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ISSUES MANAGEMENT COMPANIES HIGH-TECH DEVELOPMENT OF ENGINEERING IN AN UNSTABLE ENVIRONMENT

The present article deals with the problems of management of development of high-tech potential of machine-building enterprise on the basis of innovation and proposed a number of measures to improve the situation in mechanical engineering.

Keywords: *enterprise, engineering, innovation potential, high-tech development.*

Introduction. It is necessary for Ukraine, to attain the level of modern developed countries, national economies of which are considered to be the fifth technological order, as the results of the development of strategies for the development of industries, accelerated, high-tech industrial development, including mechanical engineering. In order to achieve a high rate of industrial development, the next set of problems should be decided:

- macroeconomic defined low efficiency of industrial policy of the state;
- market characterized by poor infrastructure market;
- cross-sectoral, detach inefficiency interaction related industries with natural monopolies;
- intra-including the critical state of fixed assets investment and innovation challenges

companies in the industry, low structuring the industry, as well as a shortage of qualified professionals.

Statement of the problem. The complex problems related to engineering defined as the branch, and is typical for the whole of the domestic industry, but we consider it necessary to identify its intra problems, as they are the cause of most of the problems of engineering as a whole [1; 2].

Analysis publication. For the present study analyzed the work of the following specialists: Akberdina R. [1] R. Ackoff [2], Ansoff I. [3] Archibald R. [4], Zakharchenko [5, 6]. But these studies have not been brought to the level of a specific machine-building enterprise.

The results of research. The share of general engineering accounts is about 8% of the gross domestic product of Ukraine. This is an automotive engineering, a transport machinery, a heavy machinery, a machine tool industry and an electrical engineering.

Since the early 2000s, the Ukrainian engineering has developed rapidly with stable positive dynamics. The largest volume of production were recorded in 2008 it was almost 64 billion UAH. Exports of engineering products was \$ 27 billion Gen.

The crisis has had a negative impact on the industry. In 2009 the production volumes decreased by 58%. This has particularly affected the automotive, heavy and transport engineering, the share of which is the largest in the structure of the industry products. But by the beginning of 2013, the industry showed a small, but still growth (table. 1).

Experts note the relatively high competitiveness of products manufactured by Ukrainian machine builders. Especially high development shows the transport sector: + 280% compared to 2011. Not least because of the technical upgrading of transport engineering. In a similar way, and machine-building enterprises - NCMHs, "Azovmash", which are directed for the modernization of large property investments.

The first and one of the most acute problems in engineering is a significant depreciation of fixed assets, which reached 64.8% (in their full book value). A deterioration of metalworking equipment reached almost 70%. Retirement rate of machinery and equipment exceeds the rate of renewal in 4 - 5 times.

The annual rate of renewal of machinery and equipment shall not exceed 1%. Physically worn out equipment engineering company does not provide standard indicators, such qlt precision machining, the parameters of reliability and operating rules of time. As a result, the lag in performance as well as on the consumption of resources consumed.

Table 1

Financial and economic indicators of the largest machine-building enterprises of Ukraine

| The company's | Net income | | Net profit | | Current liabilities | | Coefficient of total liquidity |
|---|--------------------|----------------|--------------------|----------------|---------------------|---------------|--------------------------------|
| | 2012 million. UAH. | 2012 growth, % | 2012 million. UAH. | 2012 growth, % | 2012 million. UAH. | 2012 growth,% | |
| 1. Zaporozhtransformator | 3948 | 9,95 | 947 | 913 | 2854 | 14,24 | 0,75 |
| 2. Machine Design Flax Sumy NPO. N. Frunze | 3249 | 18,71 | 239 | 0 | 2604 | 31,15 | 1,32 |
| 3. Research and Production Complex Gas Turbine "Zorya" - "Mashproekt" | 2979 | 12,31 | 89 | 175 | 2867 | 18,36 | 1,34 |
| 4. Novokramatorsky Machine Works | 2373 | -13,87 | 77 | 171 | 719 | 56,11 | 3,83 |
| 5. Electrotiyazhmash | 1451 | 34,01 | 50 | 38 | 846 | 39,43 | 1,33 |
| 6. Turboatom | 1297 | 2,29 | 309 | 427 | 1587 | 96,02 | 1,68 |
| 7. EMSS | 1205 | -7,18 | 1 | 32 | 1006 | 53,87 | 0,86 |
| 8. Jabil Circuit UKRAINE Limited | 1103 | 14,24 | 16 | 30 | 228 | 4,18 | 1,01 |
| 9. Sumy plant pumping and power machine building "Nasosenenergomash" | 990 | -3,16 | 69 | 94 | 552 | -23,81 | 1,03 |
| 10. Yuzhkabel | 950 | -12,91 | 37 | 79 | 75 | -29,34 | 4,10 |

The second problem is insufficient targeted investments in machinery industry and the low efficiency of their use.

The low level of investment in the industry is due to the shortsightedness of the existing industrial policy, insufficient level of capitalization of the banking system, the high cost of investment loans and low credit attraction engineering industries.

Weak credit is determined by the attractiveness of engineering low profitability.

In addition, the home practice, most of the projects aimed at the development of mechanical engineering, is funded by the company's own funds (76.5% of the total investment in the sector), while in developed countries the ratio is reversed (70% -80% of the funds walking on the production, is usually borrowed or raised funds).

If you look at the statistics of investment in the engineering sector capital investment grew by 10% -20% per year. If in 2010 it amounted to 4.4 billion UAH, in 2011 it was 5.9 billion UAH. (+ 20%), and investments in the development of domestic engineering totaled 6.8 billion UAH. (+ 11%).

However, it is not much: for example, the program of development of mechanical engineering only state investments in the development of the industry were to make 18 billion UAH, that the enterprise sectors have not received [7, c. 59].

To solve the problems of investment in industry and in particular in mechanical engineering is much talk about revitalization and attract direct foreign investment. However, the study of the question to reveal the internal adverse conditions:

- the lack of growth in production due to the low effective demand of enterprises and the public;

- insufficient development of mechanisms to support exports;

- the presence of a low tariff rates for engineering products (for example, it is believed that the customs rate of less than 35% to invest in car production in Ukraine is meaningless).

In addition, the research revealed the following negative aspects, already established in the implementation of foreign direct investment in the Ukrainian economy:

- deformed sectoral structure of foreign direct investment: the concentration of investments in primary industries with relatively little attention to high-tech industries producing products with high added value, which potentially could be as a subject to Ukrainian exports:

- uneven distribution of foreign direct investment between the regions of Ukraine;

- limited range of investors, resulting in a number of potential investors does not include a significant number of prospective investor companies;

- weakening of control over the preservation of economic security: a potential source of threat is the divergent interests of the state and investors focused on early profit while minimizing initial costs.

Analysis of the experience shows that foreign manufacturers are basically two scenarios.

The first scenario is a result of the establishment of joint ventures and financial investments of control over the most competitive Ukrainian machine-building enterprises in order to capture their markets in Ukraine. After wearing demonstrative starting investment in real production collapses and turns into a joint venture distributor of foreign "investors" produced abroad.

The second scenario is the placing on the enterprises of the sector through joint ventures or long-term contracts ancillary industries included in the processing chain of production, which are the final link of Ukraine abroad.

We are talking about production in Ukraine labor, materials science and energy intensive parts and assemblies that do not contain significant know-how, with the cooperative production of which Ukrainian producers can count only on a small proportion of the total profit.

The transformation of the Ukrainian enterprises in support of export oriented production puts them in technological dependence on foreign partners and deprives the incentives to develop the production of its own high-tech products.

Promising opportunities and associated with an increase in the supply of Ukrainian products to South America, where he actively promoted products of power engineering and aircraft. Support, mainly in the form of the state order is also declared for aircraft manufacturers, passenger trains, locomotives, buses and trolley buses, agricultural machinery.

The possibility of the Ukrainian government to ensure local demand for these products is difficult to determine because of the uncertainty budget for 2015, which was based on inflated rates of GDP growth. The growth in demand without the use of budgetary funds can be expected unless

in power generation, where the program of modernization of production capacities in the area of coal mining and port facilities.

The third problem is the low level of competitiveness of products.

This problem exists despite the fact that the number of home equipment on the parameters not only inferior, but often exceeds the scientific and technical level of the Western countries. The relative competitive products of Ukrainian industry in the home market mainly due to the high cost of the Western models.

The fourth problem is unstable overall financial condition of enterprises engineering. Low (or negative) profitability production, holding capital expenditures from its own sources costs (due to lack of credit for investments), and finally a simple "decumulation" profit leads to the fact that the current assets enterprises for last four years were 30 - 40% the less than the current payables and loans and borrowings.

The fifth problem is increasing shortage of the qualified personnel, reducing the influx of young professionals the loss of continuity, aging Engineering in companies and as a result aging engineers in companies and as a result developing reduced intellectual capacity of the industry .

The sixth problem is that the machine-building complex is non-uniform on the structure. In it are available developing and depressive the direction. Depressive it is possible to carry the machine-tool industry, chemical, construction and road, communal-tractor and agricultural mechanical engineering to number.

Distinctions in subsectors are caused by a number of factors, but the major is the condition of the markets which enter production. In optimum situation there were subsectors making hi-tech means of production for mechanical engineering and other branches of a machine-tool construction.

Seventh issue is the reduction and sometimes loss of innovative component of the industry; focus on traditional, outdated technical solutions; copying foreign technologies.

The number of machine-building enterprises engaged in innovation, is only 12% of all enterprises in the industry [6].

In development of high-tech activity the intra firm science integrated into real sector of economy is urged to play a key role. In the leading industrial countries the company to perform the bulk of research and development: 65% in the EU; 71% in Japan.

Ukrainian same factory science has few resources (6% of expenditure on research and development) and focuses mainly on short-term solution to the technical problems of its own production, including by adapting developments made by third parties, to the specific production conditions.

According to experts, for the successful development of the industry it is necessary to pay attention to withdraw from the current level of 10% - 12% to the level of 20% - 25%. GDP in developed countries. For example, China, which is now the share of mechanical engineering accounted for about 15% of GDP, in 2013-2015 plans to increase investment in research and development by more than half.

It is expected that these costs in 2015 will amount to 2% of China's GDP (more than 210 billion Euros), with up to 80% of this amount will have it on the machinery - Beijing plans to not only reduce dependence on imports, but also to increase exports.

For example, China, and so is the world's largest manufacturer of machine tools, machine tool under the state program of development plans to increase its export volume to \$ 4 billion 2015 is eight times more than in 2010 of [7, c. 61].

So far, even without state home engineering continues to "keep the brand" and to be one of the engines of the Ukrainian economy. However, the lack of funds for modernization and problems with exports to the traditional markets do not allow the sector to develop its full capacity.

At a time when the financial crisis affects the real economy, may develop divergent trends.

Investigating mechanical engineering problems, it is possible to draw a conclusion on the remained deep crisis which continuation in the conditions of integration in Ukraine will inevitably lead to a primitivization of branch and bankruptcy of its enterprises.

And, as in Ukraine historically there was a high social importance of mechanical engineering, deterioration of an economic situation in the enterprises will conduct to decrease in a standard of living of considerable part of the population and can cause social shocks.

The crisis could increase the competitiveness of some sectors of Ukrainian engineering. As in 1999, the positive impact could have a process of import substitution. In the context of Ukrainian imports more expensive equipment becomes more attractive to consumers in terms of price. In particular, this applies to some types of machine tools, agricultural machinery, household appliances and electronics.

However, it should be borne in mind that the structure of production in the Ukrainian engineering has changed markedly over the last 15 years. In some sectors, engineering significantly increased the proportion of assembly plants that produce equipment from imported components.

For them, the benefits of the increased cost of imports will not be so large as to companies working with local suppliers. In particular, a very large proportion of these companies are now concentrated in the manufacturing of household appliances in the automotive industry and agricultural engineering.

The biggest advantage during the crisis have the machinery industry, which provide equipment strategically important sector of the economy. Statistics showed the best production of railway equipment manufacturers, as well as high-power turbines and generators for power. In addition, the support of the public funds can expect manufacturers of agricultural equipment, medical equipment. However, the global economic recession led to a decline in production, underutilization of enterprises with consequent negative economic and social consequences.

Conclusions. In order to change this situation and solve the problem, you need to improve the management system high-tech development of the technical capacity of the engineering enterprise.

It is necessary to develop:

- principles for the development of innovative strategies engineering enterprise;
- methods for developing high-tech development strategy of machine-building enterprise;
- organizational and economic mechanism for coordinating the development of high-tech with the overall strategy of the engineering enterprise..

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