

Analysis of Innovation of Food Machinery Technology

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Abstract. With the continuous improvement of industrial production technology, food production enterprises are facing unprecedented challenges, the continuous improvement of food production machinery technology should become the future development of enterprises and the ultimate goal of sustainable power, improve their products on the market competitiveness, to avoid being eliminated by the market development trend. The target location selection of food machinery technology innovation in enterprises are explained, and several popular food machinery innovation technology are introduced, and their development in food production is discussed.

Introduction

New product development and key technology innovation should be the basic direction of food machinery technology innovation, which is helpful to the food production enterprise product quality and technical performance improvement, and further improve product function improvement and production efficiency, and reduce enterprise product development and manufacturing, so that enterprises in the market more competitive.

Analysis on the positioning and selection of the innovation of food machinery technology

Food machinery technology innovation is the key to improve the quality of food production. As for different food production enterprises, they must be based on their own production objectives to achieve innovation and positioning, which includes the mechanical and technological innovation and strategic positioning, which is the food production enterprises to be innovative machinery manufacturing technology.

Innovation of target location selection.

Technology positioning

Technology orientation mainly reflects in the process of food machinery technology innovation, which includes the depth of innovation activity and the process of innovation. In the process of innovation activities, the food production industry is based on the technology of production machinery, through the market trend, demand and enterprise ability to improve food machinery production technology, and if the potential market demand from the enterprise itself, and to develop new products, more targeted, the new technology requirements are more detailed. Followed by innovative activity, which is mainly reflected in the improvement of the existing food machinery technology, this reform has low investment cost, short of risk, but quick, and so on. Many innovation activities of enterprises are a gradual process of product development and production based, which need to formulate a long-term plan to be completed. This kind of deep research on food machinery technology has the characteristics of long period, large investment and high risk, once the success of the enterprise will be a major breakthrough in the production efficiency, and the product will replace other similar products to become the market mainstream.

Product positioning

Product categories can be divided into 6 layers. First, companies should clearly define themselves in order to meet the actual needs of the market. Second, the product level positioning, food companies should be based on different levels of market demand to produce products, food machinery manufacturing technology, which is the main technical aspects of food production, which include food production and marketing. Third, the main technical structure of food production.

Forth, companies if you can clearly define their own development goals, you can view the functional positioning to the evolution of their own mechanical technology, rich in mechanical capabilities; Fifth , the length of the product line positioning, which must be based on the types of products produced by enterprises, but also to consider the ability of the enterprise itself can bear the responsibility. Some enterprises will work with other companies to complete the task of some production lines, such enterprises can set up their own food machinery production line to improve the efficiency of the two sides together, and finally the price positioning, enterprises in the food machinery technology innovation process to take into account the customer's feelings, understand their purchasing psychology, so to adjust the technical capacity and technical direction, to achieve a reasonable estimate of the market situation, to avoid excessive calculation and cause more technical resources, waste of operating costs.

Innovation in strategic positioning.

Production of low production cost positioning

A major goal of Food machinery technology innovation is to reduce costs, so the production of low cost positioning should be clear the following: first, enterprises whether it is to promote the use of new products or new technology should be easy to produce mechanical technology itself as the goal. Second, to keep the foreign advanced equipment and technology learning and introduction. Third, we should focus on the food sales market, more development of some products with high market share, and lower product market prices. According to the above points, food machinery innovation has a basic orientation, and therefore for the enterprise, food machinery and technology innovation to more technical improvements and the introduction of the full effort.

Technical innovation first move

In the fierce competition in the market, the first to move ahead should be the basic concept of innovation as a business. For food production enterprises, the first to be able to move the first dynamic innovation, not only can get more market reputation and consumer loyalty, but also to form their own unique industrial production technology. In addition, the first move to move ahead is to encourage enterprises through the development of new food machinery and technology, and thus create a number of new market value, the formation of the industry's leading power. And from a legal point of view, the first mover leading companies can also apply for legal patents, intellectual property relations, and so on, the formation of technical and institutional aspects of the double barriers, indirectly for business sales bring more high profits. Therefore, many food production enterprises are hoping to get more market share, benefit and consumer reputation through the food machinery, which is now the competition principle of consensus in the field of technology market [1].

Analysis of the technical data and innovation technology of food machinery

Food production enterprises in addition to the direction of the mechanical technology innovation through the enterprise orientation, but also to set up technical innovation goals, and to stabilize their prospects for the development of the market, this paper combines the relevant food machinery innovation technology to explore the technical objectives of the enterprise to achieve.

Technology production efficiency. After entering the twenty-first Century, the world's food machinery technology production scale and efficiency have been greatly changed, automatic, intelligent mechanical technology with the market demand is becoming more and more big, these innovative technologies including the automatic protection principle of intelligent device, such as automatic shutdown function, production capacity or excess capacity of the abnormal warning, etc.. Such as in Denmark, in recent years on R & D and production to a disc type ice cream machine, it is a change in the traditional conveyor belt mechanical production mode, through small disc to rotate so as to realize from the ingredients, filling, in sign, freezing, heating release and pull out the sign finished a series of ice cream production process. The whole process has achieved full automation, and it is very low for manual. And Japan also for its own food packaging technology development and innovation, ADW series of automatic vacuum packaging machine can be in the 100m range of 511 kinds of quality products, the most quickly determine the value of the recent target value and then on the product packaging operations. If you encounter some problems, such as packaging or product

quality problems, machinery and equipment will be quickly feedback to the computer system, so as to complete the product target quality intelligent monitoring, guarantee product packaging error rate will not be higher than 0.1%. Such careful packaging operation and quality monitoring is also the product of the enterprise efficiency speed. According to the enterprise statistics show that in the use of ADW type automatic packaging machine, the enterprise's mechanical packaging efficiency is higher than the previous 38.8%, the efficiency is quite obvious.

Efficient utilization of food raw materials. Food machinery technology innovation is to improve the food production of raw materials, such as the use of raw materials, such as a number of food and food deep processing enterprises, for the soybean meal in phospholipids, oil, soy protein, fiber and activated carbon extraction. For example, the use of enzymatic hydrolysis method for the production of soy sauce and so on are the combination of the production of soy sauce and so on are the combination of food machinery and chemical methods and the production of innovative food production technology. So the more subjects of the new and the use of food machinery production technology has become more innovative and diversified development, and for the enterprise to develop more food production machinery and equipment.

In our country, the oil industrialization production generally uses the traditional low temperature extrusion equipment to extract the grain in the oil, the oil extraction rate is about 1~2%, but also can be a lot of loss of protein, which cause the loss of the nutrition ingredient of the food. At present, the use of the short time of food and indirect heating technology can maximize the loss of nutrition in food, to ensure the authentic food. For example, Japan has studied the bacteria killing equipment based on high pressure environment, which can be realized in the ultra high pressure environment of 300~510MPa to kill the potential bacteria in the net jam or fruit juice, and to ensure that the nutritional components of fruit juice jam and vitamin structure is not destroyed. It can also keep the fruit products. And in the United States, also in the use of frozen drying technology and equipment to process food, it is also the principle of maximizing the nutritional composition and color flavor, it is learned in the low-temperature freezing drying equipment to deal with the packaging of food can be stored at room temperature for 5 years will not degenerate. In our country, it has also developed a food preservation technology, which is based on the static compression of fluid. In its fluid compression environment, most *Salmonella* and *Escherichia coli* in food can be killed, and the effect of the maximum extension of the period of food consumption is [2].

Innovative technology utility. In order to improve production efficiency, food machinery technology innovation is gradually moving in the direction of development, and hope to be more scientific and brief process can get the traditional need to spend a lot of time to achieve the results of the process. For example, according to the fruit juice production of frozen crushing machinery equipment, it uses liquid nitrogen as its core refrigerant, to ensure that the fruits of raw materials are frozen state. Under the action of its effect, the actual fruit can enter into the -100 at 30 minutes and then the low temperature of the fruit is crushed. In this state, the fruit's flesh tissue will be quick and crisp, the nuclear network will appear the separation state, at this time with the machine can be easily broken, retain its nuclear network and smash the capsule. After the separation of the fruit of the nuclear network organization, you can obtain a higher purity of fruit juice, purification rate can reach more than 95%.

And for some fast food production, food enterprises used microwave heating equipment, this equipment can form an instantaneous penetration type microwave effect, not only the heating speed, uniform heating area, and there is no heating process, food material in the heating environment can achieve inert stop, without the presence of any remaining phenomenon. This microwave equipment is transformed by microwave heating up to more than 90%, which is 15~20 times the traditional heating process. Even more important is that it will not destroy the structure of the food, so the mechanical technology in the vast majority of food production enterprises are being widely used, more similar to the mechanical technology and microwave drying, microwave drying, microwave sterilization and so on [3].

In a number of dairy food companies, ultra high pressure processing equipment is the most common, it is characterized by being able to work at room temperature, it is the formation of high

pressure environment can reach 1000MPa, the high pressure processing of yogurt, coffee, spices and other food is very effective. In addition, it can also be provided on the starch gelatinization, acid for meat, to ensure meat color, flavor and tenderness are intact. In the food, which is not likely to be reactive in the atmosphere, it can also be achieved by the use of biological macromolecular enzyme hydrolysis, enzymatic reaction of the technology to achieve high pressure on food processing, such as the production of organic fruit juice and so on [4].

High efficiency and energy saving of products. Energy efficient and energy saving is also a major goal of food machinery technology innovation, and heat treatment products is the key to the development of food machinery.

The seven - effect evaporator designed by the United States of America FMC company can evaporate from each kilogram of steam 6kg water, which is four more than the traditional 42% - efficiency evaporator. And Japan, corporation has also developed the fluidized bed with a built-in function of three spray dryer, it light than the previous one, the secondary spray dryer can save energy by nearly 40%, and its space occupies smaller rate, but also as a granulating machine use, of canned food to kill the bacteria effect is particularly prominent, in the content of killing bacteria canned can than about general water-saving equipment 24%~32%, energy consumption reduced by 20%, the sterilization quality assurance. And in South China, full fat bean powder processing is used high frequency electric field is optimized deodorization technology, it can achieve pulverizing function, replaced the traditional wet with the new fluidized bed granulation technology, the maximum for the production of bean products improve the efficiency, but also saves energy.

Summary

In short, with the continuous improvement of food awareness in science and technology and human, the innovation and enrichment of food machinery technology is becoming the inevitable trend of social development. It is not only for the human food consumption health safety issues, but also in the context of the world wide advocacy of environmental protection and energy conservation. The development of food machinery technology is a positive response to social progress.

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