



Modernization project of LLC «IZ-KARTEX named after P.G. Korobkov»:



In 2012, the Unimatic Engineering Center developed a complex project for the modernization of a large machine-building enterprise LLC «IZ-KARTEX named after P.G. Korobkov» based in St. Petersburg, for the period until 2020. LLC «IZ-KARTEX named after P.G. Korobkov» is the largest manufacturer and supplier of open-pit electric excavators in Russia and the CIS countries. IZ-KARTEX products are supplied to mining enterprises in Russia, Ukraine, Kazakhstan, Belarus, Uzbekistan, Mongolia, China, India and other countries.

During the development of the project, a technical audit of the enterprise was carried out and also a complex analysis of all the main technological stages of manufacturing products:

- mechanical restoration;
- assembly and welding processes;
- processes of preparation and colouring of finished products.

The company's specialists analyzed the capacity utilization and identified bottlenecks. Within the framework of the project, an analysis of over 2500 parts of the stock was performed. After carrying out the necessary analysis, the parts were divided into groups and representative parts were selected from them and these represented the groups of parts with similar processing technologies (by dimensions, grades of material, equipment used, etc). 3D models of parts and technological processes for machining parts were developed, projects on automation of welding processes and heat treatment were proposed. The calculations of the complexity were carried out with the selection of cutting and auxiliary tools and technological equipment, and devices. Based on the analysis and developed design technologies, the customer was proposed with the use of modern progressive equipment.

In the scope of the project by the Unimatic Engineering Centre:

1. A schedule has been developed for putting new equipment into operation and decommissioning old equipment without stopping production.
 2. Calculation of the load of the main technological equipment by years and the balance of enterprise capacities by years until 2020 as well as the amount of ODA.
 3. Development of design layouts for the enterprise's workshops, considering the phased replacement of equipment according to the developed delivery schedule, with routes of parts being to workshops and between workshops, and at times interoperational storage places, etc.
 4. Proposals have been developed to equip working places and to optimally organize and equip points of technical quality control of products.
 5. An investment plan and technical and economic indicators to be achieved have been developed. Implementation of the project in full will allow the company, by increasing productivity and quality, to master new products, increase production output by more than 2 times and organize compact and efficient production.
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Integrated processing of large machine parts:

According to the project of complex modernization of production of LLC «IZ-KARTEX named after P.G. Korobkov», St. Petersburg, the Unimatic Engineering Centre implemented two technological projects for the complex machining of large-sized parts on a turn-key basis.

- Project of integrated gear shafts with a maximum module of 50

For complex machining of gear shafts, Unimatic supplied a multifunctional turning and milling machining center of the Japanese machine-tool company Mori Seiki model NT6600 DCG / 3000C. Due to the introduction of complex processing technology, a progressive cutting tool and the combination of turning, milling, drilling and gear hobbing operations on one unit of equipment, the specialists of the Unimatic Engineering Center managed to achieve a reduction in the production time of gear shafts from several weeks to several days.

According to the developed technology, on the NT6600DCG / 3000C OC, the shaft teeth are finally processed. After manufacturing this part on such a machine, only the high-frequency teeth are hardened and the diameters are ground for bearings, after which it goes directly to the assembly.

The project of complex processing of shafts and axles:

For processing shafts and axles with a diameter of up to 880 mm and a length of up to 6.5 meters, Unimatic supplied a multifunctional turning and milling machining center of the WFL company (Austria) of the model M100 MILLTURN / 6500.

The Unimatic Center specialists, together with WFL, implemented a unique technology of deep drilling and boring to a depth of 2 meters at a turning and milling machining center. Special boring bars for deep processing are installed in the milling head automatically from the Pick-up station.

Thus, it is possible on one piece of equipment to combine the multifunctionality of a multi-axis turning-milling machining center and a deep drilling machine.

Due to the introduction of modern processing centers with advanced technologies, Unimatic specialists managed to:

- significantly reduce the machining time of large parts;
 - improve the quality of manufactured products;
 - simplify transport and logistics operations;
 - free up unloaded production facilities.
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An integrated approach to solving problems of machining production:

In terms of the developed project “Complex modernization of the company LLC «IZ-KARTEX named after P.G. Korobkov» until 2020, the Unimatic Engineering Center won the competition for the development of the technological project “Modernization of the small assembly area” and this project is being implemented on a turn-key basis.

The company's specialists conducted an analysis of the stock. Detailed technologies, control programs for 42 parts were developed, cutting, auxiliary tools and clamping tools were selected. Five units of advanced metalworking equipment from one of the largest Japanese machine tool companies in the world Mori Seiki were delivered, including:

- 4 turning OTs Mori Seiki NLX2500 SMC with bar loaders;
- 1 Mori Seiki NVX5080 milling OC for 4-axis machining.

The implementation of this technological project allowed to free up 28 units of outdated equipment and production areas (while maintaining the volume of production), and to reduce labour intensity by more than 3 times.
