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Evgenia Dyrda, Anastasiya Schepetkova, Olena Galushko
Pridneprovsk State Academy of Civil Engineering and Architecture
E-mail: steel-story@yandex.ru, a061094@mail.ru, olena_galushko@ukr.net

PERSPECTIVES OF UKRAINIAN MECHANICAL ENGINEERING DEVELOPMENT

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Theses are devoted to problems and perspectives of Ukrainian mechanical engineering development. Role of mechanical engineering in national economy is described. Problems of mechanical engineering, such as losing the competitive advantages, production decreasing, debts growing, ineffective assets structure, are investigated. Influence of European integration process on mechanical engineering enterprises is discussed.

Keywords: mechanical engineering, productivity, integration, Customs Union, European Union, assets, depreciation, innovations, production output, competitive advantages.

Introduction. Mechanical engineering is one of the most important sectors of the industry, plays a significant role in the socio-economic development of Ukraine. Mechanical engineering is intensive industry by resources and technologies. It contributes to the material and technical re-equipment of most other industries, to the automation and mechanization of production lines, to the optimization of working conditions, as well as scientific and technological progress of the country.

So there is an important aspect of enhancing the competitiveness of Ukrainian enterprises and economic of Ukraine as a whole. The level of engineering is one of the main indicators of economic and industrial development of the country .

Problems and perspectives of mechanical engineering in Ukraine. The share of mechanical engineering in economically developed countries is between 30 to 50% of the total volume of industrial production (in Germany - 53.6%, Japan - 51.5%, UK - 39.6%, Italy - 36.4%, China - 35.2%). It provides the technical re-equipment of all industry every 8-10 years. The share of engineering products in the GDP of the EU countries is 36-45%, in the U.S. - 10%. Russian mechanical engineering takes 18% of GDP [1].

Great potential for the development of engineering in Ukraine was formed during the USSR times. Ukrainian mechanical engineering was one of the leading industries in the USSR, as for production output and number of employees. Mechanical engineering in 1990 produced 31% of total industrial production. Ukrainian mechanical engineering has provided 45 % of the production of metallurgical equipment, more than 20% of the production of agricultural machinery, about 40 % of the production of military- industrial complex, and 97% of the production of diesel locomotives [1, 2]. And with the declaration of independence in 1991, Ukraine inherited this great potential of mechanical engineering production capacity from USSR. As a result mechanical engineering was more than 30 % of the industrial potential of Ukraine.

Ukrainian mechanical engineering complex includes more than 20 specialized industries, that is almost all branches of engineering. It serves the heavy industry and plays a crucial role in creating the material and technical base of the economy.

Releasing the conditions of production for various industries, mechanical engineering implements scientific and technological progress and provides comprehensive mechanization and automation of production. So in the modern conditions, mechanical engineering takes an extremely important role in accelerating of scientific and technological progress.

The features of all branches of the mechanical engineering complex are: a high degree of capital intensity, long pay-back period of investments for both fixed and current assets, dependence on a large number of suppliers, contractors and banks.

Important feature of mechanical engineering, which determines its position, is the availability of unused resources. Among these resources are: unused or partially used equipment, production facilities, slow moving inventory items; temporary underemployment staff; innovations which haven't been completely implemented.

Ukrainian mechanical engineering is characterized by a high level of production concentration. The potential of Ukrainian could be compared with the potential of Great Britain and France combined. But level of branch development can not be compared.

Ukrainian mechanical engineering products in general, with the exception of certain types of goods, are not competitive on the world market and the domestic market due to many factors. One of them - the reduction of expenses on research and development, which led to a decline in the quality of products, impede the process of their updating, and loss of previously conquered market position. Integration of Ukraine to EU will bring a lot of benefits and new possibilities, but for mechanical engineering it will be significant challenge, which domestic enterprises wouldn't like

to surface, as global mechanical engineering corporations will enter Ukrainian market not only as producers but as investors. And current owners of enterprises wouldn't be able to keep their shares and control over domestic market.

Large Ukrainian mechanical engineering plants suffer technical obsolescence and technological backwardness of production capacity due to the large depreciation of fixed assets and lack of investments. Depreciation of fixed assets of Ukrainian mechanical engineering complex is from 77% to 98%. The majority of mechanical engineering enterprises are in the "hole of debts". As industry has been strongly affected by global financial crisis, it's difficult for enterprises to improve situation and pass over the crisis of debts. Ukrainian banks don't offer any special conditions of interest rates decreasing and debts restructuring to support industry and economic development of all country.

Key market for Ukrainian mechanical engineering enterprises is CIS. About 90% of domestic car wagons exported to the CIS countries, mainly in Russia. Such dependence on one market has played a cruel joke with the companies. During the global crisis the production of almost all plants have fallen by 70-80% because the Russian clients decided to postpone with buying of new car wagons.

Mechanical engineering output analysis. For last 5 years, the number of unprofitable industrial enterprises have taken more than 30% of the total number of loss-making enterprises in Ukraine. Profitability of production is about 5%. Trends of mechanical engineering were developed against the background of relatively optimistic experts forecasts (they promised steady growth in the next 3-4 years).

By forecast of the Ministry of Industrial Policy, the output of mechanical engineering in Ukraine in 2015 will reach amount 74738 million USD and will exceed 117% compare to previously achieved maximum (63919 million USD). But experts of Astrum Investment Management prevail that the rate of output growth in the industry continue to fall.

Structure and dynamics of Ukrainian mechanical engineering production are given at Fig.1 and Fig.2.

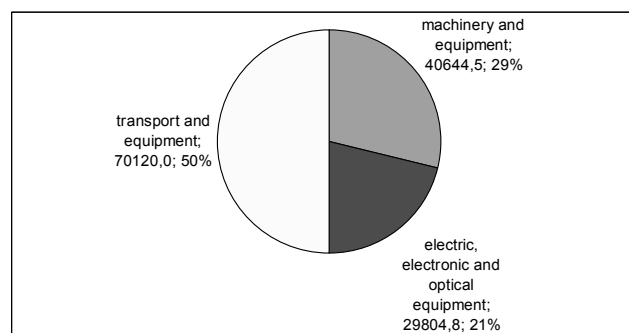


Fig.1 Structure of Ukrainian mechanical engineering production in 2012 (data by [3]).

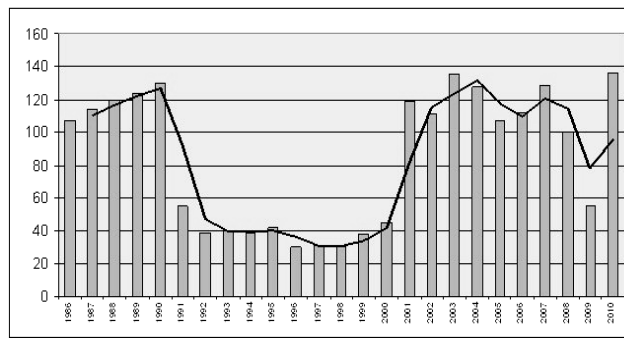


Fig.2 Dynamics of Ukrainian mechanical engineering production (in % to previous year, data by [3]).

Due to the reduction in global demand in 2008-2009, products of mechanical engineering lost sales at overseas markets. Period of 2010-2001 considered as time to overcome the crisis, recovery capacity, increase production and sales.

At present, much attention have to be paid to the products life cycle analysis and diversification, innovations and development, implementation of new technologies, modernization of production etc. Otherwise Ukrainian mechanical engineering will be uptaken by global corporations. And there is a doubts, if this corporation will be interested to develop domestic production. More likely they will clear away the Ukrainian market for own products.

Conclusion. For the integration of Ukrainian mechanical engineering to other countries, especially neighboring EU countries and formed USSR, it is very important to build the interstate specialized mechanical engineering complexes, based on territorial agglomerations and engineering units. Such strategy will allow to keep domestic production capacities and increase their competitiveness.

Problems and prospects of engineering directly related to the economic development strategy of the country. To increase it's efficiency, next measures have to be realized:

- Structural adjustment of the industry with an increase of high-tech and innovative components;
- Development of new modern products - technological equipment for all branches in order to reduce energy, material and labor costs;
- Increasing the competitiveness of products;
- Orientation of products both to the needs of the domestic market and the export possibilities;
- Using the energy- and resources saving technologies.

Ukrainian mechanical engineering enterprises have to improve product quality and thus save on losses from rejects, as these saved losses could become a source of

funding for the development and implementation of innovative products. In turn, innovative products will bring profit, which could be directed at further innovations. So sustainable development will be achieved.

References

1. Minprom. “*Mashinostroenie Ukrainy: tekushie tendenzii*” [Mechanical engineering of Ukraine: current trends], <http://minprom.ua> [Online]. Available: <http://minprom.ua/print/755.html>
2. D.S. Simonenko “*Problemy finansuvannya innovatsiynoi diyalnosti mashinobudivnyh pidpriemstv*” [“Problems of financing the innovation activity of mechanical engineering enterprises”], *Prometey magazine*, vol. № 2 (32), pp. 59-62, Feb. 2011.
3. Derzhavnyy komitet statystyky Ukrainy [State committee of statistic of Ukraine], www.ukrstat.gov.ua [Online].