Programmed aging - a condition for rapid application of new technologies.

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Abstract: Programmed obsolescence of industrial products is not a regularity caused by innovative development, but an alternative to innovative obsolescence. Programmed aging is a purposeful and controlled human activity in order to solve some industrial, economic and social problems of the development of society. Including meeting specific individual technical and organizational needs. From this point of view and from this point of view, programmed aging is increasingly playing the role of an alternative to the rapid innovative aging of products and processes. Moreover, at the current stage of technical development, innovative aging is already more important than physical aging. Therefore, a particularly important point in this direction is the correct determination of the degree of innovative aging, and hence the choice of the alternative - programmed aging. Proper assessment of the impact of programmed aging on the scale and timing of innovative aging is crucial for timely elimination of the negative consequences of their impact

1. The essence of the concept of "innovative aging".

Innovative aging is a regularity caused by innovative development in all directions of world scientific progress. In essence, this means the degree of backwardness or obsolescence of old technologies and equipment with the emergence of new ones with higher productivity and efficiency. It has been scientifically researched and established that at the current stage of technical development innovative aging is already of paramount importance in the design and production of new products and services. The aim is to establish and measure the impact of innovations on the technical, economic and social results of industrial activity. Assessing their impact on the timing of innovative aging is important for controlling and managing this process. At present, qualitative change is taking place in industrial development on the basis of innovations and high technologies. The development of technologies has the strongest influence on such basic activities as: energies, communications, nanotechnologies, etc. Three factors have been identified that form the effect of new technologies in the current stage of industrial development and form the concept of modern production development as a complex functionality (FF). These are; technological (TT), social (SS) and environmental (EE) factors (1,2,3,7,10) .Technological dictates the trend of constant reduction of manual, hard and unattractive labor at the expense of higher productivity, activity are all basic and auxiliary technological, production and information processes and activities. The social demands the creation of new or preservation of old jobs. The ecological one defines the permanent tendency of observance of the ecological norms and the parameters of the sustainable development of the ecological environment. This system dependence can be represented as follows;

$$FF = f\ (\ TT, SS\ ,\ EE\ ).$$

Or all this shows that the prerequisites are already in place and conditions and opportunities have been created for a complex solution of the problems of industrial enterprises and the formation of a new industrial policy based on communications, informatics, Internet, Intranet and others. Moreover, the technological innovation process is the most important part of the overall strategy of the enterprise. It is one of the means to achieve the goals of the industrial company, and the goals of each company are related to the sale of products that it produces and trades, making maximum profit. In this sense, the innovative technological process is the main way to achieve the long-term goals of the company and mandatory for every company. The development and implementation of innovative projects allows each company to strive to be a leader and main competitor in the market. Otherwise, when not enough attention is paid and innovation is neglected, the company is doomed to market failure and takeover by the competition.

The innovative technological process can be defined and considered as a process of creating and disseminating innovations. It is a set of consistent and logically related activities and tasks that must be performed from the moment of origin of the idea to the marketing of the product.

In modern conditions, the interest in innovations is growing. New technologies are considered as the main means of providing a competitive advantage to the company.

The connection between innovative development and the emerging innovative obsolescence in engineering and technology has also been unquestionably proven. However, research shows that the potential effects of this relationship, both on rapid innovation obsolescence and on the technical and economic indicators that shape this development, have not yet been elucidated. Therefore, it is necessary to study the relationship between the various stages of innovative development and innovative aging, to look for forms of impact leading to harm reduction consequences. Taking into account the factors that characterize the quality side of technological development allows to reveal not only the mechanism of its impact on production efficiency indicators, but also its impact on different aspects of the production process.

2. The "programmed aging" alternative

Programmed (regulated) or regulated aging is an American initiative from the early 20th century. The phrase "planned obsolescence" became really popular after 1954, when American industrial designer Brooks Stevens gave in his speech the following definition of the term "Making the consumer want to own something a little new. a little better, a little sooner than necessary. " Since then, large companies have begun to invest in R&D projects to produce the "next best product," including through self-designed design changes. According to a German study, after the 2010 importation into the Bundestag, the damage from such practices amounted to 100 million euros a year. (4.7.)

Many producers and consumers today are opposed to the global approach to programmed (planned) aging, but it is also certain that almost all of them work in a place that depends on programmed (planned) aging. Research shows that offices, productions, services, services function to a large extent thanks to the observance of the principles of programmed aging (5,6,)

Thus, nowadays all electrical and electronic appliances that do not age innovatively (printers, etc.) have an integrated chip that damages the appliance after a certain period. Apple's iPod comes with a battery that is programmed to break down after 18 months. The same thing happens with Apple Laptop batteries. The iSupply Research Institute has purchased and broken down Apple's latest model, the iPhone-5, to calculate the cost of making the smartphone. The smallest model with 16 Gigabyte costs the manufacturer 207 US-Dollar, its price in Europe is 679 euros. And the largest with 64 Gigabyte memory costs Apple $ 230, in stores in Europe its price is almost five times. Of course, the costs of lawyers and lobbyists are not included in the production costs. In February 2010-2020, the Brazilian Institute of Policy and Computer Science filed a lawsuit against Apple, alleging that the company was practicing illegal business practices. The accusation is based on the "planned obsolescence" of the iPad line. Some people have long suspected that technology companies and manufacturers are planning to reduce the production of old products, deliberately limiting their functionality by making them deliberately slower, thus forcing consumers to periodically replace their devices (6,7)

The new refrigerators use built-in tubes that are thin, steel and corrode after three to four years. New refrigerators are like bombs at home. With 100 percent of the washing machines, they already have circuit boards and microprocessor control. This control in many of them is programmed after "N" the number of times laundry to cost. As for TVs, the myth that LCDs will work 60,000 hours turned out

to be wrong. The same goes for cars. What they do is disguise it with the phenomenon of "inherent aging", often ignoring or even suppressing technological developments that could create a more durable and environmentally friendly product. wastefulness that the system does not allow the production of the most durable and efficient goods. Programmed aging is the open recognition that the longer a product is in use, the more difficult it becomes to maintain continuous, cyclical consumption, and hence the market itself. In other words, the durability of products is in fact the opposite of production growth, so there is a direct incentive to ensure a shorter life for each product produced, and in fact the system cannot function in any other way. .

As a conclusion of the above, it can be assumed that programmed aging is a purposeful and controlled human activity in order to solve some industrial, economic and social problems of society. Including meeting specific individual needs. From this point of view, and from this point of view, programmed aging is increasingly playing a role.

The basic principles of programmed aging are shown in Fig.1

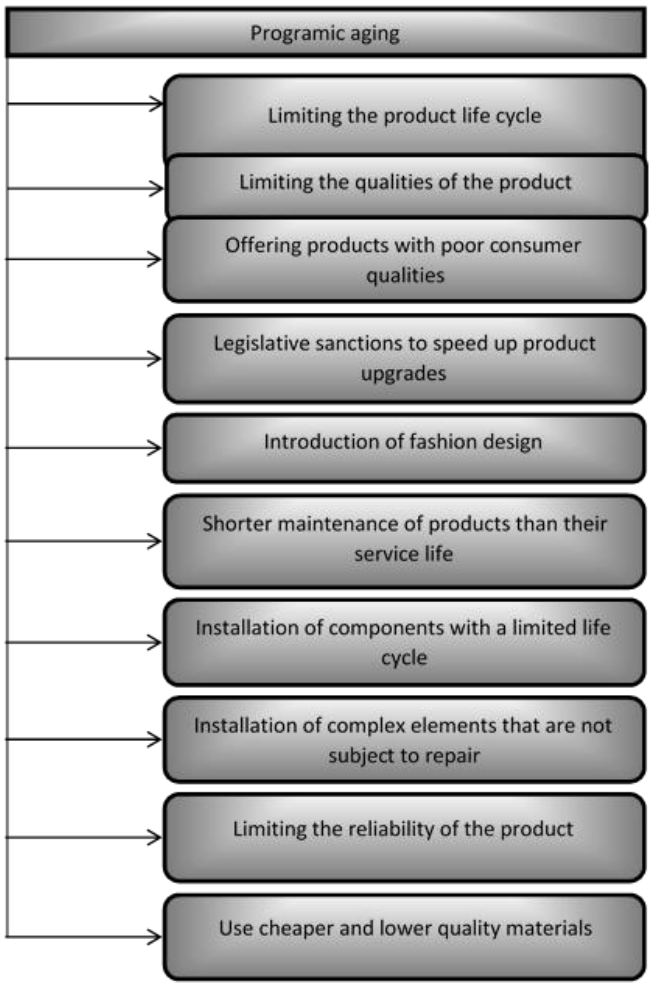

Fig.1 *Principles of programmed aging.*

3. Factors that characterize the quality side of the problem innovative and programmed aging.

Taking into account the factors that characterize the quality side of the problem allows to reveal not only the mechanism of its impact on the indicators of production efficiency, but also its impact on different aspects of the production process. To facilitate further clarification of the problem, we will group the influence of these factors in several directions.

The influence of innovative development and innovative aging on technology is expressed in the improvement of existing and construction of fundamentally new machines, apparatus and equipment. According to the purpose and growth rate of their productivity, they can be divided into two main groups: special machines and equipment designed for the production of homogeneous products on a mass scale; and universal machines and equipment designed to perform a variety of universal activities. In recent years there has been a trend of strong unification and standardization of elements and components of machines based on the modular principle. The aim is to create conditions for fast assembly of machines with different technological purpose, but with universal purpose (principle of mechatronic machines). The study of the laws of development and improvement of special and universal equipment makes it possible to determine the period in which the greatest effect can be obtained from a given generation of machines designed for a particular production process, and at the same time the transition period to the production of new types of machines.

In the modern conditions of accelerated technological progress the importance of this direction and its manifestation on the pace and scale of the innovative obsolescence of technology has significantly increased. Studies show that the real consequence of this impact is an increase in the scope and timing of innovative obsolescence of machinery and equipment that are in operation and a rapid change in their structural composition (9). Innovative development and aging is also expressed in the creation of new materials that have an active impact on accelerating the innovative aging of existing equipment. This influence is due to the widespread use of new materials adapted for processing on a particular type of machine. The share of unnecessary equipment adapted for processing old materials depends on the scale of their use in production. Innovative development and aging also affect technological processes. The changes that occur from the application of new technologies in all cases play an active role in the production process, as a result of which the relative share of old technological processes is constantly reduced, and with them the machines and equipment used for this purpose. It is related to the professional training and improvement and the methods of raising the qualification and training of the staff. Significant changes occur in the qualification of the staff, as a result of which a large number of new professions arise, old ones disappear and the ratio between the different groups of professions changes. The development of technology leads to significant changes in the methods of its operation on the one hand, and on the other hand to improve methods for changing the nature of work and improving staff skills. Therefore, technological development and more precisely its consequences the form of innovative aging of products and processes, lead to a kind of attitude of manufacturers to seek ways and means to improve and change their parameters. The tendency to change the parameters of innovative products and processes as a result of their rapid innovative aging is already forming a new alternative concept for innovative development. It also sets new requirements, both for the consumer nature of innovative products and for the methods, approaches and methods of their production.

From the above we can conclude that the impact of innovative development and aging is globalizing, resulting in innovative aging of technology and lagging behind the level of commissioned technologies from modern ones. The further use of innovatively obsolete equipment and technological processes leads to certain losses, the amount of which will depend on the degree of this lag.

Formation of alternatives to rapid innovative aging. The main directions, providing an effective way out of the limitations imposed by rapid innovative aging in the creation of competitive innovative products, are actively applied by many companies in mechanical engineering and electronics. This new approach, quickly adopted by industrial companies, is already showing its advantages in the following directions (2,9,10). Application of the modular principle of construction and production of industrial products; Design and manufacture of modules for various technological purposes; Application of programmed aging; Replacement of products with new ones; Formation of alternative models; The formation of alternative models in the virtual functioning of the production system and the construction of analytical and simulation models is carried out according to forecast

indicators of already built such systems. If this data is sufficient, proceed to the next stage, or building the model, if it proves insufficient, additional data is sought from existing systems or their elements, as close as possible to the modeled technical or production system.

Conclusion

In conclusion of the present study, the following conclusions can be drawn that; Programmed aging can be an alternative to rapid innovative aging, or the process of programmed aging can be regulated by man. Innovative aging is a regularity, and its manifestation is a given imposed by the innovative development and human intervention in the process of its manifestation.

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