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How Metinvest develops new products

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Metinvest began to develop new products centrally in 2010. A team was formed, and a regulation was developed that describes the process for studying, budgeting and mastering the production of new steel products at the Group's enterprises. The document streamlined interactions between plants, sales channels and the management company as part of this process.

Now the enterprises have technical committees for new product development. They are involved in developing projects and improving the consumer properties of products, as well as agreeing on product standards and product catalogues. The committees comprise managers and relevant specialists from factories, sales services, industry experts and other units involved in the process.

270 new products released by Metinvest from 2010 to 2018

Since 2014, the Marketing Department of the Sales Directorate has coordinated new product development projects and the work of the technical committees.

We can develop the simplest products – from idea to production – in two months. This includes flat products: adjusting rolled and sheet steel production with a basic set of properties. For such products, we do not need to purchase additional equipment or develop and adjust complex technological regimes. Launching the production of some new types of

long products

can take more than a year, since we need to purchase new mill rollers and roller guides, as well as other materials.

The new product development process has five stages:

Idea and market analysis

Technical and economic analysis

Preparing for production of new types of metal products

Pilot batch production

Commercial production

Example

In 2012, the Polish company Gotowski received an order to build an automobile bridge over the Vistula River. The developer sought a solution to reduce steel consumption without sacrificing bridge strength.

Metinvest developed a new product especially for this project: the S420M-S460M thermo-mechanically hardened steel sheet, which meets the EU's EN 10025-4 standard..

> Thermo-mechanically controlled processed (TMCP) steels make it possible to achieve a fine-grained steel structure that provides high strength, good mouldability and high resilience. TMCP steel products contain less carbon and allowing agents, which ensures good weldability.

For the bridge's construction, Azovstal delivered 6,000 tonnes of heavy plate made of S460M steel. This product made it possible to reduce the quantity of steel used in the construction process by 27% compared with the application of traditional steel grades.

The advantages of TMCP steels include:

Reducing the weight of bridge metal structures while maintaining load-bearing capacity

Increasing construction safety by reducing the amount of work at heigh

Saving on total project costs

Reducing construction time

An automobile bridge in the village of Kamen connects Lyublin with Rad and Kielce. The steel structure with reinforced concrete flooring is made up of 10 spans. The bridge is 1 kilometre in length with two car lanes and a bike path.

Construction took almost three years. In 2015, Gotowski received an award for the application of new technologies and design solutions in the construction of this bridge.

1. Idea and market analysis

Ideas for development can be formed based on the Group's product and technological strategies, surveys and sales channel offerings, employees of enterprises and other departments of the Group, as well as specific customer specifications. Marketing experts analyse the market to determine the demand for a product, the potential market volume and the possible profit that can be generated.

2. Technical and economic analysis

The plant analyses the possibility of producing a new product at its facilities, develops the project technology, and calculates the required funding and expected level of metal production costs. For example, the depreciation period for rolling stock purchased to make long products is one year, so the new profile, taking into account the additional development costs, should pay off within this period.

Comparing the results of the market and technical studies, the technical committee performs a technical and economic analysis (TEA) and decides on the feasibility of developing a new product. If the TEA shows that making a new product will be profitable and optimal in terms of production time, we move on to the next stage.

We can begin to develop a new product either to a customer’s order or to meet future market needs when we see the potential for a product.

3. Preparing for production of new types of metal products

The plant develops a final project implementation plan and technological documentation for the required equipment. At this stage, funding is allocated and the missing tools and materials for metal production are purchased. This is a rather lengthy process: purchasing rollers can take up to nine months. The foundation for development and further serial production is prepared – calibrations are developed, rollers are bored, and auxiliary tooling is manufactured. Technological services of enterprises develop a basic process project that they will use to make a test sample of the new product.

4. Pilot batch production

When we have completed the preparatory work, we begin to plan pilot production, because it should not significantly impact current production.

We make a small batch of the new product. At every production stage, we analyse the selected technology and, if necessary, make adjustments.

This gives us a pilot batch of the product: from a couple to several hundred tonnes, which we either immediately deliver to the customer or send to warehouses for further sale. The end consumers of the new products can participate in their inspection, and qualification tests can be performed not at the factory but in specialised third-party laboratories.

Customers test the product and provide feedback. If the feedback is positive, we begin commercial production. Where correction is needed, we take this into account when producing the next batch to bring the product to the required level of quality.

We take a holistic approach to promoting new products on the market. We have meetings where, together with the sales team, we explain to the customer the new product's advantages compared with traditional materials and discuss the delivery conditions for the pilot batch. We take part in the processing of the product. We develop informational and advertising materials, as well as advise customers. We try to offer the customer a more profitable alternative to what they usually use. For example, say that a customer buys a new type of metal: it is thinner but stronger. This means that during further processing, less time will be spent on manufacturing and fewer welding materials will be consumed. And, perhaps, some stages of creating the final metal structure can be excluded.

5. Commercial production

When there are no further questions regarding the technology and quality of the new steel product, we begin its commercial production.

- We ramp up production and sales to the planned volumes;
- We offer the new product to a broader circle of customers, provide technical support and expand the geography of deliveries;
- We train our sales team so that they can explain the new product's advantages and features to the customer.