

## INTEGRATED QUALITY CONTROL AT HEINEKEN: HEINEKEN HISTORY

SARRE B.W.

Heineken, The Netherlands

W-8A.MP2

Heineken's history starts on December 16th, 1863, on the day when young Gerard Adriaan Heineken purchased brewery the "Hooiberg" (the Haystack) in Amsterdam. The official transfer took place in May 1864. It was the largest brewery of the Dutch capital at that time. The Hooiberg was one of 57 breweries existing in Amsterdam and had a capacity of approx. 1,000 hectolitres annually.

Gerard Adriaan multiplied sales within a few years, making it necessary already in 1867 to build a new brewery in Amsterdam. In 1873 the decision was taken to construct a new brewery in Rotterdam, which was put into operation a year later.

Already then it was Heineken's primary objective to brew beer of the very best quality. Heineken's own laboratory, unique in the brewing world at the time, kept a watchful eye on raw materials and the final product.

Simultaneously, Dr. Elion, educated in the school of Louis Pasteur, developed in 1886 the now famous Heineken A yeast, which is to this day the primary factor in giving Heineken beer its excellent taste.

When Gerard Adriaan died in 1893, the brewery had grown to become one of the largest and most important breweries in Holland, with annual sales already reaching some 200,000 hectolitres. As a comparison, the average Dutch brewery sold only 3,000 hectolitres annually.

Under Dr Henry Pierre Heineken, the son of Gerard Adriaan, the company continued its rapid expansion. He considered it his life's work to perfect the beer-brewing process. Like no other he realized that a product of high and consistent quality would be a successful product. His approach was continued by Alfred H. Heineken, who from the 1950s onward brought the Heineken label worldwide fame and gave it a unique image. He also laid the basis for the international structure of the Heineken concern.

### INTERNATIONAL EXPANSION

In the 1920s Heineken had already started to export. In the thirties Heineken went on to build a position in the Far East, initially through a joint venture in Singapore with Fraser & Neave (1931). The first overseas brewery was then built in Surabaya, Indonesia.

At the end of the forties and the beginning of the fifties export to Africa was transformed into local activities. In 1968 Heineken and Amstel merged, thus combining both their national as well as international strength. In the seventies and the eighties Europe was the target, with the acquisition of majority participations in breweries in a number of European countries.

In Latin America we point to our participation in two, rapidly growing, brewery enterprises: the Argentina Quilmes Group, operating in various countries of South America, and the Kaiser Group of Brazil.

Furthermore, in 1990, Heineken acquired Van Munching & Co., which for many years has been (and still is) the sole importer in the USA.

In the nineties we see Heineken's expansion in Central Europe and in Asia/Pacific.

### COMPANY PROFILE

\* The Heineken Group is the world's most international brewery group.

- \* Associated with more than 90 breweries, in some 50 countries.
- \* Our products are sold in over 150 countries.
- \* Heineken beer is the no. 1 international beer brand.
- \* Europe is our home market.
- \* The Heineken brand is the leading beer brand in Europe.
- \* The Heineken brand is the no. 1 imported beer brand in the USA.
- \* The Heineken Group is the second largest brewery group in the world, with 56 million hectolitres brewed under Heineken supervision in 1993.

**THE HEINEKEN BRAND**

The Heineken brand is the jewel in our crown, with a strong no. 1 position in various fields and an excellent worldwide brand recognition. The brand sold 15.2 million hectolitres in 1993 and has enormous potential for further growth. Heineken is brewed in some 30 breweries worldwide.

A concern for craftsmanship has always been a feature of the Heineken tradition. Soon after the birth of the brand, Heineken became renowned for its quality and smooth drinkability. Already in 1889 at the World's Fair, Heineken beer was granted the Grand Prix Paris, an award still mentioned on Heineken labels. The consistent high quality of Heineken is a major factor in its success.

It is the most widely available beer brand in the world, found all over the globe wherever you go, backed by a combination of local production, exports and licensing arrangements; all under our strict quality control. Indeed, as the famous advertising campaign in the United Kingdom said: "Heineken refreshes the parts other beers cannot reach".

**WORLDWIDE PRODUCTION**

This world map shows the Heineken brewery subsidiaries, the minority interests and the licensing partners (as at April 30, 1994).

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**QUALITY STRUCTURE**

With this sort of scope to deal with, the first requisite of a control system is a structured and organized approach. Balance is also needed to achieve a relatively rigid approach to authorities on the one hand and flexibility to deal with the wide range of circumstances on the other.

The centralized approach needed to develop this structure is found in the Production Policy and Control Department which is directly responsible to the Executive Board. As the name states, this department is responsible for both standards setting and checking for compliance. The actual res-ponsibility for achieving the standards is delegated to our opera-ting companies or contractually agreed upon with our licensees.

Review and improvement of production standards is seen as a shared responsibility of everybody in the quality loop which is based on the PDCA model. Organization of this review is both the most important and most difficult aspect due to the geographic spread involved. However, it is a vital process without which we would lose our ability to function as a learning organization and consequently our ability to compete with the growing number of major brewing companies wishing to emulate our success.

## QUALITY CHAIN

Heineken is one of the companies who advocate a "supply chain" or "quality chain" approach to ensuring quality.

Beginning with our raw materials, and malt in particular, we are working on the development of preferred suppliers. This means that we want to build a relationship based on more than just specifications. We want to know the whole history of barley and malt. We want to know what sort of quality systems they use to ensure quality. In fact we want an open book policy to build trust and, for this, we are prepared to pay a price premium.

Moving on to water, we find an even greater need to "know your water supply" as water is under threat in many parts of the world including Europe.

Threats are divided between pollution from nitrates, pesticides and sea water incursion in coastal areas on the one hand and over exploitation on the other. The latter aggravates pollution and can also lead to shortages. We have introduced catchment area surveys, regular monitoring, increased treatment and measures to reduce usage.

As high volume users, reduction in usage can ease the strain on both supply and effluent facilities and reduce our own costs.

Our approach to Hops is similar to that for Malt but the relatively small number of suppliers makes it difficult to build special relationships.

Yeast we keep under our own control and Heineken A-yeast is supplied on a monthly basis from our pure culture plants in Zoeterwoude and Den Bosch.

The next links in the chain are product definition through customer research and R & D, and process identification through development, best practices and competitor benchmarking.

Once these steps have been carried out, standardized process, cleaning and laboratory methods and instructions are issued in controlled document format.

This work is carried out by a standards committee and backed up by an administrative norms and standards department.

Not so very long ago the quality chain would have stopped at the brewery gate, but this is happily no longer the case. Standards for quality in distribution ensure that proper attention is paid to Best-before-dates, First in-First out, warehouse and transport conditions and checking methods.

We also require every brewery to have procedures for customer complaints, traceability of product and recall procedures. Nobody is particularly enthusiastic about these latter rules but it is essential to be prepared.

## QUALITY CONTROL

Quality control is fully delegated to the production units and, wherever possible, right down to the operators themselves. However, to ensure that our policy of one brand-one taste is achieved, various central controls are carried out. Probably the most visible of these is the monthly sampling scheme whereby beers from all over the world are sent to Zoeterwoude for analysis and taste testing.

Quarterly quality meetings are also held on a country or area basis to discuss operations and reporting by exception.

Formalized audit systems exist for an annual process audit and a 3-yearly systems audit carried out by PP&C or Heineken Technical Services Staff.

Reporting systems include a Quality Assurance software package developed by our French operation. This is backed up by a Brewery Comparison System which is efficiency and cost based.

Checks are also made on a quarterly basis on the quality of our products in the market. These are carried out by an external agency.

A Quality Award System was introduced this year which uses information from the above systems to award a Heineken Brewery of the Year award and a Most Improved Brewery of the year award. This has introduced a new element of competition and motivation.

## QUALITY SUPPORT

In case I am creating the impression that Heineken is a hard taskmaster, let me quickly point out that we also have a department, Heineken Technical Services, whose role it is to provide back-up services in any or all of the following areas:

- Research \ Development
- Engineering Project-Services
- Raw materials and Process Consultancy
- Distribution and Logistics
- Purchasing

## QUALITY SYSTEMS

Finally a word or two about Quality Systems and in particular our experience of the ISO 9000 series. At this stage I should clarify that we have applied various systems at one time or another and the opinions expressed here are my personal opinions based on that experience only. Amongst the other systems are Good Manufacturing Practice, Hazard Analysis and Critical Control Points (HACCP) and the Total Quality Philosophy.

ISO 9000 has some fairly well known weak points amongst which are that it tends to be bureaucratic, can be static and emphasizes technical quality. It is weak on efficiency and, in fact, gives no guarantee of product quality. It is system oriented.

Amongst the strong points are that it forces a re-think of systems and procedures, it gets operators involved and internal auditing increases understanding of other people's jobs and problems. Furthermore, 3rd party auditing keeps people alert and the written system facilitates training.

Sufficient numbers of companies have already achieved certification in almost all industries so that the pioneer value of certification as a marketing tool is no longer valid. Not having it can be a liability though and this can lead to certification for the wrong reasons.

The effectiveness of any system will depend on the motive for its introduction and the commitment with which it is followed up. If it is introduced to improve quality, it will do so if the target is clear and the effort sufficient. If introduced to arrive at a piece of paper, this too will succeed.

Our goal in Heineken is Total Quality.

In closing, I hope that you can agree with me that:

"Beer enhances the enjoyment of the meat that fortifies the quality of life".

## THE CURRENT STATE AND PROSPECTS OF TRAINING OF ENGINEERS-TECHNOLOGISTS FOR MEAT INDUSTRY

ANTIPOVA L.V.

Meat Processing Technology and Meat Products' Department, The State Technological Academy of Voronezh, Voronezh, Russia.

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### Introduction

The system of continuous education that has been established in Russia nowadays consists of following sections: nursery and out-of-school education, general and professional secondary education, higher education and specialized secondary education institutions, technical colleges and technical institutes, as well as improvement of professional skills and training for a new profession. Higher education encompasses institutes and academies, which provide professional training and education of future engineering and technology specialists for various branches of food and food processing industry, as well as for agriculture.

The contemporary economical setup in Russia in terms of ongoing reorganization of industry and establishing new forms of property calls for a new approach towards personnel training. Development of fundamental science, Russia's technology achievements, and foreign countries' experience form basis for successful development of meat production industry. Necessity for broad and rapid introduction of brand new technologies, which allow to provide the most efficient utilization of resources and harmlessness of production processes and products, requires a high level of professional education and competence of specialists including general, professional, and practical training and education.

The objective of this written work is to evaluate the existing system of higher education in Russia and to generalize experience of engineering and technology specialists for meat production industry on the basis of Voronezh Technological Academy's department of Meat Processing Technology and Meat Products.

### Results and discussions

There were 100 higher education establishments in the former USSR, and the number of students was around 5 000 000. 800 000 graduates were prepared annually. In eighties there were 10 specialists with technical higher education for 14 specialists with non-technical one (Shikshunov, 1993). 470 basic professions were divided into 22 groups.

Within those groups there existed 650 specialities. Common and different aspects of our country's educational system and world's ones could be defined on the basis of comparative analysis. The common aspects are striving for basic and individual knowledge, balanced spectrum of quantity and quality of knowledge in terms of job market demand. The main differences are as follows: orientation for deep specialization of theoretical and practical training, computer illiteracy of majority of teachers and students, lack of computers, insufficient feasibility of educational programs, politization of educational process, bureaucratic nature of educational organizations and their management including allocation of resources and graduates, isolated disposition of educational process. There were no standards of giving credits to higher education institutions and evaluating of their activity as well as there were no glasnost in the results of their checking and control.

The beginning of the current decade is remarkable for radical changes in Russia's political situation, first and foremost due to desintegration of the Soviet Union and Eastern Europe socialist countries. Future of the CIS is ambiguous. Nineties are characteristic of general slump in production output and soaring inflation rate. The centralized system of resource allocation has been dismantled. Social unrest, national conflicts and rising unemployment were quite new a phenomena with Russian society. There has been a resource re-allocation at the expense of agriculture and industry.

On the other hand, Russian society has gained civil rights and freedom. Private business activity is well under way. There have been laid foundations for legal basis of new state and individual freedom. Russia develops new

relations with various countries and companies in different parts of the world. Independent non-state banks have been founded as well as may joint ventures. To say it a rough idea, a mixed economy is being formed in Russia, and the process directly influences educational system.

A tendency for decreasing in number of higher education graduates is depicted on Figure 1. Starting from 1987, the number of engineering specialists was reduced. Now there are 305 basic professions on the list. They are divided into 31 group (Kinelev, 1993). There exist 87 humanity and natural knowledge professions and 26 economical ones, as well as 16 agricultural and 177 technical knowledge professions and specialities. There can be traced a trend for a change of enrolment in higher education institutions in terms of professional groups (Table 1). From 131 million of working people in the former USSR there were about 8,7 million of specialists with higher education, 47% of those worked in national economy representing engineers and science personnel. In this connection, engineer education is an aspect that predetermines Russia's future taking into account world tendencies of human civilization development.

Education of adults is being developed in our country as well. The prospects of it can be outlined as providing opportunities for a free movement of ideas, specialists, and technologies to remove any barriers from this way. There should be provided an integral open space of higher education of specialists, which would be based on the grounds of openness for entry of any higher technical educational institution, unity of educational standard quality, and individual approach.

The acting educational programs in Russia are upgraded with the help of multi-level training and education of specialists including bachelor's and master's degrees. Higher education institutions have acquired real opportunities for step-by-step realization of continuous educational process of specialized secondary education and higher education. The general status of educational system of Russian Federation is set out in the Bill of Education of Russia.

Within the Bill and some complementary documents "Higher Education" state program is set forth. The program contemplates the idea of meeting all needs of an individual for education, the need of society for preparing specialists on the world level, so that they could be able to work out newest technological processes, and the need of higher education institutions in the newest methods of teaching of high efficiency. The first results have been obtained already.

Many high education establishments including Voronezh Technological Academy, which is situated in the center of Russia in Tchernozomy Region, have represented their projects of switching to multi-level system of education.

Voronezh Technological Academy prepares specialists for chemical and food industry. One of the specialities (number 27.08) is Meat Processing Technology and Meat Products Department. The personnel of this department encompasses 12 people. They have different scientific degrees, such as Professor, Doctor, Candidate of Science, as well as Senior Lecturer and Assistant Lecturer. The department draws in educational process acting specialists from enterprises, lecturers from relative departments and institutes. The experience of working with such a staff shows good results of interconnection among higher education establishments and industry. It helps to advance scientific and technical development of qualification and deep specialization. Lecturers' training takes place at different enterprises of meat and food industry, some of the enterprises are regarded as branches of the department. It creates good conditions for preparation of engineers not only with the help of education itself, but through transforming the department branches into workshops, which complies with principle directions worked out by Federation of European Associations of Engineers (FEANI).

The department owns modern computers and carries out computer-aided learning with the help of various kinds of computer programs. Some special courses have been worked out, they are devoted to the problems of healthy food and man's health, environment protection, environment friendliness of production processes and food products in terms of Russia's system of certification. The courses are developed by scientists and lecturers of theoretical and specialized departments of food industry. For a case in point, there have been worked out the following courses: Meat Biochemistry, Food Chemistry and Basic Principles of Healthy Rations, Rational Utilization of Secondary Resources, Modelling of Management Situations, Methods of Meat and Meat Product Analysis, Applied Biotechnology. The courses encompass theoretical studies and practical training based on contemporary information and methods of analysis. They allow to form high professional qualities of students enabling them to understand essence of physical and chemical processes in raw meat and product during storage and processing. Students can evaluate and realize the full potential of meat industry resources, provide safety of production processes and products.

The student are taught how to provide environment protection and perform competent and efficient management and monitoring of production process. The traditional mode of training end education in the

Academy provided a considerable demand for its graduates. But some tendencies of production process development require a new approach to theoretical, practical, and specialized training of students. The principal emphasis is put on graduating of certified engineers-technologists of meat and meat products within a 5-year cycle. A student can finish his or her education on a lower level (as a bachelor) in the field of his speciality. This curriculum takes eight semesters encompassing about 11% of specialized subjects, 14% of humanitarian, and 50% of natural science subjects. The plan of certified engineers' preparation is intended to be carried out during the 9th and 10th semesters, which involve deep study of specialized subjects. The 9th semester curriculum is compiled of basic for the given branch of industry compulsory subjects and some electives (Table 2). The 10th semester has a sectional structure of deep professional training according to the following scheme: technology calculation and stock-taking technology intensification rational utilization of resources new production lines modelling of management and production situations, etc. The whole structure is shown on Figure 2. Recommendations for an elective within a specialization require to provide deep studying of by-product processing technologies and production of traditional and non-traditional for Russia meat products. Such a system allows to gain knowledge of rational utilization and allocation of resources and raw materials, mobile organization of production process and its diversification in order to save and increase production potential.

#### Conclusion

Thus, political and economical situation in Russia brings about deep changes in the traditional system of education. A tendency towards decreasing of student enrolment in some scientific directions of higher education has become obvious. The project of switching to multi-level system of specialists' training has been worked out as well as requirement for higher education institutions. The requirements have been set out in order to provide a painless entry into the world educational system. Most of technical institutes and colleges of Russia including Voronezh Technological Academy have prepared projects of two-step education: bachelor's degree and certified engineer. Preliminary evaluation confirms correspondence of the plan is based on deeply specialized learning with maximum individualization. Bringing of this project into being will rise quality of education within the limits of a given profession and develop international cooperation in education and science. The project will create an open educational system of preparing of engineers-technologists for meat industry.

#### References

- 1 Shikshunov, V.E., (1993). Higher Education in Russia: Looking into the XXIst century. Bulletin of the Association of Russian Higher Education Institutions "Contemporary Situation in Educational System and Tendencies of its Change in Russia and in the World". Moscow, No 10-12, pp.25-42.
- 2 Kinelev, V.L., (1993). Problems of Education of Engineers: Report on the Conference "Education of Engineers as a Key Factor of Social and Economic Development", Moscow.