INNOVATIVE APPROACH TO THE SYSTEMS OF FOOD PRODUCTS PACKAGING

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Abstract

Today's packaging took on many newly invented functions. At present, it is perceived as a product which ensures maintenance of the pre-determined quality of the packaged products, allows to adapt the products for transport, storage and presentation, and remains environment friendly.

The aim of this study was to present the food packaging systems currently offered on the market. For this reasons factors influencing the choice of a packaging system were analyzed. The classical as well as specific packaging systems were presented.

INTRODUCTION

The ever widening spectrum of the available packaging materials, possibility to modify them at will, and the possibility to go so far as to program their desired properties, combined with the growing requirements of the consumers, the competition which gets stronger every day, and the aspect of the protection of the natural environment ensure a permanent development of the system packaging, first of all in respect of food products [1, 3, 6].

A packaging system is to be construed as a structured set of elements, interconnected and connected to the environment, separated and designed so as to ensure a proper packaging of the product. Every packaging system has its specific, often registered, name, and is determined by the technical requirements, specific construction of the packaging machines and the use of specific packaging materials solutions. The names of packaging systems have been based as a rule on the English terminology [4].

The choice of a packaging system depends on a variety of factors, among which the following play the essential role [2, 5]:

- physical form and properties of the products intended for packaging,
- conditions and storage time of the packaged products,
- properties of the packaging materials or solutions intended to be used,
- special requirements made to the packaging, for instance protecting the product against the processes occurring in the oxygen atmosphere, ensuring aseptic conditions at the packaging phase, etc.

MAIN LINES OF DEVELOPMENT IN THE AREA OF FOOD PACKAGING SYSTEMS

The food packaging systems currently offered on the market can be classified according to the diagram in fig. 1 [3-5].

The common feature of the classical systems, with simultaneous forming and filling is that the whole process of product packaging constitutes a closed whole as the final stage of the technology of production of the given product. According to the classical approach, the packaging process can also occur on the basis of a previously prepared packaging format, for instance a cardboard shell, filled with a certain quantity of the product and then closed as one unit. The most frequent techniques

where the packaging is produced outside of the system include: expresso, stalox, glolok, blister pack and skin pack [4, 5].

The basic kinds of packaging systems presented here constitute the basis of functioning of specific packaging systems, developed as a result of the development of new technologies in packaging and of the search for even more perfect packaging materials and solutions [4, 5].

The aseptic packaging is particularly common among the specific packaging systems. The assortment of products packaged in aseptic conditions continues to grow. It includes juices, beverages, concentrated food products, soups, sauces, milk and milk products, puddings, ketchup, food for children and yoghurt products. New items are regularly added to this list. Even if the aseptic packaging enjoys already a relatively high popularity in the world, it is being believed that this manner of extending the durability of the food products shall be used in a variety of new applications. It is a result of the many advantages associated with the use of that packaging system, the most important being: extending the durability of the product, reduced consumption of energy, possibility to rapidly sterilise the products sensible to a longer exposure to high temperatures, possibility to use modern, lightweight and cheaper packaging materials, owing to a thermal and pressure load lesser than in the case of packaging used for sterilising the products in autoclaves, and a high degree of protection against secondary contamination [3, 5, 6, 9].

Packaging in modified atmosphere guarantees a better health safety of the product, preservation of its nutritive value, slowing-down of the development of undesirable physical and chemical processes, and a significant extension of the shelf life of the product. The importance of the MAP system is clearly demonstrated by the number of packaging based thereupon currently used on the global market, for example on the British market in 2002 it reached 2,9 billion units, with a predicted growth within a decade to the level of 3,7 billion [1, 7, 8].

One of a more important achievements in the technology of food recently has been to apply high pressures and the radiation method of stabilising food products. Those methods allow to extend the durability of food and use the modern kinds of packaging materials [4, 5].

For an individual consumer, the choice of the food products depend from many factors, including the nutritive value, safety, naturalness, among which the comfort gains in importance. The adjustment to the changing life environment of the population, manifested by the consumers' effort to find a more comfortable and quicker way to prepare meals, led to a dynamic development of a new group of products termed "Convenience food", which requires new kinds of packaging solutions. Active and intelligent packaging are a particular kind of packaging from the point of view of the consumer. Such packaging solutions are able to warn the potential buyer about any irregularities associated with the packaged product [2, 4, 10].

The biodegradable packaging is environment friendly, allowing to solve the problem of a growing quantity of packaging waste and enabling the companies to comply with their obligations with regard to the environment protection aspect of the packaging solutions they use.

CONCLUSION

On the basis of the presented overview of the most popular food packaging systems we can state that the development of the specific and modernisation of the conventional goods packaging systems constitute one of the principal lines of development of the modern packaging industry. The technological advancement in that respect consists mostly in applying new or modified packaging materials and implementing new technologies.

The technological innovations are intended to reduce the consumption of material at the stage of production of packaging, reduce the power consumption, increase the output of the packaging machines and improve the quality of packaging, improve their functional properties and recycling potential. The effort to extend the shelf life of the packaged products plays also a great role, mainly with respect to food products, leading to the use of specific stabilisation systems and taking into account the growing demands of the consumers.

Very often the specific packaging systems are implemented as a result of the competition pressure, changing health and hygiene requirements and the new regulations enacted in the sector of packaging, including used packaging and waste packaging.

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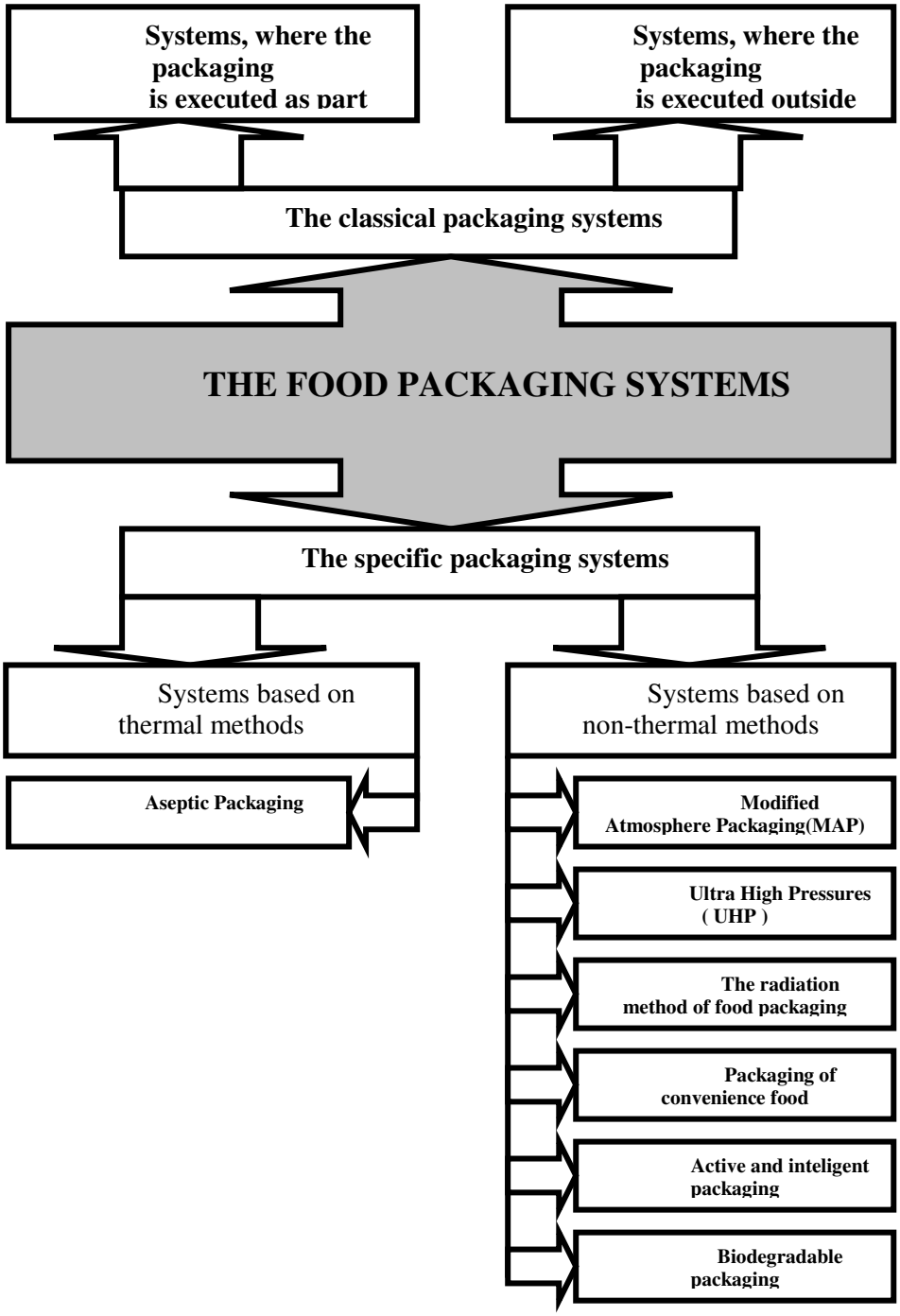

Fig. 1. The partition of food packaging systems
Source: author's work based on [2-5].