

Министерство образования и науки Российской Федерации  
Федеральное государственное бюджетное образовательное учреждение  
высшего профессионального образования  
"Тамбовский государственный технический университет"

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# ПИЩА ДЛЯ УМА

*Утверждено Учёным советом университета  
в качестве учебного пособия для студентов,  
изучающих проблемы производства пищевой продукции*



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Тамбов  
• Издательство ФГБОУ ВПО "ТГТУ" •  
2012

УДК 811.111(075.8)  
ББК Ш13(Ан)93:Л80  
П368

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П368      Пицца для ума : учебное пособие / Е.М. Коломейцева, М.Н. Ма-  
кеева, Т.П. Пекшева, И.Е. Ильина. – Тамбов : Изд-во ФГБОУ ВПО  
"ТГТУ", 2012. – 88 с. – 50 экз. – ISBN 978-5-8265-1129-9.

Включает статьи и тексты по вопросам производства различных ви-  
дов продуктов питания, их качественных характеристик и пользы для  
здоровья людей. Деловые ситуации и задания помогут студентам понять  
и выполнять различные функции в компании и совершенствовать свои  
навыки в общении по вопросам пищевого производства. Все задания  
сопровождаются языковыми упражнениями, закрепляющими понимание  
проблем и словаря делового английского языка в сфере производства  
продуктов питания.

Предназначено для студентов, изучающих проблемы производства  
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**ISBN 978-5-8265-1129-9**

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университет" (ФГБОУ ВПО "ТГТУ"), 2012

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## A GUIDE TO USING THE TEXTBOOK

The book is designed to help intermediate and upper-intermediate learners of business English improve their business vocabulary and knowledge. It is for people studying English before they start work and for those already working who need English in their job.

Apart from improving your business vocabulary, the book also helps you to develop the language needed for important food production business.

You can use the book on your own for self-study, or with a teacher in the classroom, one-to-one or in groups.

The main task of this book is to enlarge specific problems of food production. The materials will allow the students to extend their linking of theory and practice further by analyzing the strategic issues of specific food manufacture.

The studies are intended to serve as the basis for class discussion. They are not intended to be a comprehensive collection of teaching material. The materials have been chosen (or specially written) to provide readers with a core of cases which together cover most of the main issues. As such they should provide a useful backbone to a programme of study but can sensibly be supplemented by other material.

The material in question can never fully capture the richness and complexity of real-life food production situations and we would encourage readers and tutors additionally to take every possible opportunity to explore the live strategic issues of food processing organizations.

We expect readers to seek their own lessons from units and tutors to use cases in whichever way best fits the purposes of their programme.

It is essential that students are required to undertake additional reading from other sources and that their 'practical' work is supplemented by other material as mentioned above.

Teachers can choose units that relate to students' particular needs and interests, for example areas they have covered in course books, or that have come up in other activities. Alternatively, lessons can contain a regular vocabulary slot, where students look systematically at the vocabulary of particular thematic or skills areas.

Students can work on the units in pairs, with the teacher going round the class assisting and advising. Teachers should get students to think about the logical process of the exercises, pointing out why one answer is possible and others are not.

We hope you enjoy using this book.

## Unit One. CONFECTIONERY PRODUCTION PROCESSES AND MACHINES

**Task One. Read, translate and discuss the following article from** <http://www.international-confectionery.com/>

### INTERNATIONAL CONFECTIONERY ASSOCIATION MISSION

The International Confectionery Association brings together the interests of the global confectionery industry and represents and promotes these interests internationally. ICA facilitates, coordinates and communicates international scientific, regulatory and public affairs information while promoting and representing the interests of the confectionery industry in a collaborative and responsible manner.

#### POSTED IN WORLD COCOA *Certification*

Certification for cocoa farming is a transparent, credible, and ongoing process that reports on labor conditions in the West African cocoa farming sector – on a country-by-country basis. Cocoa certification represents a major step forward in efforts to improve the well-being of children, farm families and communities in the cocoa sector. It is the first program ever to address labor issues involving a farm-based commodity grown on several million small family-owned and -operated farms in some of the world's most remote regions.

#### POSTED IN ABOUT CONFECTIONERY *Chocolate*

The story of chocolate begins more than 2,000 years ago in equatorial Central America where the Mayan Indians held cocoa beans in high regard. Mayan writings refer to cacao as "food of the gods". It was the Mayans who first created a beverage from crushed cocoa beans which was enjoyed by royalty and shared at sacred ceremonies. Chocolate's importance in the Aztec Empire also is clearly recorded. Although Christopher Columbus brought a handful of cocoa beans to Spain in 1502, it was Hernando Cortes who was successful in introducing drinking chocolate sweetened with cane sugar to the European audience after his visit to what is now known as Mexico in 1519.

**Task Two. Learn the given words and word combinations and use them in the situations from the text.**

The International Confectionery Association, ICA; facilitate; coordinate; public affairs information; promote; represent; a collaborative and responsible manner; a transparent, credible and ongoing process; report on labor conditions; on a country-by-country basis; a cocoa farming sector; to improve the well-being of children; to address labor issues; hold cocoa beans in high regard; create a beverage; sacred ceremonies.

**Task Three. Read, translate the text and answer the questions.**

1. What kind of sector is confectionery industry?
2. What is it made up of?
3. What commercial operations are there in Canada?
4. Where was the industry concentrated in?
5. Where are new companies appearing now?
6. What is the confectionery industry dependent on?
7. What did Statistics Canada report by the end of the century?
8. What is the reason for the reduction?
9. How can any sharp increase in the international price of raw sugarcane or cocoa beans affect the industry?
10. Which country has always been a major Canadian supplier of high-quality candies?

Confectionery Industry, a manufacturing sector made up of companies primarily involved in processing candies, chocolate and cocoa products and chewing gum. Confectionery manufacturing started to emerge as an important industry in the late 1800s. One of the earliest commercial operations, McCormick's Ltd, was established in London, Ont, in 1857. Robertson Brothers Ltd was in the candy business in Toronto by 1864, and Ganong Brothers opened in St Stephen, NB, in 1873. In 1873 Moirs Ltd, originally a bakery, commenced candy production in Halifax, NS. Robert Watson Co started in Toronto in 1874, and by 1879 Viau Ltée was in production in Montréal.

In Toronto, Patterson Candy Co was established in 1888, and the Cowan Co in 1890. Confectionery production greatly increased in Canada in the early 1900s with the establishment of several major producers, including William Neilson Ltd in Toronto in 1908, Willard's Chocolates Ltd, Toronto, 1914, and Fry-Cadbury Ltd, Montréal, 1920. Walter M. Lowney Co of Montréal and Walter Baker Co of Canada, Toronto, also became established during this period. In these formative years the industry was concentrated in Eastern Canada, a situation that prevails today, although in Western Canada a number of smaller manufacturers emerged during this period and new companies are still appearing.

During the past 2 decades, a considerable amount of plant consolidation has taken place. In 1961 the industry had 194 plants in production. By the end of the century Statistics Canada reported 94 plants in production: NS had 4; NB, 2; Qué, 29; Ont, 41; Man, 3; Sask, 0; Alta, 2; and BC, 13. As is the case in most other food sectors, the major cause of the reduction has been the steady phasing out of smaller, obsolete production facilities and their replacement with fewer, larger, highly efficient operations.

The confectionery industry is unique among segments of the Canadian FOOD AND BEVERAGE manufacturing system in that it is dependent on fo-

reign supply for 2 of its primary ingredients: sugar and cocoa. Unfortunately, these commodities are subject to rapidly changing prices in spite of accords such as the International Sugar Agreement. This factor, in turn, can seriously affect the industry's sales volumes and profit margins. Any sharp increase in the international price of raw sugarcane or cocoa beans is quickly translated into increased production costs and higher consumer prices; a downturn in production volumes usually follows.

Steadily increasing provincial sales taxes are another indirect cost that can have a negative effect on industry sales. However, over the long term, production volumes in most categories have shown slow, steady growth. For example, in 1973 the industry produced 68 895 t of all types of chocolate products, including chocolate bars, boxed chocolates, seasonal novelties and chocolate products sold in bulk and other forms. By 1984 the production of chocolate confectionery had increased to 90 003 t. Similarly, in 1971, 16 772 t of chewing-gum products came off the industry's production lines; by 1984 this amount had increased to 19 565 t. Trends in sugar confectionery, which includes hard candy, pan goods (hard and soft) and similar products, fluctuate. In 1971 the industry produced 49 114 t of sugar confectionery; in 1984 the volume was 52 264 t.

Importation of hard-candy products affects the trend. The UK has always been a major Canadian supplier of high-quality candies, but imports are increasing from South American countries, notably Brazil and Argentina.

Statistics Canada reported that in 1997 the industry made shipments valued at \$1.48 billion. The industry is represented by the Confectionery Manufacturers Association of Canada, Toronto.

## **Part One. SOFT CANDY (JELLY & GUM) CANDY PRODUCTION PROCESS**

**Task One. Find Russian equivalents of the following vocabulary units and learn them:**

- 1) jelly machine manufacturer
- 2) supplier
- 3) exporter
- 4) wholesalers
- 5) distributors
- 6) molding production process line
- 7) starch impressions
- 8) mogul plant
- 9) a complete range of equipment
- 10) significant labor savings
- 11) continuous production

**Task Two. Read, translate the text below and answer the questions.**

1. Which company can provide candy machines?
2. Who may be interested in these machines?
3. What equipment can the company Linhandle offer?
4. In how many ways can gums and jellies be formed?
5. What does a traditional mogul plant do?
6. How does a starchless molding system work?
7. What are the economic advantages of the new machine?

A professional Jelly Machine manufacturer, supplier and exporter with a factory in Taiwan can provide you with high quality Candy Machine and excellent buy services. Enquiries from global wholesalers, distributors, buyers, agents are welcome.

If you are interested in any item of our jelly machine, please feel free to contact us.

We would like to be your reliable Jelly Machine manufacturer and welcome to visit our factory.

**PROCESS LINE LCQ-150, 300 FULLY AUTOMATIC JELLY AND GUM CANDY MOLDING PRODUCTION**



LINHANDLE offer a complete range of equipment for the preparation, cooking and molding of gums and jellies. Gums and jellies can be formed in two ways: The traditional mogul plant deposits cooked syrup into starch impressions. The product then undergoes drying during stove, before separated from the starch. With the LINHANDLE starchless molding system, cooked syrup is deposited at final solids into molds. The finished products can then be demolded after a short period, eliminating the use of molding starch.

There are many fundamental economic advantages over the mogul systems, including:

- \* Significant labor savings
- \* Continuous production



- \* Short processing time-with no stoving
- \* Less floor space
- \* No starch conditioning plant
- \* Reduced scrap, better production quality
- \* Clean and hygienic production

**Task Three. Find Russian equivalents of the following vocabulary units and learn them:**

1. PROCESS:

Sugar cooking...>Premixing...>Stirring buffering tank...>Aeration equipment...>Depositing...>Cooling turner...>Drying...>Seasoning...>Finished products.

2. PLC=programmable logic controller

**Task Four. Describe the marshmallow production process using the words from Task Three.**

### **LC-DSC-300,-450 DEPOSITED MARSHMALLOW PRODUCTION PROCESS DEPOSITED TOFFEE JELLY CANDY PRODUCTION PROCESS**



**Application:** the equipment is designed for aeration confectionery: rated aeration soft candy, marshmallow, chocolate, toffee, etc. ... by easy view screen in touch with PLC control system fully automatic production line.

**Task Five. Read the article below and write one word to fill the gap.**

### **LOLLIPOP CANDY PRODUCTION PROCESS**

As 1... professional Lollipop Forming Machine manufacturer, supplier and exporter with a factory in Taiwan, we provide you 2... high quality Lollipop Forming Machine and excellent buy services. Enquiries 3... global wholesalers, distributors, buyers, agents are welcome.

If you are interested 4... any item of our candy machine, please feel free to contact us.

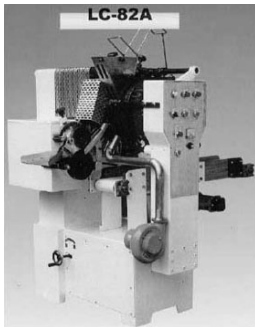
We would like 5... be your reliable Lollipop Forming Machine manufacturer and welcome to visit our factory.

**Task Six. Read the article and choose the best phrase from the given below to fill each of the gaps:**

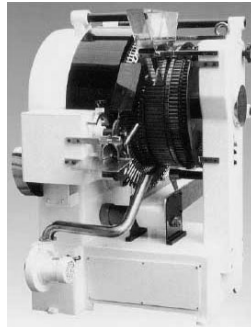
- A. LOLLIPOP STICK
- B. SHAPE
- C. LOLLIPOP SIZE
- D. LOLLIPOP WEIHT
- E. SUGAR ROPE

**LC-82  
LOLLIPOP FORMING MACHINE**

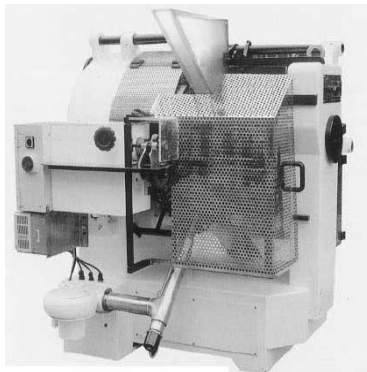
LC-82A



LC-82B



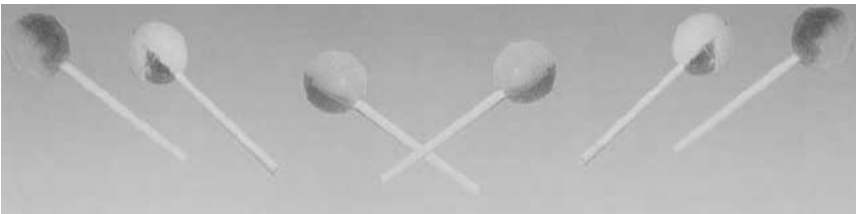
LC-82C



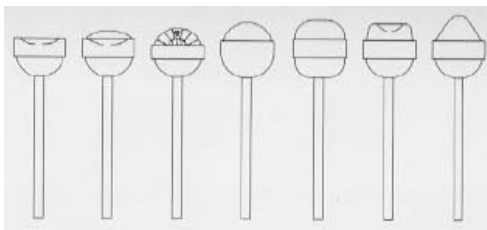
## LOLLIPOP FORMING MACHINE

As per specifications list, the definite output depends on the pop diameter.

1. ....: A wide range of ball and cylindrical lollipop shape.
2. ....: The diameter (D) of the lollipop is fixed; the length(C) of the pop is adjustable.
3. ....: the weight depends on the shape and specific weight of the sugar mass and filling ingredients. The weight can be changed by adjusting the height and width of feeding rollers and lollipop length(C).
4. ....: The machine is equipped with one set of feeding rollers, adjustable in height and width that determine the lollipop weight. Center filling of powder, gum and jam sugar rope be acceptable for forming.
5. ....: Paper, plastic or wooden stick can be used, Stick diameter is fixed, the length of stick be adjustable 5 mm.

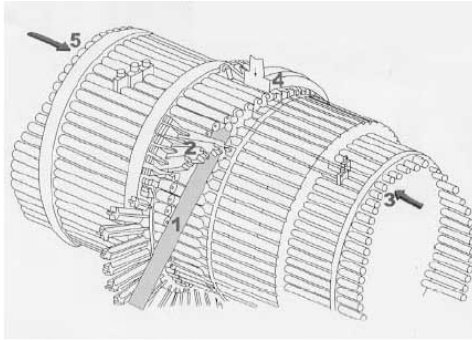


Specifications	LC-82A	LC-82B	LC-82C
Capacity	300 pcs	800-1200 pcs	UP 1200 pcs
Drive	1HP x 1, 1/8HP x1	2HP x 1, 1/8HP x1	2HP x 1, 1/8HP x1
Dimension LxWxH	153 x 102 x 178cm	118 x 104.5 x 166.2cm	207.7 x 178.5 x 160cm
Weight	700 kgs	800 kgs	850 kgs
Above specifications subject to designed requirement to be changed without notice			



### Functional layout, forming head

1. Sugar rope
2. Rope cutting
3. Stick feed
4. Continuous forming track
5. Forming plunger



**Task Seven.** Make up questions covering the subject-matter of the text below.

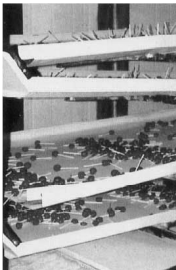
### **LC-85C FIVE LAYERS COOLING PLANT**



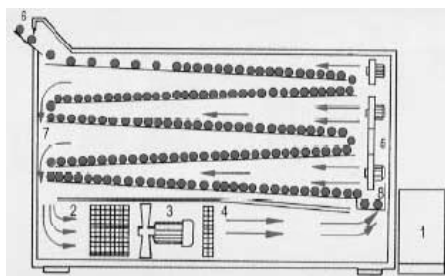
**HIGH QUALITY LOLLIPOP 5 LAYERS COOLING PLANT LC-85C** is specially designed for Ball lollipops. The ball lollipops produced on LC-82B former are fed via conveying belt to the cooling system. There are 5 overlapped trays in the LC-85C cooling plant are side movement to prevent deformation.

After cooling in LC-85, the ball lollipops are fed via sorting device to separate loose sticks and sugar pieces before wrapping. The water cooled compressor and cooling system are completely insulated and have an integrated enclosed circuit. Six fans spread the cooling air over the 5 trays/belts at each level.

**Task Eight.** Describe the scheme below using the given words.



1. REFRIGERATOR
2. COOLING BLOCK
3. FAN
4. HEATING ELEMENTS TO DEHUMIDIFY
5. DISTRIBUTOR FANS
6. LOLLIPOP INLET
7. CONVEYOR TRAYS
8. LOLLIPOP DISCHARGE

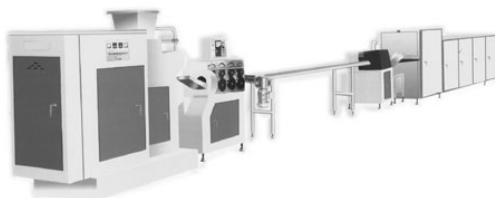


**Task Nine.** Read the article below and choose the best word to fill each gap.

## SOFT CANDY PRODUCTION PROCESS

### LC-108

### FULLY AUTOMATIC SOFT CANDIES (TOFFEE, CARAMEL) PRODUCTION PROCESS

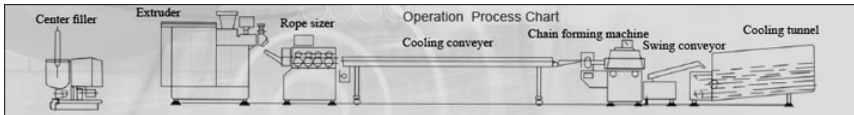


Extruding soft candy has revolutionized production (**methods/ways/lines**) for many candy manufacturers. LINHANDLE design and manufacture complete line for toffees, caramels using this method. There are (**faults/advantages/ weaknesses**) of this method over traditional manufacturing process area. Delicious candies production (**lines/methods/process**) included Aeration Automatic Vacuum Cooker to produce aerate masses for delicious candies manufacturing without shortage equipment. Chain forming machine is (**low/ high/middle**) operating speed machine for best forming of the candies. It is flexible to suit simply and high speed packing machine (**uses/reduces/ makes**) packaging equipment investment fund. The complete production plant composed of Syrup dissolver, Automatic vacuum cooker, Extruder with center filling, Rope sizer, cooling conveyor, Chain forming machine with swing Conveyor, Cooling tunnel; efficient, reliable to (**produce/make/do**) quality products.

## LC-108 FULLY AUTOMATIC SOFT CANDIES (CAMEL, TOFFEE, ...) PRODUCTION LINE



The production process (**machine/line/equipment**) is designed with center filling by chain forming machine for unfilled and small percentage of center filling candies, we (**recommend/offer/insist**) to use rotating die set of LC-91 and matching front process LC-80C Rope Sizing machine with sizing roller adjustable pressure roller, heating and speed (**adjustable/becoming/suitable**) for high percentage center filling up to 35% LC-60B Jams Filler filling pump to be designed for production of center soft candies, hard candies with fruit jam, semi-liquid, chocolate, etc. ... output 500 Liters.



**T a s k T e n .** Read, translate and give a summary of the texts below.

### LC-80V ROPE SIZER



**The rope sizer machine** is designed a variety stage unit with sizing roller adjustable pressure roller, heating and speed adjustable to suit a variety of products. The heating controlled by electronics is mounted on the panel including "PAULS" Bottom and others. Over feeding of the rope may be prevented by the rope control unit.

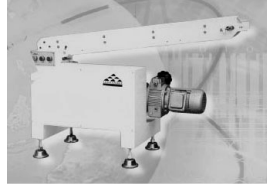
### LC-91 CHAIN FORMING MACHINE

**This chain forming machine** performs a variety shape of candies forming with the production of high percentage up to 30% filled hard candy with liquid and semi-liquid, chocolate etc. Output 900 kgs/hr. depend on the size and shape of candy and production process balance, etc. ... Flexibility and low noise LIHANDLE forms line comprising batch Roller, Rope sizer, Forming ma-

chine and Cooler. Due to the seamless forming and the absence of burrs confectionery may be produced for the wrapping on the most modern and high speed twist Wrapper.

### **LC-158 SWING CONVEYOR**

**This swing conveyor unit** that's suitable for after forming machine outlet products to transport and swing on the belt of cooling plant.



### **LC-84 COOLING PLANT**

This is **an economic cooling plant unit** that's suitable for a variety of sweets and candies to suit customer worldwide concerning air-conditioner system subject to capacity, quality of product, environment temperature & humidity of factory.



**Task Eleven. CHEWING GUM and BUBBLE GUM PRODUCTION PROCESS. Learn the given words and word combinations and use them in the situations from the text.**

Chewing gum, bubble gum, two robust sigma type mixing blades, double conical roller bearings, protective seal, double reduction precision ground helical gears, to be lubricated in oil box, pre-set height.

**Task Twelve. Read, translate and answer the questions.**

1. What is the mixer made of?
2. What are the stigma plates supported by?
3. What does the reducer have?
4. What are all gears and bearings lubricated in?
5. What is the control panel like?
6. When will the mixer stop?

### **LC-140 MIXER**

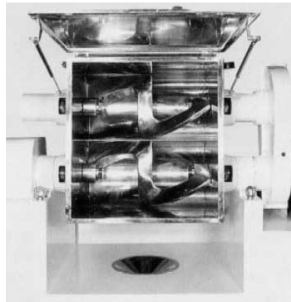
The mixer designed for chewing gum and bubble gum is a unit with two robust sigma type mixing blades. All contact parts with the product are made of stainless steel. The sigma blades are supported by double conical roller

bearings with protective seal. The reducer has double reduction precision ground helical gears made of high hardened steel. All gears and bearings are lubricated in oil box.

Control panel presents all electric system, easy operation, and security system installation. Once the cover is opened up to pre-set height, the mixer will automatically stop operation.

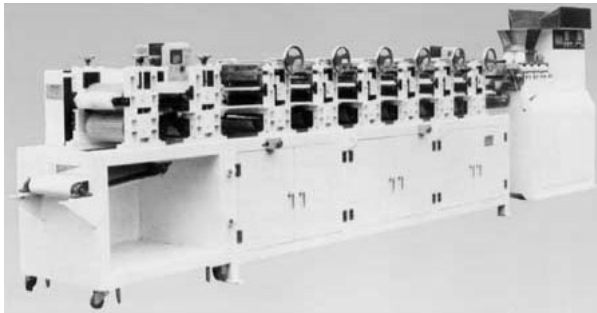
### **LC-160**

**Top view looking down inside mixing blades**



### **LC-160A**

**Continuous operation for making chewing gum**

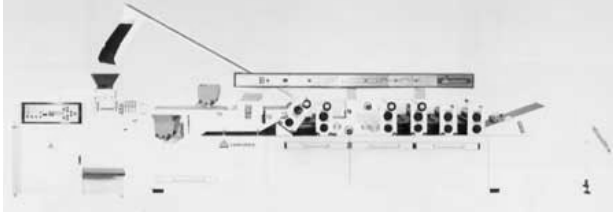


### **LC-160B**





## LC-160C



**Task Thirteen. Read, translate and make up questions to sum up the text.**

Continuous operation for making chewing gum, extruding and six-sectional roller forming process include putting gum masses into the twin screw of extruding machine forming die head that produces various shapes of chewing gum sheet: coins and bubble gum tablets. The front section of the extruder is connected with six-sectional roller and cutting unit. The rolling unit provides continuous compressing rolling and forming the gum sheet that is rolled out to acquire final thickness.

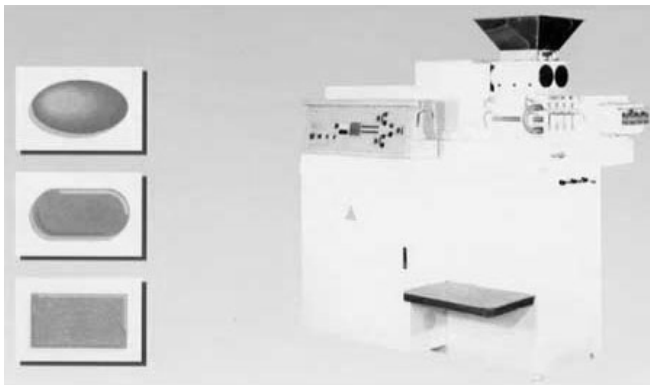
The roll openings are variable and are adjusted through hand wheels with the help of measuring instruments.

The speed of each set of roller is controlled to ensure working stability, accuracy, efficiency and easy maintenance.

The cutting unit is available, cutting and scoring roll pairs are built in or exchangeable.

**Task Fourteen. Use the correct forms of the verbs.**

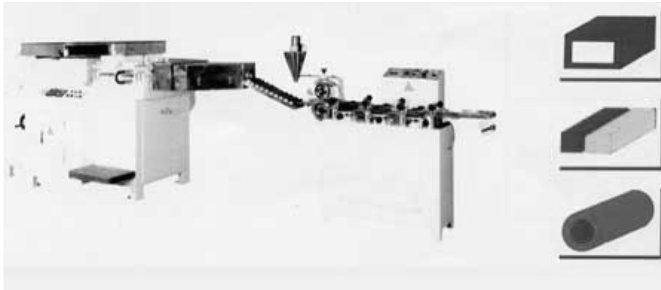
## LC-150 EXTRUDER



Linhandle (**supply**) a variety of extruders to suit customers worldwide. It (**be**) easy to remove extruding SCREW AXLE of machine for materials or color cleaning when production lot (**change**). It (**use**) to force feeding of materials if setting roller feeder. It can (**to center**) filling powder and jam if setting filler. The extruder (**be**) essential suitable for ropes and sheet shape products. It (**use**) for multi-layers, flavors and ropes productions.

The extruder (**connect**) with forming machines, cooling conveyor and wrapping machines for final products.

## 2 COLORS / 2 FLAVOURS EXTRUDERS



Two extruders (**assemble**) on one frame and connected to one pressure head in order to extrude two products with distinct colors/flavors into ropes. Then, passing through LC-80 rope sizer it (**become**) desired small rope conveying into cooling system to wrapping machine.

**T a s k F i f t e e n .** Insert the appropriate prepositions.

## LC-180 BALL FORMING MACHINE



BALL MACHINE is production 1... ball and other spheroids in bubble gum, solid or hollow form with or 2... a filling. For example: powder filled, semi liquid caramel and hard candy. The ball machine makes rope of paste delivered 3... the extruder via to appropriate conveyor belt, cuts it 4... the correct length and shapes it according to the forming cylinder.

It is fitted 5... 2 sets of equalizing roller to calibrate the diameter of the rope. The cut rope is exactly equal in length 6... the forming cylinder and a pusher helps each individual piece 7... the machine. The cylinder turn rapidly and move together progressively to make.

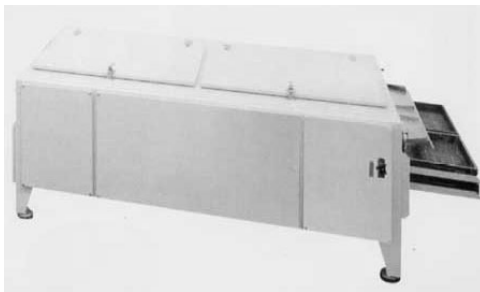
The shape and form 8... the individual piece is a cylindrical stick diameter 8 – 25 m/m. There are two machine models 9... different outputs. R800 means the forming cylinder length is 800 m/m. R1200 means the cylinder length is 1200 m/m. Ball machine is able to produce any spheroid candy 10... diameter 8 – 25 m/m.



**Task Sixteen. Describe the following pictures using the given vocabulary.**

Vibrating cooling machine, be equipped, deformation, to discharge the cooled products, table swings, discharging slopes, improve the cooling effect, ball forming machine, output range, production process layout, suit customers, an air-conditioner system, quality of product demand, environment temperature, an optional collective conveyor belt, high efficiency, spare parts, to pre-heat, a sponge, pharmacy, pottery, porcelain, revolution products, non-revolution products coating.

### LC-182 VIBRATING COOLING MACHINE



This machine is equipped with vibrating system. It protects the products from any deformation during the cooling cycle. Except for this function the table will be inclined timely to discharge the cooled products. The frequency of table swings, working and discharging slopes are adjustable. The refrigerator will improve the cooling effect. The vibrating cooling machine matches up the front of machine (ball forming machine) output range for production process layout.

## LC-84A/B/C/D THREE LAYERS COOLING PLANT



This is an economic plant unit which is suitable for a variety of sweets and candies. To suit customers worldwide an air-conditioner system is designed to increase capacity of production, quality of product demand, environment temperature & humidity in factory. That's to be confirmed by customers.

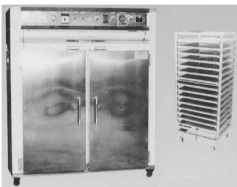
## LC-84E/F/G/H COOLING PLANT



The cooling plants are designed on a customer's demand according to the cooling soft mass, extruder model, required sugar rope, speeds and available working space.

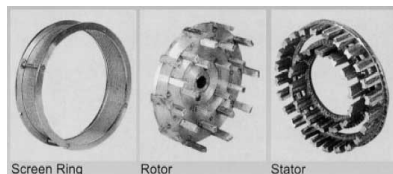
LINHANDLE supply the cooling plants for any kinds of products.  
An optional collective conveyor belt is used to collect the chip.

## LC-120 SUGAR MILL

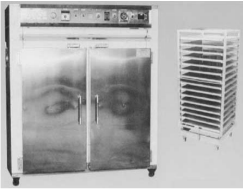


**Application:** sugar power, food, chemical, pharmaceuticals, plastic fertilizer, mineral stone, metal, ceramics, gypsum pulp and a variety of materials are used to suit customers worldwide.

There are multiple uses for a variety of crushing materials. Its advantage is easy-operation; it can save time and power, high efficiency. Besides, spare parts have a long life, easy to replace and clean.



### **LC-130 PER-HEATING CABINET**



This cabinet is used to preheat the slabs of Gum Base. After preheating, the Gum Base becomes soft like a sponge and can be fed directly into the mixer machine.

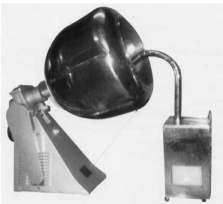
### **LC-190 COATING MACHINE**



The pan is made of stainless steel that can be tilted 0 – 40 degree. Its speed is variable and blower is equipped with coating machine so that coating would dry quickly.

*Application:* it may be used for a variety of Sweets and Candies, Pharmacy, Pottery, Porcelain and Plastic industry for dyeing and mixing color.

### **LC-195 CORRUGATE POLISHING (COATING MACHINE)**



The machine application and features are the same as in LC-190 coating machine, except that it is designed to corrugate vessel and blower without being equipped with coating machine.

The machine is suitable for high efficiency, revolution products polishing such as ball gum, pharmacy, etc. ... and for non-revolution products coating.

## **Part Two. HARD CANDY PRODUCTION PROCESS**

**Task One. Read, translate and describe the production process of the appliances. Learn the following words and word combinations.**

Continuous microfilm sugar cooker, spread, the syrup in a very thin film, a vertical steam heated cooking tube, high speed rotor blades, mount on a common base plate, a control panel, a syrup reservoir tank, a selection of flavor and color incorporating equipment, a syrup holding tank, a continuous syrup pump, the discharge arrangement, evaporate, the injection of buffered acid colors and certain flavors, fit with sight glasses, a discharge pump, extract, the installation.

## "MICROFILM" COOKER DEPOSITING PROCESS BATCH COOKER DIE FORMING PROCESS

As a professional Candy Processing Machine manufacturer, supplier and exporter with a factory in Taiwan, we provide you with high quality Candy Processing Machine and excellent buy services. Enquiries from global wholesalers, distributors, buyers, agents, are welcome.

If you are interested in any item of our candy machine, please feel free to contact us.

We would like to be your reliable Candy Processing Machine manufacturer and welcome to visit our factory.

### LC-26

## CONTINUOUS "MICROFILM" COOKER CONTINUOUS CANDY MOULDER COOKER VACUUM TYPE



The continuous microfilm sugar cooker is cooking in film form by spreading the syrup in a very thin film on the inner surfaces of a vertical steam heated cooking tube by means of high speed rotor blades. The basic unit, mounted on a common base plate, complete with its own control panel, comprises the following: Syrup reservoir tank Discharge pump, Syrup pump Discharge pipe Microfilm cooker, Vacuum pump and condenser Optional. Extra equipment comprises a selection of flavor and color incorporating equipment, Pre-heater or first stage cooker unit. The pre-dissolved syrup is pumped from the syrup holding tank by a continuous syrup pump into the top of the Microfilm cooker where it is cooked continuously as it passes in film from down the tube to the discharge arrangement, the moisture which is evaporated from syrup, is removed from the cooker through a pipe connected to the condenser of the vacuum pump. At the base of the Cooking chamber provision is made for the injection of buffered acid colors and certain flavors. Below this a special outlet is fitted with sight glasses through which the steam of sugar can be observed. A discharge pump extracts the cooked sugar continuously. The sugar is discharged continuously into a Turbo mixing cone or hopper, according to the installation.

### **Task Two. Learn the following words and word combinations.**

The syrup tank, the syrup inlet, a self-contained variable stroke piston type pump, a vertical inner cooking tube, to be lagged and encased, a stainless steel cover, a high speed revolving shaft, a series of high speed centrifugally loaded spreader blades, a stainless steel collecting chamber, a discharge pipe, the microfilm cooking chamber, an automatic valve, an air bleed regulating valve, a reduction gear.

**Task Three. Read the following texts and match the beginning phrases.**

- A. VACUUM PUMP
- B. MICROFILM COOKER
- C. SYRUP PUPA
- D. SYRUP TANK

1. ... is made of stainless steel construction; the syrup tank is mounted at the back of the main column, where it is freely accessible.

2. ... is a self-contained variable stroke piston type pump, motor driven through a reduction gear, is provided to draw the syrup direct from the tank from where it is pumped in a metered flow to the syrup inlet at the top of the cooking rotor.

3. ... consists of a vertical inner cooking tube surrounded by a steam jacket, capable of operating on a steam pressure of up to 13.6 Atmospheres (200 lbs per sq. inch). The rotor unit is lagged and encased in a stainless steel cover. Inside the inner tube a high speed revolving shaft carries a series of high speed centrifugally loaded spreader blades which wipe the syrup in a very thin film on the inner surface of the cooking tube due to the rapid movement of the syrup film over the cooking surface. A very great intensity of heat exchange between the cooking tube and the syrup is obtained; thus giving a high output of cooked sugar from a very compact unit. At the base of the rotor, the cooked sugar falls into a stainless steel collecting chamber, fitted with sight glasses, which is connected to the discharge pump.

4. ... has been specially designed for removing high boiled sugar continuously from the collecting chamber and is dependently motor driven through a variable speed drive. The outlet of the discharge pump is fitted with a discharge pipe through which the cooked sugar is delivered at a convenient height.

5. ... is connected via the condenser to the top of the microfilm cooking chamber. It is fitted with an air bleed regulating valve to set the required degree of vacuum. The pump is independently driven and an automatic valve ensures that water is fed to the pump immediately.

**Task Four. Read, translate and describe the features of the model.**

**MODEL GD SERIES CONTINUOUS "MICROFILM" COOKER  
AND CANDY DEPOSITED PRODUCTION LINE**



Model GD series "Microfilm" Cooker and Candy Depositor continuous Automatic production line is the advanced confectionery machine. The composition of machine includes electric and PLC control system all in one.

The machine has the features of compact structure and efficient, reliable fully automatic PLC control system to produce quality smooth, transparent candies, also two colors, stripe, center filling candy and toffee.

This depositing candy production line saves factory space and labors, easy operation maintenance so it is worldwide proven; efficient, reliable to produce quality products.

### **Part Three. CHOCOLATE CANDY PRODUCTION PROCESS**

**T a s k O n e . Read, translate and make up questions to the texts.**

#### **DEPOSITED CHOCOLATE CANDY PRODUCTION PROCESS. LCXQ-I DEPOSITED CHOCOLATE PRODUCTION PROCESS**



LINHANDLE supplies a fully automatic integrated continuous chocolate molding depositing production system for an advanced complete variety shape of molding chocolate, accurate quantity, smooth figure, high grade chocolate to suit customers worldwide.

The advanced equipment by Programmable Logic Controller (PLC) match Mechanism and Electric Proven; efficient, reliable to produce quality chocolate products: pure chocolate, single color, tablets, chocolate bar, chocolate granule mixing depositing, etc. ...

Whole production process equipment is composed of preheating molds, depositing, vibrating, cooling, demolds, process conveyor and cooling conveyor.

#### **FULLY AUTOMATIC PRODUCTION PROCESS FOR CREAMINESS CHOCOLATE, NOUGAT, CEREAL BARS, CANDY BARS**

LINHANDLE are the Taiwan's leading suppliers of creaminess chocolate, nougat, candy bars, etc. The company is ready to supply a processing plant and to design, build and commission the machinery. The production process: from raw material preparation via processing stages; LC-28 fully automatic vacuum

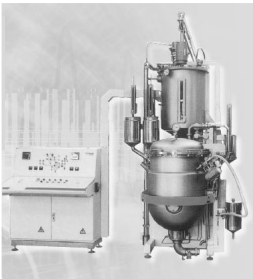


cooker for making aerated masses, mixing granule ingredient, forming, cooling, cutting and enrobing, right up to packaging. The performance experience of LINHANDLE satisfies customers worldwide.

**Production Layout Process**

1. Mixing and Feeding Section
2. Automatic Storage Barrel
3. Roller sets for Preliminary Product Molding
4. The hang Roller for sticky material paste
5. Particles Sprayer
6. Tunnel and Candy Core Cooling
7. Slitting Mechanism
8. Sub-delivery system for Slitting Mechanism
9. Cutting Mechanism and 180° turn delivery mechanism
10. Chocolate Coating Mechanism from backside
11. Joint delivery Mechanism
12. Coating Mechanism from front side
13. Cooling tunnel for Chocolate Coating and Spraying
14. Finished products Sorter

**LC-28B  
AUTOMATIC VACUUM COOKER**



**Application:** the cooker is designed for aerated masses for making nougat chocolate, bar candy, cereal bar, halawa, and marshmallow.

**Machine Characteristics and Functions.**

1. Using the steam pipeline heating system highly raises up the efficiency of thermal energy and drops down the manufacturing cost.
2. The Vacuum decline-temperature control system enhances the quality of the products.
3. The two-step mixing system could also create unique product taste.
4. The programmable logic controller (PLC) system ensures the reliability of quality and also raises up the efficiency of production.
5. Using the imported double speed mixing motor efficiently lowers down the consumption of electricity.

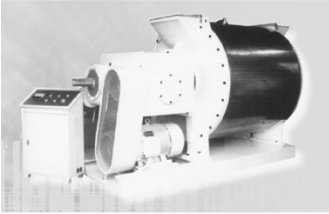
**Task Two. Learn the following words and word combinations.**

Finely grinding chocolate, bean powder, daily application chemical materials, mesh, chocolate thermoregulation tank, chocolate degassing, de-smelling, dehydrating, the separation of oil and grease, ferrous substance, approximately 10 hours/per batch, storage tank.

**Task Three. Describe the functions of the appliances shown below.**

**LC-58R**

**CHOCOLATE (FLUID) REFINERY MACHINE (ROLLER)**



The machine designed for finely grinding chocolate also can be used for grinding bean powder into oil liquid materials and daily application chemical materials. Capacity is subject to grinding mesh and then complete grinding chocolate (liquid) by discharge pump passes through into chocolate thermo-regulation tank.

**LC-59**

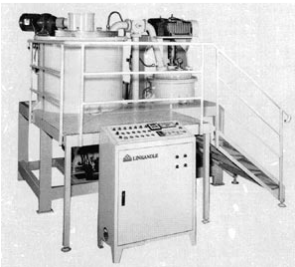
**CHOCOLATE THERMOREGULATION TANK**



The chocolate thermoregulation tank is used for retaining fine grinding chocolate paste material via agitating. It ensures chocolate degassing, de-smelling, dehydrating and prevents the paste from the separation of oil and grease etc.

**LC-58R**

**CHOCOLATE (FLUID) REFINERY MACHINE (ROLLER)**



The machine is specially designed for finely grinding chocolate without generating ferrous substance or causing noise during machine operation. Average complete grinding time is approximately 10 hours/per batch. Then completed grinding chocolate (fluid) goes through discharge pump and passes into heating type of storage tank.

**LANGUAGE CHECK**

**Exercise One. Complete the sentences using the correct form (gerund or infinitive) of the word in brackets.**

1. (Achieve) results is all my boss cares about.
2. It's important (present) a professional image of the company and its brands.
3. I look forward to (work) with you on the new campaign.
4. My agent made me (publicize) the new HollyBank soap range, although I can't stand it!

5. I've persuaded two local celebrities (attend) the launch.
6. Can you ask Sam about (set) up the stand?
7. I'm slowly realizing that (target) the right people isn't going to be easy.
8. You'll need (liaise) with the manager over the in-store displays.
9. Unfortunately, (cancel) the launch has cost us far more than we'd anticipated.

**Exercise Two. Complete the verbs with the following prepositions. Some verbs can be followed by more than one preposition: to (×2), of (×2), in (×4), from (×2), on**

- 1 refer
- 4 benefit
- 7 consist
- 2 approve
- 5 belong
- 8 depend
- 3 believe
- 6 result
- 9 succeed

**Exercise Three. Complete the article using the appropriate form of verbs and prepositions from Exercise Two.**

Eric Bernat bought a troubled Spanish confectioner in the 1950s. He *1believed* in the importance of creating one brand and knew that success ultimately 2... eliminating the majority of the company's 200 products to concentrate on building one truly global product – a lollipop, or 'candy on a stick'. This innovative product allowed children to eat candy without getting their hands and clothes dirty. Suddenly Eric Bernat was on the way to becoming the world's leading producer of candy that parents worldwide would 3... their children eating!

His strategy had several phases, and the first one 4... finding a name that would appeal to children everywhere and then promoting it worldwide. He chose Chupa Chups (from the Spanish chupar, to suck) and then asked the famous surrealist painter Salvador Dali to design a colourful logo to accompany the marketing and advertising campaign. The product's reputation soon 5... his careful positioning tactics, and within five years his famous lollipops were being sold throughout Spain.

Bernat's company now sells four billion lollipops a year in 170 countries around the world and has 6... creating a truly global brand. They even hope to win the war on sugar and have started a complete promotion of the image of their candy – the latest product under study: lollipops that whiten the teeth and prevent cavity.

## GLOSSARY

1. **buffering** – 1) промежуточное хранение 2) буферизация, использование буферного ЗУ 3) промежуточное преобразование • *serial buffering*

2. **burr** – 1) грат (излишки металла на кромках изделий после обработки) 2) заусенец; задира 3) треугольное долото 4) жерновой камень 5) оселок, точильный камень 6) ореол (Луны или звезды) 7) борфреза; небольшая фреза 8) треугольное зубило

3. **blade** – 1) лезвие; режущая пластина 2) ножовочное полотно 3) ре�ец, вставной ре�ец; нож (напр., фрезы)

4. **corrugate** – 1. 1) морщить (кожу); покрывать морщинами; сморщивать; Syn: *wrinkle 2., furrow 2.* 2) морщиться, сморщиваться 3) делать волнистым, рифлёным; гофрировать • *to corrugate steel* – гофрировать сталь; 2. = *corrugated* – делать волнистым; сморщивать; гофрировать

5. **die head** – винторезный патрон; винторезная головка; плашка • *die head chaser grinding machine* – станок для шлифования гребёнок резьбонарезных головок

6. **extruder** – 1) экструдер; пресс • *auger extruder* – ленточный пресс • *screw extruder* – червячный экструдер 2) съёмник; выталкиватель 3) машина для литья под давлением; литьевая машина

7. **forming** – формовка, отливка; form – форма; внешний вид; внешнее очертание; придавать форму; строить, создавать (по образцу, модели; в соответствии)

8. **inlet** – 1) выпуск, вход; входное, вводное отверстие • *inlet pipe* – inlet sluice 2) впускное отверстие; вход || впускной; входной 3) выпуск; ввод; подача 4) воздухозаборник (напр., двигателя) • *air inlet* – clamping pressure inlet – controlled-starting inlet – electric cable inlet – external-compression inlet – fixed geometry inlet – hydraulic pressure inlet – internal-compression inlet – mixed-compression inlet – oil inlet – unclamping pressure inlet – variable geometry inlet – регулируемый воздухозаборник

9. **lubricate** – 1) а) делать гладким, скользким б) смазывать (механизм) • *He used oil or grease to lubricate the cylinder.* – Для смазки цилиндров он пользовался маслом или жиром. 2) "подмазать" 3) а) (усиленно) угощать вином, спаивать б) пить (спиртное); Syn: *drink*

10. **piston** – 1) клапан 2) плунжер; поршень || плунжерный; поршневой • *differential piston pump* – дифференциальный насос • *floating piston ring* – плавающий поршневой палец • *piston filling machine* – поршневая разли-вочная машина • *piston pressure gauge* – поршневой манометр • *piston water meter* – поршневой водомер • *seizing of piston rings* – пригорание поршневых колец • *sticking of piston rings* – заливание поршневых колец • *balance piston*

11. **plunger** – 1) плунжер; скалка; поршень, скальчатый поршень 2) пуансон; плунжер; поршень (в виде сплошного цилиндрического тела с гладкой поверхностью, точно пришлифованного к стенкам)

12. **pan** – 1) поддон; корыто; лоток 2) ящик (для мелких изделий); тара 3) бункер 4) сковорода, кастрюля, противень • to grease a pan – смазывать сковороду жиром • to scour pots and pans – чистить кастрюли и сковородки – baking pan – cake pan – frying pan; Syn: *vessel*

13. **plant** – 1) установка; оборудование 2) агрегат; механизм; энергоблок 3) завод, фабрика, мастерская

14. **porcelain** – 1) фарфор 2) фарфоровое изделие 3) = *cowrie* 2. 1) фарфоровый • porcelain clay – фарфоровая глина, каолин • porcelain tooth – фарфоровый зуб 2) хрупкий; изящный

15. **pottery** – 1) керамика, керамические изделия; фаянс; гончарные изделия 2) гончарная мастерская

16. **pulp** – 1) пульпа; смесь тонкоизмельчённого материала с жидкостью 2) шлам • beet pulp 3) волокнистая масса || превращать в волокнистую массу 4) пульпа; суспензия; шлам; ил

17. **pump piston** – поршень насоса; насосный поршень

18. **pump** – 1) насос; помпа • to prime a pump – заливать насос (перед пуском) • to work a pump – эксплуатировать насос • blowdown pump – воздуходувка • centrifugal pump – центробежный насос • gasoline pump – бензопомпа; бензонасос • petrol pump – бензопомпа, бензонасос • heat pump – тепловой насос; обратная тепловая машина • milk pump – молокоотсос • breast pump – инструмент для сцеживания • suction pump – всасывающий насос • stomach pump – желудочный зонд (для исследования желудка и проведения некоторых лечебных процедур) 2) накачивание, выкачивание, откачивание (процесс действия насоса) 3) сердце; Syn: *heart* 4) нагнетание; накачивание || качать, накачивать; откачивать

19. **robust** – 1) прочный (о конструкции); жёсткий 2) надёжный; устойчивый

20. **roller** – 1) ролик; валик; барабан; валок; каток; валец 2) иглолка (подшипника)

21. **shaft** – 1) вал; ось; шпиндель 2) шток; стержень; тяга 3) рукоятка; ручка

22. **sigma** – сигма, среднеквадратичное отклонение

23. **sponge** – губка, пористый материал • rubber sponge

24. **syrup inlet** – syrup 1) кондировочный 2) сироп 3) сироповарочный 4) сиропоразливочный • syrup crystallizing machine – кондировочная машина • syrup filling machine – сиропоразливочная машина • syrup pan – сироповарочный котел

## Unit Two. PACKAGING MACHINES

### Task One. Read, translate and learn the vocabulary from the text.

An automatic feeding and sorting system, wrapping and sealing mechanism, ball shape, irregular shape, trapezoid shape products, 3-phase asynchronous driver, lubricate, adjust sizing system.

### LC-450C LOLLIPOP BUNCH WRAPPING MACHINE



The machine is equipped with an automatic feeding and sorting system, photoelectric print registration for wrapping correct position, wrapping and sealing mechanism, and electronic control system with reasonable configuration. Its design facilitates operating, easy maintenance and cleaning. The machine suits customers worldwide. It is proven, efficient, and reliable to produce quality lollipop candy.



This packing machine is designed for ball shape of a variety of sweets and candies to suit customers worldwide.



The machine is designed for packing irregular shape of a variety of sweets and candies, especially for chocolate. It can be used to pack trapezoid shape products, envelope wrapping after changing the molds.

#### Feature:

1. This machine is designed and manufactured according to the experience and excellent technology and automatic cutting and wrapping production.

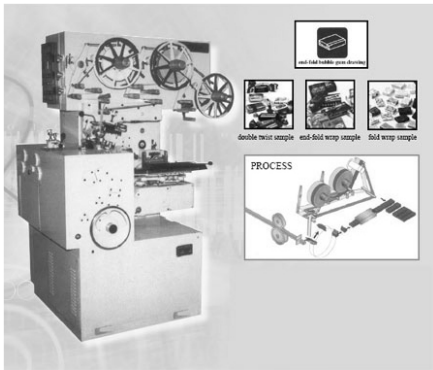
2. Four position disk plate intermittently movement.
3. PLC controlled and Gear transmits cam mechanism by 3-phase asynchronous driver.
4. Automatic lubricating on all main parts.
5. Easy & quick adjusting sizing system for different products size.

**Task Two . Make a brief summary of the texts in Task One.**

**Task Three . Read, translate the text and answer the questions.**

1. What devices did the company develop?
2. What packing materials does the machine use?
3. What other devices may be used with LC-128 Machine?
4. What makes it easy for use?
5. How does it save wrapping material?

### **LC-128 FORMING, CUTTING AND WRAPPING MACHINE**

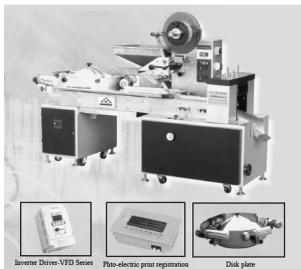


The company developed a number of devices: wrapping type end-fold wrap, fold wrap and double twist for shaping, cutting and wrapping soft candy; bubble gum-pieces in double point end-fold with comic strip as inner wrapper, toffee, caramels, ... fold wrapping and double twist wrapping machines. The machine uses commercial packing materials such as waxed paper, cellophane, laminated

aluminum foil depending on the type of wrap for outer and inner wrapping. Batch roller and Rope Sizer or Extruder are possible to use for LC-128B fold wrap and LC-128C double twist wrapping. It can be combined with LC-70 Batch roller, LC-80 Rope Sizer and for LC-128A end-fold for bubble gum. It may be combined with extruder, with rolling & scoring machine to produce quality products. The machine is easy for operation and maintenance. It has automatic lubricating system for machine long life. Control by PLC control saves wrapping material by "No sweet – No paper" – unit.

**Task Four . Read, translate and sum up the main features of the following appliances: A, B, C.**

### A. MACHINE CHARACTERISTICS AND FUNCTIONS



1. Super size Obverse / Reverse Disk plate feeding device for high speed feeding and wrapping effects.

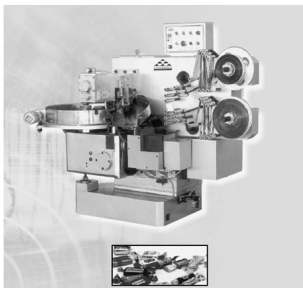
2. Single or double layer wrapping.

3. Computer programming photo-electric print registration for wrapping correctly position.

4. Inverter driver-VFD Series for speed control easy, stable also overload protection unit for machine long life.

5. Easily exchangeable sorting disk to accommodate other products size.

### B. MACHINE FEATURES



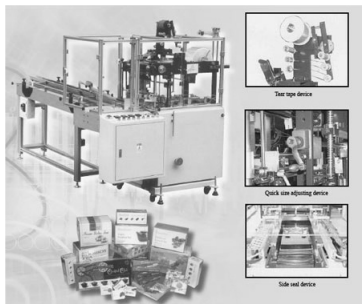
1. The machine is equipped with an automatic disk plate feeding device, the photo-electric automatic detect for 100% of wrapping without empty.

2. Inverter driver-VFD Series for speed control easy, stable also including overload protection unit for machine long life.

3. Acceptable single or double layer paper wrapping.

**Application:** the machine suitable for outer of boxes (products) wrapping such as CD/VCD/DVD, Cigarette, Tea, Candy, Chocolate, Cosmetic, Drug etc . ...

### C. MACHINE FEATURES



1. Easy & quick adjusting sizing system for different products size, it saves a lot of change time.

2. Wrapping materials are clear film of BOPP, Cellophane, and heat sealable film. They have shining good appearance and additional products value.

3. Easy operation and maintenance.

4. Equipped with stacker to save manpower and increase production capacity.

**Application:** it is used for Chewing gum, Cigarette, CD tape, Video/audio tape, Eraser etc.



**Task Five. Read the article, make up questions and comment on different ways of packaging.**

### **SWEET PACKAGING TO CATCH YOUR CUSTOMER'S EYE**

Beautiful packaging differentiates your products and therefore boosts sales. That's why our packaging equipment provides a wide variety of options. It also lowers your overall cost of ownership by maximizing throughput and uptime. With our solutions, you can bag all kinds of products in a wide range of vertical packaging styles. This guarantees outstanding product differentiation for the lowest total cost of ownership.

You can produce just about any packaging with our flexible equipment including resealable ZipTrick packs.

You can create QuatroSeal bags and boxes that are full of marketing information and look great on the shelves. Or why not use economical pillow packs? All this can be done on the same machine. Anything is possible.

### **NON-STOP PRODUCTION**

Our machines are highly automated and supremely reliable, facilitating non-stop production with limited operator intervention. For example, our sensitive jaw protection system means less time spent on cleaning and our advanced Servotronic® control system ensures exceptional ease of use and maximum versatility.

Innovative technology, such as weighing, dosing and high-speed labeling keeps everything moving as fast as possible.

### **CFS POCKET SIZE ENVELOPE BAG: EASY ON-THE-GO**

In continuation of the trend of more convenient packaging CFS has developed a pocket size execution of the CFS Envelope Bag. This resealable pocket size bag is suitable for mints, chewing gums, throat sweets and other confectionery. Because of its small size the new pack style fits excellently into the trend of easy-on-the-go and miniaturization of confectionery.



The bag can be made on the SmartPacker TwinTube, a high-speed bagging system which synchronizes two forming tubes in a single machine with speeds up to 400 bags/minute. A very compact Packaging Machine can also be used for normal bagging.

The Pocket Envelope Bags can be made on the CFS SmartPacker CX250 vertical packaging machine. A high-performance packaging machinery is so versatile that you can bag different types of confectionery in a variety of pack styles in the most effective way possible. This machine is flexible in its use;

next to the Pocket Envelope Bag you can produce regular Pillow bags, Envelope bags, Quatro Seal bags and our recloseable QuatroBox packs all on the same machine.

## DISPLAY YOUR CANDY IN A PILLOW BAG OF CFS



## MOST COMMON CONFECTIONERY BAG

Punch hole in top seal for display presentation.

This way of packaging is also suitable for consumer packs with lollipops. Next to that CFS delivers under the brand name CFS Aquarius equipment for forming, cooling and wrapping of ball, flat and 3D lollipops.

CFS Quatro Box – Four times better than a bag!



Stable, perfectly stackable and pure candy to the eye; the Quatro Box by CFS is one of the innovative packs in confectionery packaging. The space efficient patent pending packaging solution will definitely give you a competitive edge in the struggle for shelf space, but the Quatro Box does much more than please retailers. Consumers will love the new "easy opening / reseal" system that makes the Quatro Box so comfortable to open and reclose.

This way of packaging is also suitable for consumer packs with lollipops. Next to that CFS delivers under the brand name CFS Aquarius equipment for forming, cooling and wrapping of ball, flat and 3D lollipops.

### Performance Values

Unique easy opening and reclosability.

Better utilisation of retailers shelf space.

Over 50% material cost savings compared to carton, plastic or tin packs.

Less film material usage and less transport costs compared to other stand-up bags.

The patent pending Quatro Box is produced on the SmartPacker, the CFS packaging machine for confectionery manufacturers. This machine is renowned for its high performance. The CFS SmartPacker is the all-in-one solution that can manufacture standard packages as well as the new Quatro Box. So, with CFS and the SmartPacker turning the Quatro Box into a success for your sweets, confectionery or snacks really is as easy as one, two, three.

## OVERFLOWING WITH CLEVER PACKAGING IDEAS

High profile goodies rate a high profile pack, and quatro seal block bottom bags produced by our CFS SmartPacker unite beauty with practicality. Standing bags optimize your shelf space in the supermarket, allowing more consumers to see and enjoy your sweet products, while you save money compared to bag-in-box packs. Stable quatro seal bags are securely sealed at all four corners.



### **Performance Values**

All 4 sides available for printing.

Stable due to 4 corner seals.

Better use of shelf space.

Material savings (instead of bag-in-box).

## CFS SMARTPOUCH – SMART IN MORE WAYS THAN ONE

SmartPouch is smart enough to keep everybody happy. Your retail partners will appreciate the quality appearance, and the all-important choice of stand-up and hanging-slot display. Consumers will lap up the easy-open convenience and the effectiveness of the zipper reclosure device. The production department will love the automatic forming and filling from the reel, the size flexibility and the ability to switch to other SmartPacker options on the same machine: standard pillow packs, the QuatroSeal bag and QuatroBox. CFS understands that today's favoured pack style may not be tomorrow's.

Best of all, SmartPouch pack costs will be around 50% what you would pay for pre-formed stand-up pouches. With SmartPouch, you stay in control of your packing operation – and of your costs.

### **Performance Values**

Great point-of-sale presentation, whether using stand-up or hanging slot features.

Up to 50% cost savings compared with preformed stand-up pouches.

Ultimate consumer convenience with easy opening and a zipper reclose option.

Cost-efficient and flexible production, with feature options and three distinct additional formats available from the same machine.

**Task Six. Read the article on food packaging and canning and sum up the main points.**

## HAND ASSEMBLY

There are many jobs that cannot be automatically assembled due to their complexity or run quantity. Our experienced packing team, supported by our long term agency partner have the flexibility to adapt to any type of assembly, whatever the complexity or order size, with quality and efficiency.

## **SHRINK WRAPPING**

Modern fully automated shrink wrap lines (Shanklin F5) offer a quality shrink wrapping solution at up to 7000 units per hour.

## **OVER WRAPPING**

A fully automated over wrapping line (Marden Edwards), wrapping up to 1,800 units an hour.

All our wrappers can be configured to wrap a wide range of product shapes and sizes.

Labelling.

A fully automated labelling solution providing up to 6000 units per hour, where necessary labels can also be hand applied.

## **FOOD CANS**

In North America, over 32 billion steel cans are manufactured and shipped to the consumer packaging sector every year. The primary end use in this sector is metal food cans – which contain up to 30% recycled steel. Steel, or "tin" cans (named because of their micro-thin coating of tin, which prevents corrosion) comprise over 90% of the food can market. The metal food can is the most efficient, economical and nutritional means possible to deliver food products to your table (or Rover's bowl). Not only do canned foods cost less, the steel packaging is also durable, convenient and completely recyclable.

A year 2000 study conducted by the University of Massachusetts found that recipes using canned ingredients are similar in nutritional values and taste appeal to those made with fresh or frozen items. This is the first phase of a three-part nutrition study that tested 13 "family-friendly" recipes that appeal to both parents and children. The research analyzed nutritional content of entire recipes comparing such nutrients as protein, carbohydrates, vitamins and minerals. The study also conducted sensory analysis evaluating taste, appearance, color, aroma and texture of dishes prepared with canned, fresh and/or frozen ingredients.

Dofasco has become an industry leader by supplying our tin products to the food can industry. We provide products for the full range of 3-piece welded can applications and 2-piece cans including drawn and ironed (D&I) and draw-redraw (DRD). We also supply tin-free steel (TFS) ends for frozen juice containers.

## **GENERAL LINE CONTAINERS**

Aside from food cans, you probably use a number of products packaged in tin cans every day. This includes aerosols – from shaving cream to bug spray to cleaning products. It also covers paint cans and solvents. A leak-proof steel can

protects these products from contamination and evaporation. When empty, these containers can often be recycled depending on local recycling capabilities.

### DRUMS & PAILS

Steel drums and pails provide a safe, reliable and recyclable mode of containing a wide variety of products for shipping, storage, and dispensing. These containers range from 1 and 5 gallon pails through to 55 gallon drums. The main consumers of industrial packaging are the petro-chemical and paint industries.

Most of the steel Dofasco supplies for these products is in the form of cold rolled commercial steel with surface condition suitable for painting and lithography. Galvanized steel is also used in small quantities. Pre-painted cold rolled steel may also be provided for pails tops and bottoms.

### STRAPPING

Dofasco supplies a range of unannealed cold rolled steel for steel strapping applications. These include light duty applications through to the heavy duty heat treatable grades where high strength is required.

We also supply a range of unannealed and intermediate temper products for the production of high quality strapping seals. These products are available in plain or pre-painted finishes.

**CANNING** is the most popular packing in food industries for a long time. Due to its good quality image and long shelf life, it is used for any kind of food varieties.

Our very strong canning team can assist our clients from Tin Can Making till Can Food.

<u>Powder &amp; Granular</u>	<u>Prepared Food</u>	<u>Liquid Food</u>	<u>Other Products</u>
Milk Powder	Canned Vegetable	Milk Drinks	Tennis Ball
Coffee Powder	Fruit in Syrup	Coffee Drinks	Squash Ball
Candy	Canned Fish	Energy Drinks	..... etc.
Snacks	Canned Meat	Tea Drinks	
Nuts	Canned Jam	Sauce	
..... etc.	..... etc.	..... etc.	

For most of the canned food items, we can provide you from Material Processing => Cooking => Condimenting => Filling => Seaming => Pasteurization => Carton Packing => Palleting. We can make it fully automatic or semi-automatic to meet your different requirements and target budget.

Owing to our excellent experience and food engineers, we're not making only what you asked but also take into considerations any detailed aspect for food manufacturing needs.

## LANGUAGE CHECK

**Exercise One. Rewrite the second sentence so it has a similar meaning to the first sentence.**

1. I'll see you in the room we use for meetings in ten minutes.

I'll see you ..... in ten minutes.

2. This pen doesn't belong to me.

This isn't .....

3. This pen doesn't belong to me.

This pen isn't .....

4. These documents belong to James.

These are .....

5. Margaret met one of her colleagues at the conference.

Margaret met a ..... at the conference.

6. What is your boss called?

What ..... name?

7. You should consult an expert in law about companies.

You should consult ..... law.

8. This graph shows the figures for sales for last year.

This graph ..... for last year.

9. I just sent an email to one of our customers.

I just sent an email to a .....

10. I'm going on a course to train managers.

I'm going on ..... course.

**Exercise Two. Complete the sentences with *make* or *do*. You may have to use a past simple form.**

1. I'm sorry, the President is busy. You'll have to ..... an appointment.

2. The insider dealing scandal ..... a lot of damage to his reputation.

3. I think France Telecom are going to ..... a bid for Telecel.

4. Could you ..... me a favor? Could you ..... some more coffee?

5. I think we should use another agency to ..... the cleaning.

6. Don't worry, just ..... your best. We all ..... mistakes.

7. OK, shall we ..... a start?

8. The builders ..... so much noise that it was difficult to ..... any work.

9. We ..... business in the Ukraine for three years before we ..... a profit.

10. We ..... some tests last week and I think we ..... progress.

11. We have to ..... a decision. We can't just ..... nothing.

12. I hope we can send a technician to ..... the job this afternoon.

**Exercise Three. Complete the sentences with a word or phrase from the list below: all (×2), any, no ~~not one~~, none, each (×2), every (×2), both, either (×2), neither.**

1. We sent letters to sixty customers, but ..... replied!
2. I can't go. There are only two flights, and there are ..... seats left on ..... of them.
3. I can't go. There are only two flights, and ..... of them has any seats left.
4. .... I want is a bit of peace and quiet to finish writing this report.
5. I've phoned ..... store in the Yellow Pages and they are ..... out of stock.
6. We have three models, and ..... one has its own special features.
7. I was nervous at the start of my talk, but after that I enjoyed ..... minute.
8. I got three letters, but there were ..... for you, I'm afraid.
9. I got three letters, but there weren't ..... for you, I'm afraid.
10. The Trade Fair is important. We need ..... Sue and Mike on the stand.
11. Both roads lead to the city centre. You can take ..... one.
12. You've been six of the best trainees that we've ever had on this course. The best of luck to of you in your future careers.

## GLOSSARY

1. **aeration** – 1) наполнение свежим воздухом, вентилирование, проветривание 2) аэрация, насыщение кислородом • aeration of the soil – аэрация почвы 3) газирование, карбонирование 4) аэрирование, разрыхление (напр., формовочной земли) 5) насыщение газом 6) проветривание, вентилирование, аэрация, проникновение воздуха 7) разрыхлитель (формовочной смеси) 8) вентиляция; проветривание 9) вспенивание • bubble aeration

2. **agitate** – перемешивать, взбалтывать, встряхивать; возбуждать; побуждать • to agitate bath – перемешивать ванну

3. **bearing** – 1) подшипник 2) опора; несущая поверхность || опорный; несущий; поддерживающий

4. **buffering tank** – резервуар промежуточного хранения

5. **dehumidify** – обезвоживать, осушать, сушить

6. **discharge** – 1) разгружать • to discharge the cargo from the hold of a ship – выгружать груз из трюма корабля • She has discharged her cargo. – Груз выгружен (с судна). • The buses discharged passengers within walking distance of the terminal. – Автобусы высаживали пассажиров в нескольких шагах от терминала. Syn: *disburden, unload* 2) выпускать (заряд, стрелу),

выстреливать; взрывать • to discharge an arrow – выпускать стрелу • The hunter discharged his gun into the air. – Охотник выстрелил в воздух. • We feared he would discharge the bomb. – Мы боялись, что он взорвёт бомбу. Syn: *set off, shoot 2., touch off, fire off, detonate, trigger 2., explode, send forth a missile from, eject, launch, propel* 3) выпускать; спускать, сливать; выливать, опораживать • Suppose a chemical firm discharges a pollutant into a river. – Предположим, что химическое предприятие сбрасывает в реку загрязняющее вещество. • The river Thames discharges itself into the sea some miles east of London. – Темза впадает в море в нескольких милях к востоку от Лондона. • to discharge oaths – разразиться бранью; Syn: *emit, throw off, send forth, project 2., expel, exude, gush* 2. 4) разряжать 5) выделять (гною; о ране); прорываться (о нарыве) 6) выполнять, осуществлять (обязанности) 7) разгрузка; выгрузка; выпуск; сливание || разгружать; выгружать; выпускать; сливать 8) отверстие для выгрузки; спусковое отверстие; 9) расход; выгрузка 10) сброс, слив; истечение 11) производительность, подача (насоса, компрессора) 12) выпуск; опорожнение; слив || выпускать; опорожнять 13) подача; нагнетание || подавать; нагнетать (жидкость или газ) 14) производительность (насосной станции, компрессора) 15) выбросы; выделения 16) выкид || выкидной 17) разряд; разрядка || разряжать

7. **discharge box** – резервуар для сброса бурового шлама

8. **discharge capacity** – 1) пропускная способность, производительность 2) пропускная способность (водотока, водопроводящего сооружения); подача (насоса) 3) разрядная мощность аккумулятора 4) производительность (насосной станции) 5) разрядная ёмкость

9. **discharge connection** – 1) соединение с нагнетающей линией 2) сливной штуцер 3) выпускной штуцер

10. **discharge conveyor** – разгрузочный конвейер; разгрузочный транспортёр

11. **discharge efficiency** – 1) коэффициент расхода 2) отношение объёма стока к высоте выпавших на площадь водосбора осадков за данный период времени

12. **discharge end** – 1) разгрузочный конец 2) напорная сторона, нагнетательная сторона (насоса)

13. **discharge fan** – вытяжной вентилятор

14. **discharge gage** – расходомер

15. **discharge hole** – 1) выпускное отверстие 2) = drain hole – сливное отверстие, разгрузочное отверстие; выпускное отверстие

16. **discharge hopper** – разгрузочная воронка

17. **discharge line pressure** – давление в сливной гидролинии; давление в выхлопной пневмолинии, давление в нагнетательном трубопроводе



18. **discharge of pump** – подача насоса; производительность насоса; выкид насоса

19. **extruder** – 1) экструдер; пресс • auger extruder – ленточный пресс • screw extruder – червячный экструдер 2) съёмник; выталкиватель 3) машина для литья под давлением; литьевая машина 4) ленточный пресс 5) экструдер – употребляется в сочетании sample extruder 6) пресс-экструдер 7) шприц-машина 8) штранг-пресс • screw channel of an extruder – канал экструдера рабочий – auger extruder – multi-screw extruder – single-screw extruder

20. **ferrous** – железистый • ferrous metals; Syn: *ferriferous, chalybeate*

21. **gear** – 1) механизм, устройство, инструмент, прибор; Syn: *appliance, implement, tackle, tool* 2) принадлежности, приспособления • fishing gear – рыболовные снасти • hunting gear – охотничье снаряжение • skiing gear – лыжное снаряжение; Syn: *equipment* 3) а) шестерня • gears grind – шестерёнки стачиваются • gears jam – шестерёнки заедают • gears lock – шестерёнки заклинивает • gears mesh – шестерёнки крутятся б) передаточный механизм, привод • worm gear – червячный привод • in gear – включённый, сцепленный, действующий • out of gear – невключённый, недействующий, неработающий • to throw out of gear – выключить передачу • to get into gear – включить передачу; включиться в работу в) зубчатая передача • bottom gear, low gear – нижняя, первая передача • top gear, high gear – верхняя передача • reverse gear – задняя передача • to change gears, to shift gears – переключать передачу • to go into 1st, 2nd gear – переключаться на 1-ю, 2-ю скорость 4) упряжь 5) имущество, вещи б) шмотки, одежда 7) зубчатое колесо, ЗК; шестерня 8) шестерня; зубчатая передача 9) лебёдка; механизм; устройство 10) снабжать приводом

22. **gearset** – 1) редуктор 2) зубчатая передача, ЗП 3) коробка скоростей, коробка передач • internal gearset – зубчатая передача

23. **humidify** – мочить, смачивать, увлажнять; Syn: *moisten, damp*

24. **inlet** – 1) а) узкий морской залив б) фиорд, небольшая бухта; Syn: *creek* 2) выпуск, вход; входное, вводное отверстие • inlet pipe – inlet sluice 3) ввод

25. **inverter** – инвертор, обратный преобразователь, инвертирующий элемент • AC inverter – autonomous inverter – frequency inverter – phase inverter – vibrator inverter

26. **lollipop** – 1) леденец на палочке • to lick / suck a lollipop – сосать леденец 2) предупреждающий знак (в виде жезла с диском с надписью "Stop" (который держит воспитатель, переводящий детей через дорогу)) • lollipop man / lady – воспитатель(ница) с предупреждающим знаком в руке 3) любовница 4) приторное литературное произведение

27. **mogul** – 1) монгол; Syn: *Mongolian, Mongol* 2) могол; потомок завоевателей Индии • *Great Mogul – Grand Mogul* 3) важная персона; богатый или влиятельный человек, магнат • *industry moguls* – промышленные магнаты; Syn: *tycoon* 2. 4) монгольский 5) относящийся к Великим Моголам

28. **mogul** – 1) = *Mogul* 3) 2) кочка, неровность на лыжне 3) могул (разновидность фристайла, скоростной спуск на горных лыжах по бугристой трассе)

29. **obverse** – 1) а) лицевая, верхняя сторона медали, монеты, печати; Ant: *reverse* б) лицевая, передняя сторона предмета 2) дополнение, составная часть 3) обратное суждение; суждение, полученное путём инверсии 2. 4) противоположный; Syn: *opposite* 5) лицевой (о стороне) б) дополнительный, являющийся составной частью

30. **pallet** – 1) (грузовой) поддон; поддон для перевозки грузов; паллет, поддон, переносной поднос • *The warehouse will hold more than 90 000 pallets storing 30 million Easter eggs.* – На складе будет храниться 90 000 поддонов, содержащих в общей сложности 30 миллионов пасхальных яиц. • *Tomatoes were packed, 120 at a time, into "pallets" or metal trays supplied by the company.* – Помидоры были упакованы по 120 штук в поддоны, или металлические подносы, поставляемые компанией. 2) плита (конвейера) 3) якорь телеграфного аппарата 4) а) шпатель; сокол б) лопатка

31. **rate** – 1) скорость; частота; интенсивность 2) степень 3) разряд; сорт; класс 4) степень; коэффициент (напр., жёсткости пружины) 5) величина; скорость; темп; ход; интенсивность б) величина; расход 7) уровень 8) норма 9) стоимость; оценка • *abort rate* – интенсивность отказов

32. **rated** – 1) оцененный, подсчитанный, вычисленный 2) номинальный; расчётный; проектный; нормируемый 3) имеющий определённый класс, разряд, ранг 4) установленный, установленный заводом-изготовителем • *continuously rated – IP-65-rated – low kW rated* 5) номинальный; расчётный; проектный (напр., о мощности); специфицированный б) пригодный, приспособленный 7) запроектированный 8) паспортный 9) установленный • *rated battery capacity* – ёмкость аккумулятора номинальная – *rated capacity – rated current – rated frequency – rated life – rated load – rated pilot – rated power – rated voltage*

33. **reverse** – 1) реверс, обратная сторона, задняя сторона || обратный; перевёрнутый; задний 2) реверсирование, изменение направления движения 3) обратный ход 4) обратная сторона 5) реверсировать б) изменение направления 7) задний ход; обратный ход 8) оборотный 9) обратный

34. **robust** – 1) крепкий, здоровый; сильный; твёрдый • robust young man – здоровый крепкий юноша • robust nervous system – крепкие нервы • robust plant – сильное растение • robust faith – непоколебимая вера • robust plastic – твёрдый пластик • robust tenor – звучный тенор; Syn: *strong* 1., *firm* II 1., *healthy*, *sturdy*, *vigorous* 2) трудный, трудоёмкий, требующий затрат сил и энергии • robust work – работа, требующая много сил и энергии; Syn: *hard* 1. 3) крепкий (о напитках); обильный (о пище) • robust coffee – крепкий кофе • robust dinner – сытный обед; Syn: *full-bodied*, *heartly* 1. 4) здоровый, ясный (об уме) 5) грубый, грубоватый (о стиле, языке, выражениях); Syn: *coarse*, *rough* 1., *rude* 6) прочный (о конструкции); жёсткий 7) надёжный; устойчивый 8) крепкий, прочный 9) выносливый 10) робастный • asymptotically robust – empirically robust – optimally robust

35. **roller** – 1) ролик; валик; барабан; валок; каток; валец (см. тж roll) 2) иголка (подшипника) 3) дорожный каток 4) вал; валец; ролик; колесо; бегунок; барабан; цилиндр 5) краскотёрочная валковая машина

36. **roller bearing** – 1) роликовый подшипник 2) роликовая опора 3) роликовая направляющая

37. **season** – 1) время года 2) а) сезон (время проведения каких-л. мероприятий) • high season – разгар сезона • dead / dull / low / slack / season, off-season – несезонное время, мёртвый сезон; застой (в делах), спад деловой активности • fishing season – сезон рыбной ловли, путина, промысловый сезон • hunting season – охотничий сезон • open season – сезон охоты или рыбной ловли • baseball season – бейсбольный сезон • basketball season – баскетбольный сезон • football season – футбольный сезон • holiday season – сезон отпусков • mating season – брачный период, время спаривания • planting season – сезон посева • tourist season – туристический сезон • to open / usher in a season – открывать сезон • to close / usher out a season – закрывать сезон; б) время, пора, период • dry season – сухой период, сезон засухи (в тропиках) • hurricane season – сезон ураганов • rainy season – сезон дождей 3) (неопределённый) отрезок времени • She was sent home again to her father for a season. – Она опять была отправлена домой к отцу на какое-то время. Syn: *while* 1. 4) подходящее время; подходящий момент • in season and out of season – кстати и некстати; постоянно, всегда • out of season – не вовремя 5) выдерживать, сушить (лесоматериал на воздухе)

38. **seasoning** – 1) приправа; Syn: *flavouring*, *condiment* 2) выдерживание, высушивание древесины на воздухе 3) естественная сушка, выдерживание (лесоматериала) • air seasoning – выдерживание, старение – pre-heating seasoning – seasoning of paper

39. **slit** – 1) длинный узкий разрез, прорезь, щель • slit skirt – юбка с разрезом • She watched them through a slit in the curtains. – Она наблюдала за ними сквозь щёлку в занавесках. • slit drum – slit fricative – slit pocket;

Syn: *cut* I 2. 2) а) делать длинный узкий разрез (в чём-л., на чём-л.); разрезать, рвать в длину • She was wearing a white dress slit to the thigh. – На ней было белое платье с разрезом до бедра. • They say somebody slit her throat. – Говорят, кто-то перерезал ей горло. б) рваться, раскалываться, образуя длинную узкую щель 3) нарезать (листовой металл) узкими полосами; распиливать (бревно) вдоль • slit up 4) прорезь; щель; пропили; шлиц || разрезать; шлицевать 5) трещина

40. **stove drying** – печная сушка

41. **seal** – 1) уплотнение; сальник || уплотнять; герметизировать • to seal off – уплотнять; герметизировать 2) изоляция, изолирующий слой; уплотнение; прокладка 3) пломба || пломбировать 4) сальниковое уплотнение; сальник; изолирующий слой 5) придавать непроницаемость (стенкам скважины); закрывать 6) заваривать 7) заварка

## Unit Three. DAIRY INDUSTRY

### Part One. FACTS AND RESEARCHES

**Task One. Read, translate and answer the following questions:**

1. Why are dairy manufacturers subject to strict rules of production?
2. When is wastewater allowed to enter the communal drains?
3. How does a typical dairy process operate?
4. What happens if a bacteriological cycle breaks down?
5. What system do dairies install?
6. How do dairies pre-treat their wastewater?

**Dairies**, cheese makers and manufacturers of other dairy products are usually subject to special regulations. These oblige them to observe strict rules of hygiene and cleanliness, especially in the production areas. Temperature can be a problem, as some production processes use higher temperatures. Large quantities of hot water and cleaning materials are needed for cleaning. Wastewater from dairies is therefore often at a somewhat high temperature. For this and other reasons it is allowed to enter the communal drains only after pre-treatment.

A typical dairy process operates as follows. Incoming milk is filtered, warmed, pasteurized and decreamed. After this both milk and cream receive treatment according to the requirements of the final product. The machines, instruments and pipes involved in the process are kept clean in a well defined bacteriological cycle that runs automatically. If this system breaks down even partially the wastewater may receive additional load from food products like fats and proteins.

The dairies install the system with strong chemicals that include caustic soda, nitric acid, bleaching alkalis such as sodium hypochlorite and hydrogen

peroxide. The temperature of these cleaning fluids is 80°C to 85°C (about 180°F).

Concentrated chemicals purify the liquid obtained after cleaning so it can be used at the beginning of the cleaning cycle.

Most dairies pre-treat their wastewater themselves. They make use of the fact that their wastewater is alternately acid and alkali. They pipe it into large tanks where the liquid neutralizes itself during a complete cycle. When the tank content reaches an acceptable pH value it discharges into the communal drains. Other materials to treat the wastewater are sometimes added in these neutralizing tanks. Large dairies find it necessary to treat their wastewater to avoid overloading the communal installations.

**T a s k T w o . Read the article and choose the appropriate beginning phrase:**

- A. Russia's dairy industry
- B. Analysts note
- C. The first Russian company
- D. The bulk of raw milk
- E. There are three types
- F. Animal milk
- G. The fat and protein content
- H. The market research department
- I. The head count of
- J. Analysts believe
- K. Dairies
- L. However
- M. Dairy farming
- N. Each dairy
- O. The dairy industry

### **THE RESEARCH OF COMPANY "I & A"**

1. ... is 80% to 87% water and 13% to 20% dry substances such as protein, milk sugar and minerals in varying proportions depending on milk type. The most widespread kind of milk is cow milk. Consumers generally evaluate milk by its fat content, but protein content is just as important. Fat and protein are the definitive parameters of milk quality and grade. Producer-to-dealer price of milk will be determined by these key criteria (e.g. the milk supplied to Ehrmann contains 3.4% of fat and 3.2% of protein).

2. ... in milk depends on a range of factors. It is a matter of genes and cattle breed. The milk of the twelve main breeds of cow raised in Russia contains 3.63% to 3.99% of fat on average. The level of cattle care, feed, animal health and age also predict milk quality. Fat and protein content is not the only indica-

tor of milk quality. Others include acidity level, absence of bacteria, antibiotics, other harmful agents, extraneous odors and aftertaste.

3. ... has its own requirements for the milk it buys from farmers. It is the farmer's duty not only to produce the milk, but also to collect, store and deliver it to the processor while keeping all its properties intact. Today, when increasing quantities of milk are produced and processed, the farmer must possess a wide range of equipment for milking, refrigeration, feed mixing and dispensing.

4. ... of I & A studied Russia's dairy industry in January 2003. The industry's potential can be assessed more accurately if we recall what it was like in 1990, when it reached record outputs. According to the National Statistics Agency (NSA), there were 20.1 million milking cows in 1990, producing 55.7 million tons of milk annually. Per capita consumption of milk was 376 kg a year.

5. ... of cows in all farm formats has since shrunk to 12.1 million as of January 1 2003. According to NSA estimates, Russia produced 33.5 million tons of milk in 2002. Per capita consumption currently stands at 216 kg a year, well below the recommended biological standard of 392 kg, which Russia had nearly reached in 1990.

6. ... milk consumption has plummeted for economic reasons, mainly, lower purchasing power. Shrinking disposable incomes naturally compelled families to rethink their nutrition priorities. Analysts also believe that higher milk output could bring the prices down for dairy products in general, and thus boost consumption.

One of the reasons for slumping milk consumption could have been such market factor as substitution, or a change in eating habits. In recent years, as the market became inundated with a great variety of imported foods and new domestic products, a percentage of consumers must have given up milk and other dairy foods in favor of other produce.

7. ..., the analysts we have polled consider this factor unimportant. The majority of experts believe that Russian consumers' preferences have not changed in any significant way over the past 10 or 12 years, and that milk consumption will grow with disposable incomes. If this is true, Russia's dairy market appears to be starkly undersupplied and, therefore, appealing to both international and domestic players.

8. ... has a number of idiosyncrasies in Russia. The industry's groundwork was laid in the era of communist centralized economics, and has since remained largely unchanged. Milk production is still seasonal. Up to 70% of cattle births happen in spring and summer. Skyrocketing milk yields affect prices (low in summer, high in winter) and upset steady supply to dairies in the long run. Yet another unpleasant peculiarity about seasonal production is that demand for certain kinds of dairy produce, specifically, whole milk, is in inverse proportion to the seasonal production pattern, i.e. demand tends to hit bottom right when production peaks. To an extent, rural production is still regulated centrally by the state, which hampers market-based management and

sound competition. Yet another obvious challenge is low protein content in the milk; every dairy has had to deal with it one way or another. Low protein content makes it difficult to produce certain kinds of dairy products, such as curds, cheese, yogurt, and some others.

9. ... are usually dependent on their local milk suppliers. There is a limit (currently, 600 km) to how far milk can be shipped. Analysts note that competition is quite high among processors over quality milk sources. As a consequence, many dairies have to set up and maintain their own sources of raw materials. The top raw milk producing region in Russia is Bashkiria, followed by Tatarstan. The Moscow Region is fifth.

10. ... of dairy farms in Russia: major producers, most of them privatized former collective farms; new private farms; and farming households. Former collective farms produced 47.2% of Russia's milk in 2002. Another 50.9% was produced by farming households to meet their own needs; and only 1.9% of milk was produced by new private farms specifically for sale.

11. ... is produced by rural households, but its marketability is extremely poor. Therefore, the principal suppliers of milk to dairies are major producers, i.e. former collective farms. The study has revealed that every dairy makes an effort to assist its milk supplier one way or another. Assistance may range from optimized purchase prices to feed subsidies to direct investment. This is the case with both domestic and international market players.

12. ... confronted the emerging market in an artificially divided state: one part of it was, and still is responsible for milk production; the other, for processing. Whereas before, the producer-processor-retailer chain was regulated by the state, the presence of the latter has receded markedly in the industry. The producer has been left to grapple with his problems on his own, and some of those problems remain unsolved. In today's market environment, retailers make the highest profit on milk; farmers, the lowest. Without external financial backing, dairy farmers can, at best, hope to survive, but business development is out of the question.

13. ... to launch a large-scale, comprehensive support program for milk farmers was the Wimm-Bill-Dann group. Since it came up with its Milk River initiative in 1999, the company has been refitting dairy farms with modern equipment under long-term leases, introducing progressive methods of milk harvesting, storage and transportation, supplying concentrated feeds and advanced feed harvesting combines, helping farmers purchase pedigree animals, and lending to finance farming projects. According to analysts, the company has invested about US \$20 million in farms around the Moscow Region. Holland's Campina, whose Stupino factory started operation in 2000, runs a financing and modernization program for its partner farms supplying the bulk of its raw materials. Specifically, Campina leases equipment for its partners and provides consulting services on a wide range of agricultural issues. Danone, which came to Russia in 1992, has invested US \$4 in local dairy farming. Danone assists its partner farms with feed stocking.

14. ... that many dairy farms in the Moscow area would consider it a privilege to supply any of these companies. They have created a precedent of the kind of assistance rural producers can count on without waiting for the government to intervene. Overall, analysts note that investors both inside and outside the food industry tend to eye agriculture with renewed interest. While for a dairy, investment in a dairy farm is a way to become more competitive, secure steady supplies of milk meeting all production requirements and, ultimately, improve its own business, for an outside investor, this would merely be an investment to make a profit and a new income stream.

15. ... is not in line for a major breakthrough any time soon; in dairy farming, one of agriculture's most cost-intensive branches, investments may take up to 7 years to pay back. Many dairies in the provinces are facing the same problems as rural producers: worn-out or outmoded equipment, debt, inefficient management, and others. In 36 provinces of Russia, dairy farmers are losing money. This notwithstanding, some analysts are not convinced that dairy farming could be optimized or regulated efficiently by a free market; they consider a state role essential to the industry's recovery. State support for agriculture is practiced worldwide; milk and dairy products are simply too important to be governed by market laws alone.

**Task Three. Read the text and find the appropriate beginning.**

- A. Clinical products
- B. New Zealand dairy companies
- C. Milk and whey products
- D. Milk powders
- E. Cream products
- F. Cheese and cheese ingredients

The majority of New Zealand's milk is processed into dairy products for export. New Zealand is one of the top five dairy exporters worldwide, and dairy produce is New Zealand's single largest export earner. Up to 95% of all dairy produce is exported.

1. ... produce an extensive range of products, these products include.
2. ... are renowned for their high quality milk powders and nutritional powder products.
3. ... are such as butter and whipping cream and other used in baking products.
4. ... are produced for both food manufacturers and retail markets.
5. ... are high quality protein products with a wide range of nutritional and food manufacturing applications.
6. ... are such as probiotics, hydrolysates and colostrum.



**Task Four. Read the text and make up questions about dairying in New Zealand.**

### **DAIRY INDUSTRY FACTS AND RESOURCES**

Dairying is New Zealand's largest industry and one of the fastest growing. It is a significant employer and contributor to the wealth that underpins New Zealand's standard of living.

Quick dairy farm facts:

The total cow population in New Zealand for the 2005/06 season was 3.832 million, down slightly from the year before.

The average herd size has more than doubled in the last twenty years to 322 cows in the 2005/06 season.

15.1% of all herds now have more than 500 cows.

The vast majority of herds are in the North Island (81.0%) with an average North Island herd size of 280 cows.

South Island dairy herds account for the other 19% of the national total, but have 29% of the cows, with the average herd size being 484 cows.

Canterbury has the largest average herd size of 648 cows.

South Auckland has 3823 herds making it the region with the most herds.

Our dairy season runs from the 1st of June through to the 31st of May.

In the 2004/05 season dairy companies in New Zealand processed a staggering 14.7 billion litres of milk.

**Task Five. Read the text and make a brief summary.**

### **BRIEF HISTORY OF DAIRY FARMING**

Dairy farming is part of the long and proud agricultural tradition in New Zealand.

Dairy cattle were first imported by European settlers in the early 19th century to provide milk, butter and cheese for local supply. As early as 1846, only six years after the signing of the Treaty of Waitangi, the first exports began. By 1882 New Zealand was exporting the first refrigerated shipment – a worldwide first – of meat and butter to the United Kingdom.

Refrigerated shipping enabled New Zealand to develop a substantial dairy export trade to the United Kingdom, which remained the largest export market until as late as the 1970s, when the United Kingdom joined the European Union.

Refrigerated shipping, New Zealand's temperate climate and a highly innovative and efficient dairy industry based on farmer-owned co-operative dairy companies enabled dairying to grow into New Zealand's most important industry.

Since the 1970s there has been significant diversification in both dairy products and markets. The United States is now our largest market and the United Kingdom is about our 10th largest market – surpassed by Japan and several other Asian markets that barely existed 30 years ago.

## LANGUAGE CHECK

**Exercise One.** Complete the sentences with the prepositions: with, on, under, by, in, from, of, to, for, at, because of, between.

In 1983, the milk supply in Canada had little growth 1... supply management, which limited farmers' production to the domestic consumption of butterfat. 2... the time, the consumption of dairy products with higher fat content was declining, except 3... cheese, while low fat products consumption was increasing. Canadian dairy exports were small and exports were limited 4... the surplus inherent to the system. Those surplus are 5... two types, (a) structural surpluses that arise 6... the imbalance between production of butterfat and solid-non-fat and consumption of those milk components, and (b) surpluses that need to be removed from the system to insure a fine tuning 7... consumption and production.

In 1983, the dairy industry 8... Canada was slightly dominated, in terms of dollar share, 9... by co-operatives (56%). However, less than 30% of the dairy processing plants were 10... co-operative ownership. Thus, co-operatives, 11.. average, had much larger plants than private firms did. Co-operatives were concentrated in the commodity products (butter, powder) and cheddar cheese. Private firms (72% of dollar share) dominated the fluid milk market as well as the speciality cheeses, frozen dessert and yoghurt markets. Nestle and Kraft were the only multi-national companies 12.... a strong presence in Canada in 1983. Nestle was mostly processing evaporated milk, although the volume of raw milk involved was rather small. Kraft had a few cheese processing plants in Ontario, but was more involved in value-added activities such as cutting, wrapping and the marketing of cheese.

**Exercise Two.** Complete the sentences using the correct form of the verbs.

In 1997, the Canadian processing sector 1. more (concentrate) than in 1983, and co-operatives 2(increase) their dollar share of dairy processing activities by six percentage points. The four most important dairy processors in Canada, in terms of sales, were Parmalat (multi-national), Agropur (co-operative), Dairyworld (co-operative) and Saputo (private).

Dairyworld (or its legal name Agrifoods International Co-operative) 3(be) very active in the consolidation process. The co-operative is the result of the merger, at the beginning of the nineties, of the four most important dairy co-operatives of the provinces of British Columbia, Alberta, Saskatchewan and Manitoba. In 1993, Dairyworld 4(get) involved with Agropur in a partnership with Aliments Ultima (which 5(own) by the European co-operative group Sodiaal) to process the yoghurt brand Yoplait. It also initiated, in 1999, a partnership for its fluid milk operations with Parmalat to create Maxima Foods.

However, this partnership (which 6( capture) almost 50% of the volume of fluid milk marketed in Canada) did not materialise, and in December 2000, Dairy-world dairy operations 7(buy) by Saputo. The latter is also very active in the consolidation process. Saputo, a Quebec private processor, 8(buy) a few years ago a major American cheese maker (Stella Foods). The company has positioned itself as an important supplier for restaurants and food services, and is very active on the retail and export markets. Saputo is currently the number one dairy processor in Canada and may become an important player on the international scene in a near future.

Sales of ice cream in Canada 9( dominate) by two multi-national companies, Nestle and Unilever, while two other multi-national firms, Danone and Parmalat, are important players on the Canadian yoghurt market. Still in 1997, the partnership of two co-operatives (Agropur/Dairyworld), named Ultima, is the other important player on the yoghurt market. However, it should be noted that with the exception of Parmalat, and to a lesser extent Kraft, the processing activities of multi-national firms in Canada do not require much raw milk. In fact, by the nature of the dairy products process, most buy dairy components rather than raw milk, while others contract part of their processing. Thus, they 10(more involve) in the marketing of their brand name than in physically processing their products, which fit in with the new concepts that owners of global brands will in the future concentrate their management effort and finance on the branding activity, while subcontracting the manufacturing function to approved firms (Pitts and Krijger, 2001). Parmalat, which was completely absent from Canada before 1997, is the exception. Through acquisitions and partnerships, Parmalat 11 (now become) one of the most important Canadian dairy processor.

### **T a s k S i x . Read the article and make up questions.**

#### **DRIVERS OF STRUCTURAL CHANGE**

Canada's dairy processing sector has gone through a major rationalisation. However, the very low rate of internationalisation of Canadian dairy firms is striking. In a country where growth from the milk supply is almost non-existent (2,6% total increase in the milk supply from 1983 to 1997), one would think that the search for economies of scale would have to lead to the internationalisation of the industry. Moreover, during the 1983 – 97 period, foreign multi-national dairy groups, such as Parmalat, Danone and Unilever, have made their entry or increased their presence on the Canadian dairy market through acquisition.

To explain the drivers of structural change, to understand the lack of internationalisation of Canadian dairy firms and the reasons that made Canada attractive to foreign firms, three points will be analysed. First, the relative structural lag of the processing industry, second, we will look at changes in dairy

policy that might have contributed to the observed situation, and finally the financial structure of Canadian dairy co-operatives will be discussed.

The structural lag of the Canadian dairy processing sector is not related to the size or capacity of its processing sector, but rather by the fact that there was, until recently, no firm that dominated at the national level, in terms of milk processing. In European countries, such as Denmark and the Netherlands, one or two firms process between 75% and 90% of the country's milk supply (IDF, 2001). Moreover, among the 25 most important dairy groups, no Canadian firm figures in the list, while countries with a smaller or similar milk production, such as Ireland, Switzerland and Japan, are listed (Côté, 1995).

Canada is a vast country that is not densely populated; that fact plays an historical role in the reason why, until recently, there was no firm dominant at the national level. One has to remember that not very long ago, at the end of the sixties, numerous small localities in Canada had some dairy processing capacity. At the time, this made sense considering that transportation costs were relatively high, and considering the low level of farm specialisation.

The low level of farm specialisation increases transportation costs of the raw milk, because small volumes are collected on each farm. Similarly, large distances between scarcely populated regions increases the cost of delivering processed dairy products, from a regional processing point, to each urban area. Thus, with the same infrastructures and technology, a smaller and more densely populated country would have had lower transportation costs, and therefore would have been more likely to start its consolidation process earlier than Canada did. It was not before the mid-seventies that an important consolidation of processing facilities took place in Canada. The consolidation corresponds with the increased degree of specialisation of dairy farms, as well as transportation cost reduction due to technological gain and economies of scale.

The acceleration of the consolidation process, recorded between 1990 and 1995, coincided with the arrival of new international players. In fact, multi-national dairy firms, such as Danone, Unilever and Parmalat, made their entrance or significantly increased their presence in Canada between 1993 and 1997. Those firms have a global strategy and want to be strategically positioned on all continents. In order to sell on the Canadian market, foreign firms have no choice but to be present on our market given the dairy trade restrictions that exist on the continent. More importantly, the structural lag of the Canadian dairy processing industry made Canada attractive for well-capitalised firms. Thus, multi-nationals were able to reap the benefit associated with merging and rationalising a dispersed industry. This, of course, created pressure on native dairy firms to do the same. Only then, did regional dairy groups start to significantly extend their business to other regions.

The low level of internationalisation of Canadian dairy processing firms is certainly linked to the structural lag of the industry as defined earlier. To illustrate this point, we will use the classical text book case of a firm development, which is as follows: first, the firm is present on the national market, developing

its competitive advantage in a core business. Then, when the domestic market in its core business is close to saturation, the firm will export to benefit from economies of scale. At this point, we still are at the national strategy level. Thirdly, to reduce transportation costs and to benefit from multi-location advantages, the firm will operate production centres in foreign countries. Finally, the multi-national firm co-ordinates and standardises its processing and marketing on numerous markets (Bertram et al., 1996).

Canada's dairy processing industry seems to be at the first stage of the firm development. Therefore, the lack of internationalisation would be partly explained by the structural lag of the industry. Put differently, the search for economies of scale through internationalisation or exports is not necessary since important economies of scale are still possible at home. However, recent events in the industry seem to suggest that the industry might be entering a new stage of firm development.

**Task Seven. Choose the correct beginning of the paragraphs in the article:**

- A. Although
- B. Moreover
- C. However
- D. Traditionally
- E. The Canadian dairy policy

### **POSSIBLE IMPACT OF THE CANADIAN DAIRY POLICY**

1. ..., based on supply management, is oriented toward the domestic market. Therefore, most of the early effort made by farmers and processors in the system, were directed toward the domestic market, leaving little place to the internationalisation of the industry.

2. ..., co-operatives were commodity oriented, and the implementation of supply management in the early seventies did not create much incentive to change that situation. As mentioned earlier, the whole Canadian dairy industry was domestically oriented, exports were mostly in the form of powder that originated from the structural imbalance between the domestic needs in fats and solids non-fats. Since theory suggests that internationalisation is associated with product differentiation, it is unsurprising to see that co-operatives, at the time, had little concern with internationalisation.

3. ..., in the eighties, changes in the marketing of milk have favoured dairy products with growth, such as soft products and speciality cheese. Powder and butter plants became residual plants that were processing the milk that could not be used for more value-added products. As a result, Co-ops, which at the time were mostly processing commodity products, saw their access to raw milk being greatly reduced. This created incentive for co-operatives and others to make some movement of consolidation in the form of plant closure, merger

and business acquisition. The fact that co-operatives were new players in the more differentiated dairy product segments, probably played a role in slowing down the internationalisation process, since a new player would usually have to get comfortable with the domestic market first, before taking further steps toward internationalisation (Bertram et al., 1996).

4. ..., in a context of a fixed supply measured to match the domestic needs as closely as possible, it appears difficult to develop exports. Similarly, as mentioned earlier, imports are also quite restricted in Canada. This could also explain the interest of foreign firms to choose to enter the Canadian market through acquisition. In their global positioning strategy, most of the multi-national firms present in Canada also made acquisitions in the US. If free dairy trade had been possible, some of those firms might have chosen to be present in only one of the two countries instead of being present in both.

5. ... some flexibility had been introduced in the mid-nineties regarding the availability of raw milk for exports, one has to wonder why so few Canadian firms have not moved from the development of competitive advantages in a core business (stage 1), directly to the operation of production centres in foreign countries (stage 3). Supply management does not constrain a firm from investing in other countries. Moreover, most of the movement in that direction came from public and private firms, and not from co-operatives. The financial structure of co-operatives may be a cause here.

**T a s k E i g h t . Read the article and sum up its main points.**

## **MILK AND BUTTER PRODUCTION PROBLEMS**

American Butter Institute Market Situation & Outlook

Fourth Quarter 1998

Volume 1, Number 4

Editor: Chris A. Nubern

With the end of the holiday season, the butter industry experienced the conclusion of one of the most volatile years in the history of the industry. Although this statement is certainly true in terms of price, 1998 will also be remembered for the emotional debates on butter imports, daily cash trading, and futures market development. Because some of these issues were not resolved in 1998, the butter industry should prepare for another interesting year. Some of the issues that will require immediate attention from the industry include daily trading at the Chicago Mercantile Exchange (CME) and the development of a new milkfat market. The potential effects from these market adjustments are examined in this ABI Market Situation & Outlook.

Also included in this report is a brief review of market performance in 1998. Given the industry's record setting pace, a final year-end-review is war-

ranted. This analysis includes a discussion of potential marketing conditions that may affect the industry in 1999 – including projections for butter production and market prices.

1998 Year-End-Review

Strong demand and short supplies resulted in record high butter prices in 1998. With the exception of three weeks during the holiday season of 1997, weekly butter prices for 1998 surpassed the corresponding weekly market prices established during the past two years (Figure 1). Never before has the strength of the markets lasted for such an extended period of time.

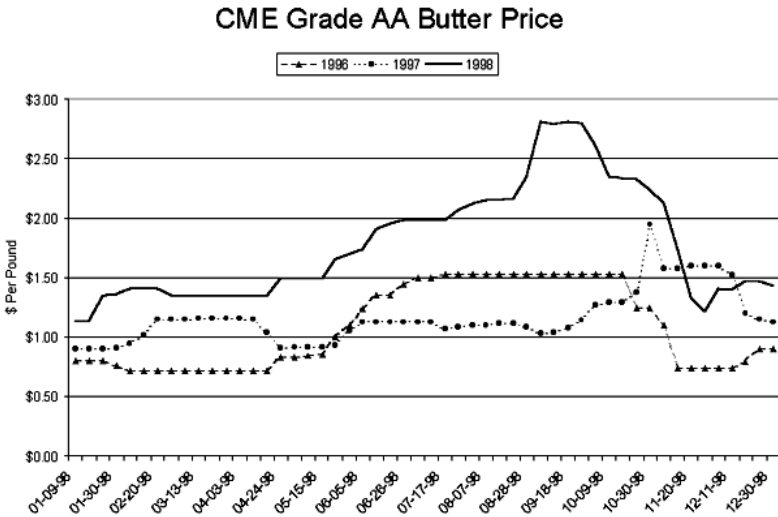


Figure 1

The average Grade AA price at the CME market for 1998 was \$1,778 – 53% higher than 1997's average price of \$1,161. Throughout the year, Grade AA butter prices ranged from a low of \$1.14 per pound in mid January to a record high of \$2.81 in mid September. On one frantic day of trading in September, a load of butter actually sold for \$2.95 per pound. Although this sale did not set the market price for the day, transactions at this price level serve notice as to how tight the market actually was during the fall months.

Trading activity at the CME cash market also increased substantially for 1998. Throughout the year, a total of 618 carlots of Grade AA butter were traded on the CME market. This represents a 22% increase when compared with the 1997 trading level of 506 carlots. Monthly sales transactions ranged from a low of 11 carlots in January to a high of 115 carlots in November. On average, 52 loads were sold each month. This compares to a monthly average

of 42 carlots in 1997 and 10 carlots in 1996. Although activity in the cash market is increasing at a good pace, estimates show that total sales transactions in 1998 will represent only about 2,5% of total butter production.

More active markets and record high prices are the direct result of limited butter supplies throughout 1998. Factors such as low milk production, declining butter stocks, and strong demand for butter, ice cream, and other milkfat products caused the short supply of butter. From 1992 to 1997, U.S. butter production has declined about 16% from a high 1,365 million pounds. Preliminary estimates for 1998 show butter production at about 1,062 million pounds – an 8% decline compared to 1997. Because of extreme weather conditions, milk production for 1998 recorded only marginal increases – thus limiting annual growth in the total supply of milkfat. The limited milkfat supplies available to the market were often utilized first to satisfy the growing demand in higher-valued markets like ice cream and cream cheese. As is often the case, the demand for butter was treated as a secondary market and was not adequately supplied with milkfat. To satisfy the needs of a growing demand base, butter manufacturers had to confront competitors in a free market arena that, according to some buyers, rivaled the ancient era of Roman gladiators.

Unlike previous years, commercial and government stocks of butter were not able to provide the market with a buffer that could be used to carry the industry through the seasonal demands of the summer and fall months. For example, butter stocks in May 1998 were estimated at 72,7 million pounds – or about 30% less than May 1997. Unfortunately, many casual observers may conclude that lower butter stocks in 1998 were related to subsidized exports of butterfat. In fact, from January through March, butter stocks in 1998 surpassed those of 1997 by an average 8,2 million pounds. Because estimates show that the majority of subsidized exports occurred from June 1997 to February 1998, it is unlikely that export activity created the critical shortage of butter in 1998. These observations are an indication that the lower stocks of butter are likely associated with far more complex issues – possibly butter pricing and the residual allocation of milkfat.

Increased imports of butter and butter substitutes in the fall of 1998 helped provide some relief from the supply crisis. For October and November, total butter stocks are averaging about 8,9 million pounds higher than 1997 levels. Depending on December sales activity, the industry could be starting out 1999 with stock levels that are comparable with 1996 and 1997, but about 30% lower than January 1998.

#### What to Expect in 1999

– Butter Production: The key to having a relatively stable year in the butter markets will depend on the supply situation. With current production levels of 1,062 million pounds, very little product is being left on the shelf or in the warehouses at the end of the year. Given the strong demand for butter, addi-



tional supply is the only variable that will keep butter markets from setting new records in 1999. Currently, economic models predict that the supply of butter will increase about 3% in 1999 for a total of 1,088 million pounds. Although these results are considered somewhat high, other industry analysts do agree that butter production will rebound in 1999 from its seven-year decline. Currently, production estimates are ranging from a one percent decline to a three percent increase relative to 1998. From a statistical perspective, the difference of four percentage points is insignificant. Compared to an average production decline of 5.6% since 1996, the industry should view current 1999 production estimates as a possible turning point.

– Market Prices: Increases in U.S. milk production are going to lead to a larger supply of milkfat in 1999. Some of the additional supplies will likely be allocated to the butter markets. Because the butter industry would like to avoid a repeat of 1998, risk management will largely consist of inventory management. Stocks of butter are expected to grow at a moderate pace during the surplus months. With higher inventories and increased production, wholesale butter prices at the cash market are currently not expected to rise above \$2. A general consensus among industry analysts is that market prices will range from \$1.15 to \$1.90 with an annual average for Grade AA of about \$1.50 per pound.

– Daily Trading: In 1998, the butter industry learned to function without Grade A and B market prices. Additional adjustments for this year are on the horizon. One of the industry's first challenges of 1999 will involve adjusting to multiple trading days at the CME. Unless unforeseen events develop, the cash market at the CME will most likely begin trading butter three days a week beginning sometime in late February or early March. Given the current pricing system used by the industry, the additional pricing information is likely to result in some difficulties for butter manufacturers. Currently, there are no immediate solutions to the challenges facing the industry. To remain competitive with additional pricing information, long-term improvements are needed in the areas of (1) legally binding contracts between buyers and sellers, (2) viable futures contracts, and (3) efficient pricing of milkfat.

– Price Discovery for Milkfat: People in the industry are concerned about using butter prices as the basis for establishing the value of cream. Although the market value of butter and cream will always be highly correlated, additional pricing information from other products is not being adequately incorporated into the current pricing system. Butter, like ice cream and cream cheese, is just one product out of many that utilize milkfat as a primary input. Determining the value of cream solely on the basis of butter prices is a reckless disregard of pricing information in other product markets – especially when the other products are utilizing an increasing share of the supply of milkfat.

Although the current pricing structure may have been appropriate in the past, structural changes in the milkfat market warrant a new pricing me-

chanism. A possible solution is the development of a milkfat market. With this new mechanism, pricing information from all market outlets, not just butter, will be used to determine the fair market value of cream. Although butter prices would remain one of the driving forces in a milkfat market, the new market would at least provide the appropriate forum to incorporate additional information from other product markets. The development of a milkfat market will not happen overnight. There are many technical issues that remain unresolved at this time. Even so, the members of ABI should remain optimistic and continue working toward the successful development of this market with the CME.

<http://www.butterinstitute.org/marketsituation/fourthquarter1998.htm>

## GLOSSARY

1. **boost** – 1. 1) поддержка; рекламирование • After this initial boost, recruiting will fall off again. – После первоначальной шумихи набор снова снижается. Syn: *help, encouragement* 2) повышение, подъём (цены, репутации и пр.) 3) добавочное напряжение 2. 1) поднимать, помогать подняться; Syn: *lift, hoist* 2) помогать, поддерживать; рекламировать; Syn: *support* 2., *encourage* 3) повышать (цену, репутацию, настроение) 4) повышать напряжение 5) воровать (обычно товары, выставленные в магазинах); Syn: *shoplift, rob* • boost up

2. **breed** – 1. 1) племя, порода, род • hardy breed – морозоустойчивая порода • rare breed – редкая порода; Syn: *race, lineage, stock, strain* 2) поколение, потомство; Syn: *posterity* 3) полукровка, метис; Syn: *half-breed* • best of breed – лучший в своём классе 2. bred – 1) вынашивать (детёнышей); высиживать (птенцов); Syn: *beget, give birth* 2) размножаться, плодиться • Kindnesses breed on themselves. – Добрые дела плодятся сами по себе. 3) порождать, вызывать • An iniquitous government breeds despair in men's souls. – Несправедливое правительство вызывает отчаяние в душах людей. • breeding ground; Syn: *give rise to, engender, produce* 2., *create, cause* 2., *be the source of* 4) выводить, разводить (животных); вскармливать 5) воспитывать, обучать • the old traditions in which they had been bred – старые традиции, в которых они были воспитаны; Syn: *teach, instruct* 6) возникать, появляться • He allowed discontents and jealousies to breed in the army. – Он допустил, что в армии появились неудовлетворённость и зависть. Syn: *arise, originate* 2, *spring forth*

3. **curd** обычно 1) свернувшееся молоко 2) творог • lemon curd 2 а) превращаться в творог, створаживаться б) превращать в творог, створаживать; Syn: *curdle*

4. **disposable income** – располагаемый доход (остаётся после уплаты налогов, взносов в систему страхования и других вычетов) • disposable income – доход, остающийся после уплаты налогов

5. **dispensing** – 1) раздача, распределение, распространение • dispensing area – отдел отпуска лекарств по рецептам; Syn: *distribution*,

*dispensation* 2) дозирование; раздача || дозирующий; раздаточный 3) разлив, налив 4) распыление || распыляющий 5) размельчение || размельчающий • *dispensing of paint – sealant dispensing* 6) разброс 7) распределение || распределительный • *fuel dispensing*

6. **extraneous** – внешний, поступающий извне; посторонний, чуждый • These questions are extraneous to the problem being discussed. – Эти вопросы не связаны с обсуждающейся проблемой. • *extraneous body*; Syn: *immaterial, inessential, irrelevant, superfluous, extrinsic*; Ant: *essential, intrinsic, material, relevant, significant*

7. **hamper** – 1) препятствовать, мешать (чему-л.); затруднять, стеснять движения • *to hamper in smth.* – помешать в чём-л. • *to hamper the progress of business* – препятствовать успеху дела; Syn: *hinder, fasten, bind, fetter, shackle, clog* 2) связывать вместе; Syn: *pack up*

8. **lease** – 1) аренда, сдача внаём; наём • *under (a) lease* – в аренде • *a lease expires / runs out* – аренда кончается • *to cancel a lease* – прекратить аренду • *to hold land under lease* – арендовать землю • *to renew a lease* – возобновить аренду • *to take on lease* – арендовать • *He has a flat on a long lease.* – Он снимает квартиру на долгий срок. 2) договор об аренде 3) срок аренды • *new lease of life – new lease on life – take a new lease of life – get a new lease of life – have a new lease of life* 4) = *lease out* а) сдавать внаём, в аренду • *to lease smth. to smb.* – сдавать что-л. кому-л. в аренду • *Cars could be leased at a reasonable rate per month.* – Автомобили сдаются в аренду по умеренной цене за месяц. б) брать внаём, в аренду • *to lease smth. from smb.* – арендовать что-л. у кого-л. • *They leased the building as a warehouse.* – Они арендовали здание под товарный склад. Syn: *charter, hire, let, rent* I *leases*

9. **milk yields** – надой молока

10. **output** – 1) продукция; выпуск изделий • *annual output* – годовой объём производства, выпуск продукции за год • *industrial output* – объём промышленного производства • *daily output* – ежедневный выпуск • *output per worker* – индивидуальная выработка, выработка на одного рабочего • *manufacturing output* – продукция обрабатывающей промышленности • *gross output* – валовая продукция • *to increase / step up output* – увеличивать выпуск продукции • *to curtail / cut back / reduce output* – сокращать выпуск продукции • *Much of her output as a writer was first published in magazines.* – Многие из её литературных произведений сначала были напечатаны в журналах. Syn: *production, produce* 1. 2) выходное устройство, устройство вывода; вывод • *data output* – вывод данных 3) производительность; мощность, отдача; пропускная способность; ёмкость • *average output* – средняя производительность 4) добыча 5) итог, результат б) выпускаемый, производимый • *output goods* – выпускаемые продукты 7) выходной; связанный с выводом, с выводным устройством • *output information* – выходная информация • *output error* – ошибка на выходе, ошибка выходной величины, ошибка вывода

11. **per capita consumption** – 1) потребление на человека, на душу населения • Ethiopia has almost the lowest oil consumption per capita in the world. – В Эфиопии практически самый низкий в мире уровень расхода нефти на душу населения. 2) в равных долях (о наследовании)

12. **plummet** – 1) кидать, бросать, швырять вниз (с силой); сбивать (птицу, самолёт); Syn: *hurl down* 2) = plummet down – быстро и отвесно падать • The prices are plummeting (down). – Цены стремительно падают. • The pilot plummeted towards the earth until his parachute opened. – Пилот стремительно нёсся навстречу земле, пока его парашют не раскрылся.

13. **shrink** – 1. shrank, shrunk; shrunk, shrunken 1) уменьшать, сокращать 2) а) уменьшаться, сокращаться б) сморщиваться; садиться (о материи), давать усадку в) сжиматься, съёживаться; Syn: *huddle, cower* 3) терять значение; ухудшаться; Syn: *dwindle* 4) высыхать, пересыхать, усыхать; Syn: *dry up* 5) а) отскочить; отпрянуть, отшатнуться • The crowd shrank back from the sight of the body. – Толпа отпрянула при виде тела. б) (shrink from) избегать (чего-л.), уклоняться от (чего-л.) • to shrink from meeting smb. – избегать встречи с кем-л. • He shrank from the challenge. – Он уклонился от поединка. б) удаляться, исчезать • to shrink from the room – (незаметно) исчезнуть из комнаты • to shrink into oneself – замыкаться в себе • shrink away – shrink back – shrink up; to shrink into oneself – уйти в себя

14. **slump** – 1) а) проваливаться (в болото, трясины) б) шлёпаться в воду 2) стихать, прекращаться (о ветре); Syn: *fall* 2., *drop* 2. 3) а) резко падать (о ценах, спросе на товары) б) вызывать резкое падение (цен, спроса на товары) 4) тяжело, неуклюже двигаться 5) бросать, швырять (со стуком); Syn: *slam* 2. б) а) сползть (о грунте) б) проседать

## Part Two. EQUIPMENT FOR DAIRIES

**Task One. Learn the given words and word combinations:** yeast fermented products, cottage cheese, ricotta, curd snack, whey drinks, hygienic requirements, turnkey dairy plant, raw materials, finished products.

**Task Two. Read and translate the article below.**

### DAIRY PLANTS

Agrometal has been a well-known constructor of small and medium sized dairy plants in Europe for a long time.

Our company offers the highest quality machineries from receiving to the deepest process of milk. Not only the well-known products like milk, sour cream, yoghurt, yeast fermented products, cheese and cottage cheese can be produced with our machines but such special products as ricotta, curd snack and whey drinks. These products require the most modern technology.

While our small capacity machines are easy to handle, the biggest capacity plants are highly automated.

We unite the traditional milk processes with the most up-to-date technical solutions and hygienic requirements of the 21st century.

Our and your success is not only guaranteed by giving you turnkey dairy plants and processing lines but also educating your operators and giving you the recipes of different dairy products.

### **SMALL CAPACITY DAIRY PLANTS**

Our small capacity machines, mostly used in family farms, are easy to handle.



### **BIG CAPACITY PLANTS**

The biggest capacity plants are highly automated.



### **COMPLETE PRODUCTION LINE**

Complete production lines include the process and the packaging of the product from raw materials to the finished products.



### **TURNKEY DAIRY PLANTS**

Our and your success is guaranteed by giving you turnkey dairy plants and processing lines.



**Task Three. Read and sum up the main facts of the text.**

Food processing and food production on the farm are closely linked. In an article on 'Dairy farming in a new environment' Ian McCluggage from the College of Agriculture, Food and Rural Enterprise explores the farm business challenges farmers must meet if they are to be successful.

A forum to discuss matters relating to the content of the Dairy Science and Food Technology site is provided. At the 13 December 2008, 114 topic areas and 516 messages including: lactose intolerance, slits/cracks in cheese, deaths from a probiotics trial in the Netherlands, patent applications, standardizing milk for cheese manufacture, the control of bitterness in Gouda cheese, salt reduction in cheese, benzene in soft drinks, making Coulommiers cheese from goats' milk, and cheese yield were recorded. There is also a searchable database of literature cited in the website.

**Task Four. Use the verbs in brackets in the correct form.**

Washing solution (**send**) to the circuit by centrifugal pumps. To optimize the washing process pumps output (**regulate**) by frequency converter. Consumption (**regulate**) automatically by control system.

Washing solutions (**heat**) by a plate heat exchanger. Steam with overpressure up to 4 bar acts as a heating agent. Heating (**do**) during circulation along the lesser circuit "tank – pump – heat exchanger – tank". Station can (**equip**) with heat regeneration system if necessary.

The set temperature of washing solution automatically (**keep**) by the control system during washing.

Transferring return washing stream to the corresponding tank and rinse water to outlet (**do**) automatically, while the washing program is running after the signal of a sensor installed in the return line.

Mixing washing solution is done during solution circulation along the lesser circuit. Dozing is done to the specified conductivity of the washing solution. After that the dozing pump (**turn**) off. Process is done automatically while the washing preparation program is (**run**) and (**control**) by the control system.

Each tank with washing solution is equipped with level sensors.

To doze concentrated washing solutions in the tank the station (**equip**) with two dozing stations for preparing concentrated caustic (up to 50%) and concentrated nitric acid (up to 65%).

Water input to the fresh water tank is done automatically while the washing program is running.

Caustic tank and acid tank (**fill**) with water automatically while the washing preparation program is running and is controlled by control system. Tanks can be filled manually as well.

**Task Five. Read the article and sum up the main facts.**

**PETMOL MAY OPEN STORE CHAIN IN MOSCOW**

Moscow Mayor Yuri Luzhkov has spoken out in favour of the opening of a chain of stores in Moscow, by St. Petersburg dairy producer Petmol.

Petmol General Director Valentin Polyakov said Luzhkov promised his support after visiting the company's factory earlier this month.

Luzhkov plans to use Petmol to set up a baby food production line, which should be operational in two months, at the Lianozovsky Dairy in Moscow, Polyakov said.

The first production line for baby milk and "tvorog" (Russian cottage cheese) was launched as part of the Children of Russia federal programme at Petmol on December 10, 1998. The line produces 10 tonnes of dairy products for children over six months. Equipment for the production of curds based dairy products was delivered by the British company APV.

A second line, producing liquid baby food, will be launched in the near future, using equipment from Swedish Tetra Pak.

Petmol products are 10 percent cheaper than other brand names on the St. Petersburg market, Polyakov said. St. Petersburg monthly consumer demand for breast milk replacement amounts to 340 tonnes.

**Task Six. Read the description of the following 15 units of equipment and discuss their functions.**

**EQUIPMENT**

Agrometal Ltd can work out milk processing lines from 1.000 l to 200.000 l daily capacity.

The main sections of our dairy plants are milk receiving and storing, pasteurizing, separating and homogenizing which ensure the prime process of milk.

For making soured dairy products the fermentors are elementary needed. The machines of curd and cheese making are the highly automated cheese and curd vats, pre-presses, and other presses.

Important additional equipments are culture fermentors, CIP units, brining equipments and cooling devices.

The outstanding technological equipments in our product range are curd snack line and ricotta-generator.

Automatic filling machine for milk and liquid dairy products; air cooler of cold store for finished products; ice battery.

## **MILK RECEIVING TANK**



Receiving and storing raw milk – as a part of the receiving unit keeps the consistency and sterility of milk.

The tank is manufactured from food industrial stainless steel type WNR-1.4301.

Depending on the plant conditions it can be also manufactured with cooling jacket.

## **MILK RECEIVING UNIT**



The modern and automated milk receiving equipment and technology ensure keeping all the beneficial attributes of milk.

It includes filter and volume measuring and cools down milk fast to 4 °C.

## **MILK PASTEURIZER**

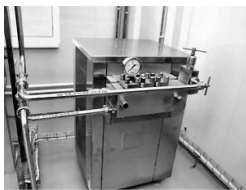


We are using high efficiency, automatic milk pasteurizer for the first sterilizing.

Pasteurizing is continuous.

The built-in heat-exchanger provides high efficiency heat recuperation.

## **HOMOGENIZER**



The homogeneity of the dairy product is ensured by the homogenizer. It is safe and got high capacity.

It is installed with one or two grade homogenizer head and driven electrically.

The high efficiency homogenization is above 150 bar.

## **MILK SEPARATOR**



The separator has got high capacity and efficiency. It works automatically.

It provides the good separation of milk compounds and got excellent technological, constructional and economical figures.



Cream separators and purifiers in different technological constructions:

- Opened separator
- Hermetically closed, manual emptying
- Hermetically closed, automatic emptying

## **SOURED DAIRY PRODUCTS**

Technological lines for producing different fat content yoghurts, kefir with different flavours and sour cream with many filling possibilities.

The aging of the product can be done in tempering room or tank.

Automated technological processes, sterility and food industrial stainless steel guarantee the good quality products.



## **CURD SNACK PRODUCTION LINE**

Production line of the Curd Snack Bar.

Unique curd snack covered with chocolate.

It can be produced from curd or whey cheese-ricotta with different flavours. The production line is totally automated.

Healthy and delicious dessert!

The production technology is our know-how.



## **CHEESE AND CURD PRODUCTION**

Modern technology-quality products.

Different process technologies.

Different types and shapes of soft, semi-hard and hard cheeses.

Production of traditional and seasoned cottage cheese.



## **CHEESE PRESS**

It makes the final press of cheeses forming them in moulds.

It works with pneumatic cylinders which could be adjusted row by row.



## BRINING



It provides the optimal brining of cheeses by using special cheese containers, salting vats and crane bridge.

## RICOTTA GENERATOR

Advantages of the equipment:

- the use of whey with a continuous technology;
- widening product range without increasing incoming milk;
- economical production; heat recuperation by using the heat of the "warm" products;
- ricotta production is totally automated – such as the cleaning of the equipment.



Temperature and technological parameters can be adjusted.

## AUTOMATIC FILLING MACHINES



Automatic filling machines for milk and other liquid dairy products.

We produce different cup, plastic bag and box-filling machines for the individual demands of our customers.

These filling machines has got high capacity and fulfill all the strict requirements of the EU.

## CULTURE FERMENTORS



It ensures the liquid starting culture for the production by mixing laboratory strains with sterilized wholemilk.

## CIP UNIT

Purity is the guarantee of quality.



The quality parameters of dairy products can be provided by CIP unit (**clean-in-place**) using cleaning and sterilizing liquid without moving any parts of the technological line.

## COOLING ENERGY PROVIDING EQUIPMENTS

It is reliable and fully automated.

Provides the cooling energy for the whole dairy plant.

It can be delivered with air and water cooling system.



### ICE BATTERY

Provides the stable and safe cooling energy for all the technological equipments by decreasing the overloads of the central refrigerating unit.

Smaller capacity compressors can be used this way.



### AIR COOLER

Air cooler of cold store for finished products.

Modern air cooling system.

The temperature of the cold store can be adjusted according to the technological requirements.



## GLOSSARY

1. **ageing** – 1) выдержка 2) окисление 3) старение • an unfortunate effect of ageing – неблагоприятный результат старения 4) вызревание (сыра), выдержка, выдерживание (вина, табачных изделий) • The ageing of tobacco is dependent on the action of micro-organisms. – Выдерживание табака зависит от воздействия микроорганизмов. Syn: *ripening, maturing* 5) дисперсионное твердение

2. **brine** – 1) рассол 2) морская вода; море, океан 3) засаливать, солить; Syn: *pickle*

3. **capacity** – 1) вместимость, ёмкость; объём • storage capacity – вместимость хранилища • mind of great capacity – глубокий ум – lung capacity – measure of capacity – seating capacity – capacity for heat – capacity for moisture – fill to capacity – play to capacity – over capacity 2) способность (что-л. делать) • capacity for making friends – коммуникабельность, способность сходитьсь с людьми • She has the capacity to go all the way to the top. – У неё хватит сил пройти весь путь до самой вершины. • Our capacity for giving care, love and attention is limited. – Наши возможности для проявления заботы, любви и внимания ограничены. • earning capacity –

трудоспособность; Syn: *faculty* 3) основная характеристика (напр., станка)  
4) паспортная мощность; допустимая нагрузка; производительность; выработка 5) подача (насоса)

4. **cottage cheese** – прессованный творог

5. **crane bridge** – эстакада мостового крана; мостовой кран

6. **curd** – 1) свернувшееся молоко 2) творог • *lemon curd* 2. а) превращаться в творог, створаживаться б) превращать в творог, створаживать; Syn: *curdle*

7. **equation** – 1) выравнивание; стабилизация 2) уравнение; равенство • according to equation – по уравнению • to formulate / state an equation – сформулировать уравнение • to solve / work an equation – решить уравнение • simple equation – уравнение 1-й степени – algebraic equation – differential equation – first-degree equation – simple equation – integral equation – linear equation – quadratic equation – regression equation – term of equation – equation in one unknown – equation in two unknowns – continuity equation – dynamic system equations – balance equation – basic equations of statics 3) уравнение, равенство, формула – continuity equation – eikonal equation ...>> eikonal эйконал – point eikonal – point-angle eikonal

8. **flavour** – 1) вкус, привкус; букет (вина) • bitter flavour – горький вкус • pleasant flavour – приятный вкус • tart flavour – терпкий вкус • artificial flavour – неестественный вкус • natural flavour – естественный вкус • The flavour is not unlike Chardonnay, but with a difference. – Букет напоминает шардоне, но отличается оригинальностью. Syn: *taste* 2) аромат, запах • delicate flavour – неуловимый аромат; Syn: *aroma, perfume, smell, odour* 3) особенность; привкус, налёт • colloquial flavour – особенность разговорной речи • foreign flavour – чуждая особенность • old-world flavour – налёт старины • strong flavour – резкий привкус • to impart a flavour to – придавать вкус • A certain aristocratic flavour must have ever dwelt about the Athenians. – Некоторый налёт аристократизма, должно быть, всегда присутствовал в жителях Афин. 4) изюминка, острота, пикантность • flavour of the month – очередная модная тема; Syn: *piquancy, zest* 2. 5) приправлять (специями), сдабривать • to flavour the stew with black pepper – добавить в рагу чёрный перец; Syn: *season*

9. **fermenter** – 1) биореактор, ферментер 2) бродильный аппарат 3) ферментатор

10. **homogenization** – гомогенизация, усреднение

11. **homogenize** – гомогенизировать, гомогенизовать

12. **hygienic** – санитарный, гигиенический; Syn: *antiseptic, aseptic, sanitary, sterile, medical, hospital*; Ant: *dirty, noxious, unsanitary, polluted, soiled*

13. **turnkey** – 1) сдача "под ключ" || готовый к сдаче "под ключ" 2) "под ключ" (контрактные условия сдачи объекта в эксплуатацию) • on

turnkey terms – на условиях "под ключ" 3) поставлять "под ключ", поставлять в готовом для использования виде

14. **mould** – 1) литейная форма; кокиль; пресс-форма; изложница || отливать в форму; формовать 2) шаблон; модель; лекало || обрабатывать по шаблону

15. **pasteurize** – пастеризовать

16. **ricotta** – (ит. **ricotta**) – итальянский сыр, приготавливаемый из сыворотки, а не из молока. В зависимости от местности имеются небольшие вариации во вкусе этого сыра, который всегда именуется по провинции: **рикотта** сицилиано, **рикотта** романо, **рикотта** пьемонтесе.

17. **recuperation** – 1) восстановление сил, здоровья; выздоровление; Syn: *recovery, convalescence* 2) возмещение (убытков); Syn: *recovery* 3) рекуперация (повторное использование отходов производства или веществ, расходуемых при технологических процессах) 4) возврат электроэнергии в сеть 5) накат орудия (возвращение в исходное положение после выстрела)

18. **row** – 1) ряд 2) венец (лопаток компрессора) 3) строка (матрицы)

19. **separator** – 1) сепаратор; отделитель 2) прокладка; проставка; дистанционная втулка

20. **vat** – 1) бак 2) барка 3) ванна 4) кристаллизатор 5) куб 6) кубовый 7) кювета 8) чан 9) чановый • **milk standardizing vat** – ванна для нормализации молока

21. **whhey** – сыворотка • **whey of butter** – пахта

22. **yeast** – 1) дрожжи, закваска • **brewer's yeast**; Syn: *barm, leaven* • **petroleum** 2) дрожжевой • **yeast extruding machine** – дрожжеформовочная машина • **yeast propagate in nutrient** – дрожжи размножаются в питательной • **bottom yeast** – **brewer's yeast** – **compressed yeast** – **distiller's yeast** – **fast-working yeast** – **grow yeast** – **nutrient yeast** – **top yeast** – **yeast agar** – **yeast propagate** – **yeast tub**

23. **yield** – 1) объём выпуска, выпуск; производительность 2) выход, полезная работа

## Unit Four. MEAT PROCESSING INDUSTRY

**Task One. Read the article and answer the following questions:**

1. What makes large meat processing companies stronger nowadays?
2. What do meat processing companies increase investments into?
3. What does efficient production management in its turn depend on?
4. What do contemporary IT management systems include?
5. What do IT management systems provide?
6. What does ERP stand for?
7. What does MES mean?
8. How can ERP be defined?
9. How can MES be described?

10. What is the difference between ERP and MES?
11. What does EPR provide?
12. What does ASU TP imply?
13. What IT systems does Russian market offer for automation of meat processing industry?
14. What information is omitted in EPR?
15. Why is management of production processes not quite adequate?
16. Why does production remain a kind of a "black box" for many top-managers?
17. What does unreliable information hamper?
18. What is the result of "non-transparent" production?
19. What is peculiarity of meat processing?
20. How does MES work?
21. What tasks does MES solve?

### **IT AUTOMATION SYSTEMS FOR MEAT PROCESSING INDUSTRY RESEARCH OF THE COMPANY "PROMELECTRONICA"**

In early 2000 meat processing was one of the best developing segments of food processing industry. Today impact of post-devaluation factors on economy is practically completely spent and active increase of population affluence is slowing down. Besides, Russian meat processing industry is domestic-oriented. Inner market is peculiar for consumer low purchasing power while processing industry is import-dependent buying raw materials from Brazil, Argentina, USA and Byelorussia and some other countries. Complex of the said factors makes large meat processing companies stronger by displacing smaller operators from the market. Considering this trend of market development, meat processing companies increase investments into promotion of their products, enlargement of product line, improvement of product quality and reduction of production expenses. Solution of the said tasks can be provided by efficient production management. And efficient production management in its turn depends on how advanced are the IT management systems of the company.

Contemporary IT management systems include various software solutions designed to increase production efficiency. There are several types of IT management systems providing management solutions on different stages of production chain:

**ERP (Enterprise Resource Processing), MRP II (Material Resource Processing);**

**MES (Manufacturing Execution Systems);**

**Automatic Technological Process Management (ASU TP).**

Currently functions of ERP and MES are merging: ERP partially fulfils functions of MES and visa versa. These systems overlap on the stage of production planning, raw material ordering and provision management. Due to these reasons there are several definitions of ERP and MES. Let's analyze the approach defining **ERP as a set of integrated applications providing uni-**

**form management of recording, control, planning and analysis of key business processes of the company.** Such processes comprise planning, recording, accounting and analysis of business activities, finance management, etc. All information is stored in the single database and one can get access to it on inquiry.

EPR is on the top in hierarchy of management systems. This level affects key aspects of company's activity – production, planning, finance and accounting, material and equipment supplies, personnel management, distribution, stock management, order management (in production, delivery and services). EPR provides top-management of the company with information for analysis and strategic decisions. MPR is EPR ancestor with smaller set of functions.

**MES is also a set of integrated applications providing collection, processing and displaying of all production and technological information required for production analysis and management.** Besides, MES allows production planning, production management accounting; it provides production paperwork, estimation of key indices of production efficiency.

MES is a kind of IT bridge between ASU TP, i.e. systems operating with physical properties (kilograms, liters, meters), and EPR – systems managing business activities operating with monetary units (rubles, dollars, euros, etc.).

**ASU TP – automatic technological process management systems – implies special equipments with integrated special software providing management of complicated production processes.** This is required, for instance, for control of thermo-chambers or for management of multi-cycle production, etc. ASU TP can work as stand-alone system or be integrated into MES.

Currently Russian market offers a number of IT systems for automation of meat processing industry. The majority of them are oriented on business management – systems of MRP-II and ERP type. Among key solution systems we should mention Infor ERP (BAAN, GMCS, Moscow), Infor:COM ("EpicRus" CJSC, Moscow), Microsoft Business Solutions-Navision (IBS, Moscow), "IS: Predpriyatye (Enterprise) 7.7, Reson (Force): Myasokombinat (Meat Processing Facility) 3.1" ("Reson" LLC, Volgograd), "Lanit. Myasopererabotka (Meat Processing)" (with MES elements, on base of ERP Microsoft Dynamics AX – formerly Microsoft Business Solutions-Axapta, "Lanit" CJSC, Moscow) and others.

EPR is actively used in meat processing industry. Meanwhile tasks of production management referring to MES are often not solved. As a rule EPR does not cover information on actual processes accompanying production from processing of raw materials to ready product. For instance, the following information is omitted: quantity of raw materials, equipment breakdown and downtime, recoding of materials and processing stages, production technology. Even if information about production comes to business management systems – it comes from papers like technological logs and reports filled by personnel manually. Subjective attitude of all people involved into recording and passing of this information is accumulated. Thus reliability and timely coming of this information to company's management is questionable, so management of pro-

duction processes is not quite adequate. Unreliable information hampers transparent production management and leads to different losses. Every top-manager knows how serious this problem is in his company. Existing business management systems – ERP – have no adequate links to production and thus provide unreliable information. Accounting gives a delayed understanding how production losses turn into loss of money, yet it neither points out the stage of production where losses appear nor gives any advice how to solve the problem. For many top-managers production remains a kind of a "black box". Of course, in this situation it is hard to manage production and to have a purposive influence on such indicators of company activities as production cost, product quality or consumer satisfaction. High production expenses and decrease of company's efficiency – that's the result of "non-transparent" production.

Peculiarity of meat processing is that production process involves a wide range of ingredients, kinds of meat, spices; it uses a lot of recipes and technologies. Product mix is huge and accounts for hundreds of items. Production management systems should consider different storage periods of ingredients and ready products because production technology involves multiple flows of materials constantly moving and changing depending on availability and quantity of certain ingredients and other involved materials. Management system should also reflect flexible schedule of equipment employment – the same product can be produced on different lines depending on time.

To understand how MES works, let's look into operation of this system. Like in any other IT system an essential part of MES is data book or reference system. Main kinds of reference systems are data books of equipment and materials, descriptions of company's organization structure and storage periods for different ingredients/ready products.

After reference guides are filled, production tasks and technological plans should be made. In the course of planning the system automatically does matching and adjustment jobs for the complete process of product manufacturing.

As soon as you have planned the task you need to send it to production. For this purpose all calculated data is directed to working places of production staff – complete information about material weighting is displayed there. Besides weight data, MES has the function of data collection from chip-controlled equipment. The group of such equipment comprises different thermo-chambers, vacuum injectors, cutters, etc. All information about production parameters comes to the system to be processed and integrated into general production data.

Information from the local data collecting systems comes to central processor where it is computed and the reports are made. The reports are published on web-site, and any authorized user on any computer connected to Internet can get on-line access to information on production situation. Moreover, basing on production data MES issues different reports; production data is sent to adjacent systems for further calculations.

Thus MES solves main tasks of control and management of meat processing as well as the objectives of providing top-management and other



decision-makers with reliable production information. According to MESA analysts, introduction of paper-free business process allows saving of 30...40% of company's resources – due to reduction of production losses, increase of output and improvement of product quality. On-line production and economy with transparent structure and adequate management – that's the demand of today. And developing MES systems are playing one of leading parts in adjustment of contemporary production facilities to actual market demands.

<http://www.foodmarket.spb.ru/eng/archive.php?year=2004&article=526&section=90>

**T a s k T w o . Read the announcement and make up several questions.**

On the INFORMATION PORTAL "EVERYTHING for MEAT PROCESSING" all MEAT Agro-Industrial Complex of Russia is submitted. On it all chain from manufacture and sales of meat before manufacture and sales of final meat products (sausage, delicacies, sausages, etc.) is reflected.

The given section of the Portal is specially created for the FOREIGN COMPANIES connected with the meat processing:

- manufacturers and traders of meat;
- manufacturers and traders additives and components for meat processing;
- manufacturers and traders of the equipment for the meat processing (meat processing, refrigerating, weight, packing, labeling, laboratory and another);
- meat processors;
- the companies trading in ready meat products;
- the companies making and trading in forages for agricultural animals;
- transporting companies.

If your company concerns to one of the below-mentioned groups and is interested in an output on the Russian market, our Portal is created for you.

Covering the whole meat agro-industrial complex of Russia the Central Information Portal for Russia's Meat Processing Industry "EVERYTHING for MEATPROCESSING" is the only unique in Russia.

If you are searching for new markets, if you want your products to be more marketable in Russia we offer you our help and ample informative possibilities.

We provide minimum cost INTERNET-based complex information service for foreign companies in their advance into the Russian market.

Advantages:

Internet advertising and Internet marketing are becoming the most efficient and cost-effective methods of produce promotion in Russia.

We are the main Internet portal of Russia's meat processing industry.

We will help you to quickly get known in the Russian meat processing market.

Most potential customers of Russia will hear about you.

We offer the lowest cost service in Russia.

<http://www.infomeat.ru/english/english.htm>

**Task Three. Choose the correct beginning of the paragraphs in the article:**

- A. The barriers
- B. New Zealand's pastoral-based
- C. The major processing
- D. The meat industry
- E. The industry

### **MEAT INDUSTRY IN NEW ZEALAND**

1. ... meat industry encompasses sheep meat, beef, venison and related products such as hides and velvet. Many in deer farming consider their industry to be somewhat different to the sheep meat and beef industries, however they are addressed together in this paper. There are extensive inter-linkages between the different industries, with meat, wool and by-products such as hides produced from the same animals, sheep and beef cattle raised in similar farm production systems, and links between the beef industry and dairy farming, with much beef production coming from dairy cull animals.

2. ... is internationally competitive and earns premiums in markets such as the EU and the US for the quality of its product and its responsiveness to customers. New Zealand lamb in particular has a very good image due to its consistency, quality and New Zealand's "clean, green" image.

3. ... is made up of sheep meat, beef and deer farms and the companies that process and export their products. Many producers farm some combination of sheep, beef and deer within a mixed farming system. Statutory boards continue to play a role in these sectors, with the New Zealand Meat Board ("Meat NZ") responsible for the allocation and management of quota rights to overseas markets and for industry good activities funded through a statutory levy. The Game Industry Board ("Deer Industry New Zealand") funds industry good activity relating to venison and velvet. It is funded through a statutory levy.

4. ... and exporting companies are the co-operatively owned Alliance and PPCS and the publicly-listed Affco and Richmond. PPCS is currently seeking to take over Richmond and if it succeeds the processing industry will be dominated by three companies, two of which will be co-operatives. There are a large number of smaller meat processing and exporting companies such as Taylor Preston, Canterbury Meat Packers, Blue Sky, Crusader, Te Kuiti Meat Processors and Progressive. Most of these are investor-owned but unlisted companies, and a number are quite entrepreneurial in their business strategies.

5. ... to entry into meat processing and exporting are relatively low, despite significant capital costs in processing, however it is an industry that has proven difficult to be sustainably profitable in. This is because of factors such as the high levels of competition in the industry, and the dependence of meat processors and exporters on successful stock procurement and on achieving

high throughput to utilise capital plant efficiently and to minimise long-run marginal cost. There is some evidence that over time the large co-operatively owned meat companies have out-performed investor-owned, publicly-listed businesses; however it should be noted that Affco was formerly a struggling co-operative business before it became a publicly-listed company. Co-operatively owned meat companies can take a longer-term view and their farmer shareholders may be prepared to accept lower dividends in return for higher stock prices. However, it should be noted that small meat processing companies, some of them growing significantly, are often investor-owned firms and such firms are often well suited to niche market development.

**Task Four. Use the verbs in the brackets in the present perfect active or passive tense form.**

The dynamics of the meat industry flow from changes in the business environment and in market structure, the effects of the quota allocation system, and from productivity improvements and innovation.

The current profitability of the meat industry owes much to the economic reforms of the mid 1980s. These reforms removed market-distorting price supports, subsidies and other interventions and made farmers and exporters focus on markets, customers and what they were signalling. Meat exporters (**improve**) their returns from international markets through increased utilisation and further processing of carcasses into added value cuts and through an increase in the proportion of chilled exports rather than frozen. New Zealand also (**diversify**) the number of export markets for New Zealand lamb.

New Zealand preparation, packaging and processing innovations (**help**) sales, including rapid cook cuts from frozen product, marinated product and the use of sheep meat in ethnic cooking. New Zealand has world class processing facilities, ongoing product innovation and processing efficiencies and high food handling and safety standards.

Meat companies stipulate and monitor farm quality control measures to ensure that the needs of markets and customers are met. New markets (**develop**), such as for halal meat in the Middle East. Farmers (**become**) much more market-oriented and (**adapt**) their production systems accordingly, for example to produce lean lamb for processing into chilled lamb and other added value markets. Lamb market clubs (**develop**) to assist in the sharing of information between farmers supplying particular supermarkets such as Tesco and Waitrose. On-farm quality assurance systems are set in close consultation with off-shore retailers.

**Task Five. Read the article and answer the questions:**

1. What is the name of a smaller enterprise within the meat processing industry in New Zealand?
2. When and why was it established?
3. How many suppliers does it have now?

4. Why is the cost of meat to consumers in quota controlled markets higher than in an open market?
5. What is the meat processing industry to a great extent driven by?
6. Why do the companies have a strong incentive to maximise throughput?
7. What production methods have improved considerably?

A good case study of a smaller enterprise within the meat processing industry is Lean Meats. Lean Meats was established about 15 years ago by around 100 entrepreneurial farmers to maximise the value of their lambs in international markets, especially through chilled lamb and direct marketing to the retail and restaurant sectors in the US. The company now has around 250 suppliers and earns \$20 million a year in export sales.

Because imports are restricted into these markets the cost of meat to consumers in quota controlled markets is correspondingly higher than it would be if an open market prevailed. As a result New Zealand earns revenue from quota markets that is substantially higher than would otherwise be the case, and these "quota rents" are in large part passed on to farmers because the meat export companies holding quota entitlements have to compete on price to procure supply from farmers.

The meat processing industry is to a great extent driven by economies of scale and by the economics of marginal throughput. The companies therefore have a strong incentive to maximise throughput, driven by the declining long-run marginal cost of additional stock processed and by quota entitlement being determined by throughput. Quota is allocated to meat export companies on the basis of the amount of product they process (based on a three year rolling average). The meat companies therefore have a strong incentive to bid up the price of sheep meat to increase their processing throughput and thereby earn more quota entitlement.

The sheep meat industry in particular has achieved major productivity improvements over the last twenty years. On-farm productivity gains tend to be incremental; however they have accumulated over time to substantial advances in productivity and profitability.

Production methods (higher lambing percentages, higher killing weights) and efficiency of grass conversion to sheep meat have improved considerably. Ewes are better fed, hoggets are increasingly lambed, farmers have bred from more prolific breeds and poor performing sheep are being identified and culled through scanning. Genetic gains have increased the performance of our sheep flock to the extent that gross farm incomes are 8% higher now compared with ten years ago through better sheep genetics alone. Improved pasture species and better management of lambs have led to higher lamb growth rates. The old norm of 150 grams liveweight gain a day is now being replaced with 200 grams a day, and some progressive farmers are exceeding this level.

**Task Six. Read the article about Future growth potential in New Zealand and choose the best sentence from the list below to fill each of the gaps:**

A. New Zealand is a niche player in high value biochemicals that draw on meat industry by-products such as blood extracts and fine chemicals.

B. Land use changes to dairy and forestry have the potential to lead to further reductions in sheep numbers.

C. One measure of growth potential is the difference between the highest and average performing farm business.

D. There is considerable growth potential in the agritech sector that services the meat industry and which is also a major export sector in its own right.

E. One limitation is that New Zealand's agritech sector focuses on pastoral rather than the much larger intensive animal industry markets.

It is difficult to forecast the growth potential of the meat industry, given uncertainties around exchange rates, market access and other factors. A key issue is the extent to which meat companies can develop and expand high value opportunities, for example for chilled lamb and for direct marketing of cuts to restaurants in the US, the EU and other high value markets.

1. ... However there are arguments that sheep farming is regaining competitiveness compared to other sectors and that this could end the long-term decline in sheep numbers and therefore of sheep meat production. Sheep industry productivity gains are likely to be significant and there are growth prospects in international markets.

2. ... MAF has calculated the differences in the profitability of sheep and beef farms in the top 25% compared with the average for all sheep and beef farms. The difference between the top performing 25% of farms and the average is \$220. If all sheep and beef farmers were to reach the performance level of the top 25% of producers this would correspond to a lift in farm gate income of \$1,95 billion per annum.

3. ... New Zealand companies compete effectively in niche markets characterised by economies of scope, demanding customers and leading edge technology.

4. ... Agritech businesses also tend to be small to medium sized businesses that face high fixed costs of exporting and complex marketing and distribution challenges.

5. ... There may well be great potential from the triangulation of New Zealand's agribusiness and meat industry capabilities, modern biotechnology and high value niche markets.

**Task Seven. Use the verbs in brackets in the correct tense form.**

The meat and wool industries (**drive**) by technological change throughout their history, with major advances that (**transform**) the industry including refrigeration and (**accelerate**) conditioning and ageing. Much of the technologi-

cal change that has **(sustain)** and enhanced the viability of the meat industry **(be)** incremental innovations including meat processing automation machinery and engineering, meat quality enhancement and packaging innovation.

Major advances in productivity and new product development may come from modern biotechnology, and Meat New Zealand recently **(enter)** into a joint venture partnership with the Wool Board and AgResearch to fund Ovita, a company established to commercialise knowledge of sheep genomics. There **(be)** also great potential for incremental advances in farm management and productivity, as well as gains achievable from medium-term advances in strategic science and technology.

There is very significant publicly and privately funded longer-term research focused on increasing productivity and innovation in the meat industry. New Zealand **(have)** a leading edge position in sheep genomics, mainly through AgResearch, with some complementary capabilities in Otago, Massey and Lincoln universities and in the private sector. Supporting resources include a range of sheep selection lines and families held by AgResearch, Massey and Lincoln universities and farmers.

Some progress **(make)** in developing the sheep gene map to identify markers for use in marker-assisted selection programmes and to target specific genes in order to secure a robust intellectual property position based on known function and potential applications.

The meat industry **(stand)** to achieve major gains from ongoing market access and trade negotiation activities and this **(remain)** a top priority policy focus. There will also be considerable policy focus on protecting New Zealand's existing access to quota-controlled markets and on ensuring that quota to these markets **(manage)** by New Zealand.

The New Zealand Meat Board ("Meat New Zealand") **(reach)** agreement in principle with Sheepco to establish a combined meat and wool industry good body. This proposal **(need)** support from farmers and from government (for legislative amendments) to proceed. The proposed new body would raise meat and wool levies under the Commodity Levies Act (CLA) framework to support R&D and other industry good activities. It should be noted that the new body **(cover)** sheep meat, beef and wool research but not venison. The greater responsiveness and accountability to farmers under the CLA framework **(improve)** the performance of industry good activities over time.

## GLOSSARY

1. **cull** – 1) а) отбраковка (скота); отстрел (животных, для регулирования популяции) • the annual seal cull – ежегодный отстрел тюленей б) отбракованный нагульный скот 2) отбракованный материал • woods

culls – откомлёвка, бракованная часть древесины 3) обычно отходы; отбросы • cull lumber – древесные отходы, неделовые остатки древесины 4) выбирать, отбирать • to cull the best passages from the work – отобрать лучшие места из работы; Syn: *choose, select* 2. 5) = cull out – браковать, отбраковывать (скот); отстреливать (животных, для регулирования популяции) 6) собирать, срывать (цветы, фрукты); Syn: *gather, pick* II 1., *pluck* 2. 7) отходы; отбросы; брак 8) браковать (напр., материал, не соответствующий требованиям); собирать; сортировать 9) некондиционные материалы; отбраковка, отсортировка || отбраковывать, отсортировать

2. **entitlement** – 1) название, наименование; Syn: *name, appellation* 2) (официальное) право (на что-л.)

3. **lamb** – 1) ягниться, котиться (об овцах) 2) ухаживать за овцами во время окота

4. **levy** – 1) сбор, взимание (пошлин, налогов); обложение (налогом), сумма обложения • They imposed a 5% levy on alcohol. – Они наложили пятипроцентный налог на алкоголь. 2) а) призыв (на военную службу), набор рекрутов б) = levies – набранные рекруты, новобранцы – levy in mass 2. 3) взимать (налог); облагать (налогом); вводить налоговые ставки • Taxes should be levied more on the rich than on the poor. – Налоговое бремя должно лежать больше на богатых, чем на бедных. • They are going to have to levy some new taxes. – Они собираются ввести ещё несколько налогов. Syn: *tax* 4) набирать рекрутов, призывать (на военную службу) • They are new levied men, and so undisciplined. – Они только что призваны и поэтому ещё недисциплинированы. 5) начинать, вести (какое-л. дело); заниматься (чем-л.) • levy war б) налог; сбор; взимание (налогов) 7) облагать (налогом, пошлиной) • levy of taxes

5. **marginal throughput** – 1) а) крайний, предельный • marginal production costs б) минимальный • semiliterate person of marginal ability – полуграмотный человек с минимальными способностями • marginal profit – минимальная прибыль 2) незначительный, несущественный, неважный • He regards violence as a marginal rather than a central problem. – Он рассматривает насилие скорее как малозначительную, не являющуюся центральной, проблему. • marginal member of Parliament – член парламента, избранный незначительным большинством; Syn: *inessential, immaterial, minor* 1., *peripheral, piddling, inconsequent, inconsequential*

6. **quota entitlement** – доля, квота, часть • production quota – доля в общем производстве или сбыте • to assign / establish / fix / set a quota – определять количество • to fill / fulfill / meet a quota – составлять квоту • to exceed one's quota – превосходить квоту • import quota; Syn: *share*

7. **throughput** – 1) пропускная способность 2) количество сырья, материала, израсходованного за определённый срок 3) производительность, выработка 4) производство 5) энергия, активность

## Unit Five. FLOUR AND CEREALS INDUSTRY

### **T a s k O n e . Read the article and discuss its main points.**

Flour available for sale is enriched and bleached all-purpose flour. The differences between the flours come down to the type of wheat, the parts of wheat included, the processing of the wheat, and any additives added to the flour. In this article each of these characteristics is examined.

### **PROTEIN CONTENT**

A certain type of protein called gluten (glutenin) is responsible for wheat flour's elastic properties. The more gluten in flour makes it easier for the flour to build up a tough structure able to trap the waste gases of yeast during kneading as well as rise effectively during baking. Less gluten in flour produces a lighter, less chewy texture such as those found in cakes. The exact amount of gluten in your flour depends on where it was milled and the variations in growth of the wheat crop.

The main wheat varieties grown in the United States are, in order of quantity grown and sold, hard red wheat, soft red wheat, durum and white. Hard red wheat is used to produce flour high in gluten content, while soft red wheat is used for flour low in gluten. Durum is milled to produce semolina flour used mainly for macaroni pastas. Semolina flour has the highest gluten content of all mass produced wheat flours. White wheat is produced in smaller quantities in the U.S. and makes low gluten flour.

**High gluten flour and bread flour** are produced from hard wheat. High gluten flour has a gluten percentage of about 12 – 14% while bread flour contains about 10 – 13% gluten. Both flours are almost completely made of hard wheat, but some high gluten flours are treated to reduce starch content, raising the gluten content to around 14%. These flours are generally used for making breads. High gluten flour is reserved for breads that are extra elastic such as bagels and pizza.

**Cake flour** is produced from soft wheat and is low in gluten content (8 – 10%). This flour is used for making delicate cakes. Baked goods made with cake flour has a tendency to crumble because of the low gluten content.

**All purpose flour** is made from a mixture of hard and soft wheats. The gluten content ranges from 9 – 12%. This is the most versatile flour because it can be used to make both cakes and breads. However, breads won't be as chewy and cakes won't be as tender as if you used bread or cake flour.

**Pastry flour** is also a mix of hard and soft wheat flours with an emphasis on soft. Generally, the gluten content is 9 – 10% and is often recommended for pie crusts.

### **GERM**

Whole wheat flour contains the germ (the embryo of the wheat kernel) and is more flavorful than regular all-purpose flour which does not include the germ. Because the germ is included, there are more nutrients as well as fiber



and fat content in whole wheat flour. However, the flour should be stored in the refrigerator to prevent the germ oils from becoming rancid.

## PROCESSING

Almost all the flour sold is **steel ground** meaning a large machine with steel hammers or rollers crushes and grinds the wheat kernels down. This is a very efficient means of producing flour, but the steel surfaces heat up with the high speed and volume of wheat being ground. This heat causes some of the vitamins in steel ground flour to be destroyed during the grinding process.

Alternatively, **stone ground** flour is produced by the relatively slow grinding of large stones together (with the wheat in the middle). This type of flour is harder to find and almost always leaves the germ intact producing whole wheat flour. There is no heat build up, so all the nutrients stay intact as the flour is made.

**Bleaching or aging** is another process that differentiates flours. Bleached flours produce doughs that are less sticky and rise better than unbleached flours. Bleaching can be accomplished by aging the flour over time (the oxidation of the flour causes the yellow pigments to fade) or through a chemical means (usually using chlorine dioxide and potassium bromate to age the flour). The aging process removes some of the naturally occurring vitamin E present in wheat. The flour ends up uniformly white and has (generally) better baking properties.

The texture of the flour is determined by how much sifting (or bolting) is performed at the mill. The degree of sifting will result in a powdery flour or a coarse flour. Prior to packaging, most flours in the United States are also presifted. Presifted flour can be measured directly from the bag by stirring, measuring with a dry measuring cup, and leveled with a straight edge. Unsifted flour needs to be sifted prior to measuring (by volume). If unsifted flour is measured by weight, it should still be sifted prior to use in a recipe requiring sifted flour (assume all recipes require sifted flour).

## ADDITIVES

Enriched flour contains vitamins and nutrients that have been added to offset the loss from the grinding and aging of flour. Usually, niacin, riboflavin, thiamin and iron are added to flours that do not contain wheat germ. In addition vitamin E is often added to bleached wheat. Some brands will also contain additional vitamin A, C, and D.

Some bread flours will have a little bit of malted barley flour added to help yeast growth. In addition, potassium bromate may be included to lend strength and help the dough maintain the yeast gases.

The addition of baking powder and salt produces self-rising flour or leavened flour. When using self-rising flour, simply omit the baking powder and salt from the recipe (leave in any baking soda a recipe calls for).

**Task Two. Read the article and choose the best definition from the list below to fill each of the gaps:**

- A. Wheat germ flour
- B. Strong flour
- C. Weak/soft flour
- D. Self raising flour
- E. Stone ground flour
- F. Rice flour
- G. Plain flour
- H. Malted wheat grain flour
- I. Granary flour
- J. Gram flour
- K. Gluten-free flour
- L. Cornflour
- M. Buckwheat flour

A large range of different types of flours are available. Below are some examples.

1. ... is made from the cereal buckwheat and is naturally gluten free. It is popular in America, Japan, Northern Europe and Slavic countries for dishes ranging from pancakes through to noodles.

2. ... is made from maize (also known as corn) and is referred to as corn starch in the USA. It is used in custard and for thickening sauces and gravies.

3. ... complies with the international gluten-free standard and is most commonly used in products specifically manufactured for people with coeliac disease. It is made from wheat flour which has had most of the proteins, including the gluten, removed.

4. ... is made from chickpeas and is used to make a variety of savoury snacks such as onion bhajias and pakoras (vegetable fritters).

5. ... is a trademarked type of flour containing kibbled and whole-grains used to make granary bread and rolls.

6. ... is brown or wholemeal flour with added malted grains.

7. ... contains 10% protein and is suitable for a variety of uses such as biscuits and sauces.

8. ... is made from milled or brown rice. Rice flour does not contain gluten but with the addition of a gum, it can be used in a number of different products. It is also used in some ethnic cuisines, e.g. Chinese.

9. ... contains 10% protein and added raising agent (e.g. baking powder), and is suitable for sponge cakes and scones.

10. ... is wholemeal flour ground in a traditional method between two stones.

11. ... contains a maximum of 17% protein and is used for yeast doughs and for flaky, puff and choux pastry.

12. ... contains 8% protein and is suitable for cakes.

13. ... is brown flour which contains at least 10% added wheat germ (the embryo of the wheat seed which is usually discarded when wheat is milled to white flour).

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**Task Three. Read the text and make up several questions.**

**Key points**

- In the UK, wheat flour is most commonly used for the manufacture of food products, although rye and cornflour are also used.
- The whole wheat grain is used to make wholemeal flour; white flour is made using only about 75% of the grain (only the central part of the grain is used), while brown flour is made using about 85% of the grain.
- In the UK the law requires iron, thiamin and niacin to be added to brown and white flour to compensate for losses during milling. Calcium is also added to some flours.

In the UK, wheat flour is most commonly used for the manufacture of food products, although rye flour, cornflour and a variety of speciality flours (e.g. rice flour and gram flour) are also used. There are many types of wheat flour which differ in characteristics according to factors such as the variety of wheat, growing conditions, planting and harvesting times. Wheat flour is sold in three main forms – wholemeal, brown or white. Milling and processing of the wheat grains affect the sensory, functional and nutritional properties of the flour.

In the production of wholemeal flour the whole grain is used. This type of flour has an extraction rate of 100%, which means nothing is removed during milling. White flour is refined. It has an extraction rate of around 75% as the bran is removed (along with some of the nutrients) and only the central part or endosperm is used. Brown flour has a higher extraction rate than white flour (about 85%). It contains more bran and this gives the flour a darker colour, and a stronger flavour and odour.

UK law requires brown and white flour to be fortified with nutrients (iron, thiamin and niacin). This helps to compensate for any losses which may result from milling. Calcium must also be added to all flours, except wholemeal and some self-raising varieties. This began in the early years of World War 2, in anticipation of a reduced supply of dairy products, and therefore calcium, and continues today.

Strong flour is produced from a variety of wheat that has a high protein content. This type of flour is used for making bread. Soft flour is produced from a different variety of wheat. It has lower protein content and is used mainly for making cakes and biscuits.

**Task Four. Read the article and answer the questions:**

1. What problems does the company solve?
2. Where have the models of separators passed all the necessary tests?

3. When are PSM magnetic separators effectively used?
4. What technological lines do PSM-3 magnetic separators ideally fit into?
5. What are PSM-1 (hump magnets) and PSM-2 separator models separator models designed for?
6. What is the main difference of SMK magnetic separators from PSM separators?
7. How does SMB magnetic separator extract both small and large tramp metals from the product and then discharge them?
8. What is recommended to use for more efficient processing?
9. Where can SMK magnetic separators be installed?

Research and production company "Erga", specializing in product purity and protection of equipment in grain processing and flour-and-cereals industries, designs and successfully launches production of new types of equipment for solving the above-mentioned problems.

Produced PSM, SMK & SMB models of separators have passed all the necessary tests in the Explosion and Chemically-dangerous Productions Committee and have received industrial safety certificates in the Federal Institution "Moscow State Machine-testing Station".

PSM magnetic separators are effectively used in grain processing and flour-and-cereals industries during unloading of raw materials from cars or railway wagons, and during the whole process of processing grain and final product production. During grain entry it is recommended to install PSM-3 magnetic separators instead of existing elevator boots. Main advantage of this model of magnetic separators is that being an exact copy of an existing elevator boot, it ideally fits into technological lines of both domestic and foreign manufacturers. Productivity of such separators ranges from 15 up to 350 tons per hour. PSM-1 (hump magnets) and PSM-2 separator models are designed for removal of tramp metals from grain during its processing. Those separators are installed in gravity flows with circular and rectangular sections and are distinguished for installation and servicing simplicity. If the grain is transported on conveyors, we suggest using PSM-4 magnetic separators for removal of ferrous metals (nuts, bolts, scoopers, etc.) from the product flow. This separator model harmoniously fits into an existing technological line and doesn't require constructive revisions for installation.

SMK magnetic separators are installed in gravity flows. Their main difference from PSM separators is that the product flow section is completely covered by a magnetic field, allowing removal of 95...97% of tramp metals from the separated material. SMK-1 model is installed into existing gravity flows similarly to the above-described PSM-1 and PSM-2 separators. It is an improved version of a grate assembly inside a sealed casing. SMK-2 differs from the previously-described SMK-1 model in a mechanical cleaning system, allowing faster separator cleaning. If the product flow section is filled more than to 70% it is recom-

mended to install SM (SM-1, SM-2) separators, a simplified version of SMK model. Manual cleaning (SM-1) and mechanical cleaning (SM-2) system types are available.

SMB magnetic separators are installed instead of conveyor's drive pulleys. Being an exact copy of the original drive pulley, our separator has a number of advantages over other types of magnetic separators. Designed for high productivity, SMB magnetic separator extracts both small and large tramp metals from the product and then discharges them automatically. For more efficient processing it is recommended to use combined power of SMB pulley and PSM-4 suspended separators.

SMK magnetic separators (modification of the SMR type) can be installed both in the entry hoppers where grain goes from the cars or railway wagons, or in any other hoppers.

<http://grain.rusmagnet.com/eng/>

## GLOSSARY

1. **baking powder** – разрыхлитель; сода для выпечки (двууглекислая сода)

2. **bolt** – 1) болт; винт; палец || скреплять болтами, закреплять болтами, сболчивать 2) стержень; шпилька; шкворень 3) задвижка, засов, язык замка 4) стержень, палец, ось, шкворень, шпилька

3. **bleaching** – отбелка, обесцвечивание; bleach – 1) отбеливатель, отбеливающее средство || отбеливать, обесцвечивать 2) выщелачивать 3) белизна, бледность || белеть, бледнеть 4) выцветание || выцветать

4. **casing** – 1) обшивка; оболочка; обивка; опалубка 2) картер; футляр; рубашка; рама; оправа 3) обсадные трубы 4) коробка; ящик 5) корпус; кожух; оболочка; чехол

5. **chickpea** – нут, горох турецкий

6. **discharge** – 1) разгружать •to discharge the cargo from the hold of a ship – выгружать груз из трюма корабля • She has discharged her cargo. – Груз выгружен (с судна). • The buses discharged passengers within walking distance of the terminal. – Автобусы высаживали пассажиров в нескольких шагах от терминала. Syn: *disburden, unload* 2) выпускать; спускать, сливать; выливать, опораживать • Suppose a chemical firm discharges a pollutant into a river. – Предположим, что химическое предприятие сбрасывает в реку загрязняющее вещество. • The river Thames discharges itself into the sea some miles east of London. – Темза впадает в море в нескольких милях к востоку от Лондона. • to discharge oaths – разразиться бранью; Syn: *emit, throw off, send forth, project* 2., *expel, exude, gush* 3) разгрузка; выгрузка; выпуск; сливание || разгружать; выгружать; выпускать; сливать 4) отверстие для выгрузки; спускное отверстие

7. **dough** – 1) тесто || готовить тесто 2) тестообразная масса 3) замес теста • to knead a dough – месить тесто • to punch a dough – обминать тесто • to roll a dough – раскатывать тесто • to sheet a dough – раскатывать тесто в листы – leavened dough – unleavened dough

8. **drive pulley** – приводной шкив; ведущий шкив

9. **durum wheat** – твёрдая пшеница

10. **fritter** – 1. небольшой пирог с начинкой из фруктов, овощей, рыбы или мяса; начинка предварительно обжаривается во фритюре; e.g. vegetable fritters: pakoras; onion bhajias; 1) обычно кусочек, фрагмент; Syn: *piece* 1., *fragment*, *shred* 1. 2) деление на слишком мелкие части (в результате которого пропадает общий эффект) 2. 1) (fritter away) растрачивать по мелочам • You've been frittering away the whole afternoon instead of working. – Ты весь день бил баклуши вместо того, чтобы работать. • It's easy to fritter away a fortune if you're not careful. – Если не заботиться о состоянии, его легко растратить. 2) (fritter away) делить, разламывать, разрывать на мелкие части

11. **germ** – 1) а) зародыш, эмбрион • in germ – в зародыше, в зачаточном состоянии • wheat germ – пшеничный зародыш б) завязь 2) бактерия, микроб, микроорганизм • germs multiply – микробы размножаются • (some) germs cause disease – (некоторые) микроорганизмы вызывают болезни • germ warfare – война с применением бактериологического оружия; Syn: *microbe*, *microorganism*, *bug* 3) зачаток; начало, происхождение; Syn: *beginning* 4) давать ростки, развиваться • New projects were germinating in his ever fertile brain. – Новые проекты развивались в его полной всяких идей голове. Syn: *bud*, *sprout* 5) вызывать процесс роста, развития

12. **gluten** – клейковина

13. **granary** – 1) амбар для хранения зерна; зернохранилище, зерносклад 2) житница (хлебородная, богатая урожаями область, снабжающая другие районы зерном и хлебом) 3) основной источник (чего-л.)

14. **gravity flow** – движение самотёком (под действием силы тяжести); базнапорный поток

15. **grate assembly** – решётка, сетка для сбора

16. **hopper** – 1) бункер; накопитель 2) загрузочный ковш 3) приёмная воронка 4) воронка; бункер; ковш 5) вагон-хоппер; вагонетка с опрокидывающимся кузовом

17. **hump magnet** – округлая выпуклость (на поверхности магнита)

18. **kernel** – 1) сердцевина (плода), ядро (ореха), косточка (фрукта, ягоды); Syn: *nucleus*, *core* I 1. 2) суть, сущность, ядро • The kernel of this doctrine is quite mysterious. – Суть этой доктрины довольно загадочна. Syn: *crux*, *gist*, *nub*, *essence*, *core* I 1., *substance* ; Ant: *periphery* 3) зерно, зёрнышко (злаковых), зародыш 4) стержень 5) ядро, ядерное предложение; компонент, центральный компонент || основной, базовый, центральный

19. **malt** – 1) солод 2) солодовый напиток • The malt is above the meal. – Хватил лишнего; Перебрал (о пьяном) • Soft fire makes sweet malt. – Тише едешь – дальше будешь; Поспешешь – людей насмешешь. 3) а) солодить, делать солод б) солодеть 4) делать солодовые напитки 5) пить солодовые напитки 6) солодовый • malt liquor – солодовый напиток

20. **nutrient** – 1) питательное вещество • basic / essential nutrient – основное питательное вещество 2) питательный 3) снабжающий продовольствием, поставляющий продовольствие

21. **nut** – 1) гайка 2) резьбовая муфта • nut bolt – болт с гайкой

22. **rancid** – 1) прогорклый, протухший (о жире) 2) тошнотворный, отвратительный, мерзкий; Syn: *nasty, disagreeable, odious*

23. **red wheat** – краснозёрная пшеница

24. **semolina** – манная крупа • semolina pudding – манный пудинг

25. **sifting** – 1) отсеивание 2) просеивание 3) просеивать 4) просеивающий • flow sifting – просеивание потока

26. **starch** – крахмал – corn starch – grain-based starch – hydrolized starch – pregelatinized starch; corn starch – кукурузный крахмал; grain-based starch – мелкозернистый крахмал; hydrolized starch – гидролизованный крахмал; pregelatinized starch – пептизированный крахмал

27. **scoop** – ковшовая лопата

28. **seal** – 1) герметизировать 2) заваривать 3) заварка 4) пломба, пломбировать 5) уплотнение, уплотнять

29. **tramp metals** – случайные примеси железа; посторонние металлические предметы в скважине

30. **waste gases** – отходящие газы; колошниковые газы; отработавший газ (при взрыве); отходящий газ

31. **wheat** – 1) пшеница • winter wheat – озимая пшеница • summer wheat – яровая пшеница 2) зерно пшеницы • bulgur wheat – "болгарская пшеница", булгур, бургуль (крупа из обработанных кипятком, высушенных и измельчённых зёрен пшеницы) • hard wheat – твёрдая пшеница • soft wheat – мягкая пшеница

32. **yeast** – дрожжи, дрожжевой • yeast extruding machine – дрожжеформовочная машина • yeast propagate in nutrient – дрожжи размножаются в питательной • bottom yeast – дрожжи низового брожения • brewer's yeast – пивные дрожжи • compressed yeast – прессованные дрожжи • distiller's yeast – винокурные дрожжи • fast-working yeast – дрожжи с высокой бродительной способностью • nutrient yeast – кормовые дрожжи • top yeast – верховые дрожжи • yeast agar – агар-агар с дрожжевым экстрактом • yeast propagate – дрожжи размножаются • yeast tub – дрожжевая ванна

Учебное издание

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# ПИЩА ДЛЯ УМА

Учебное пособие

Редактор Е.С. Кузнецова

Инженер по компьютерному макетированию И.В. Евсеева

Подписано в печать 23.11.2012.

Формат 60×84 /16. 5,11 усл. печ. л. Тираж 50 экз. Заказ № 590

Издательско-полиграфический центр ФГБОУ ВПО «ТГТУ»  
392000, г. Тамбов, ул. Советская, д. 106, к. 14