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Forbes Ukraine: Metinvest Introduces AI for Product Quality Control at Zaporizhstal

Metinvest Group's IT company, Metinvest Digital, has developed an AI tool that helps to control product quality at Zaporizhstal. A recent article by Forbes Ukraine explored how the Group is saving money with this solution and why scaling it to 11 other plants might be challenging.

Speaking at the ForbesTech 2024 conference in November, Maksym Balanyuk, head of the R&D centre at Metinvest Digital, announced that the Metinvest mining and steel group has implemented an AI solution for production quality control, which is projected to save the Group US$250,000 annually.

The AI identifies defects during the production of slabs, a semi-finished steel product used to manufacture sheet metal. These slabs are produced at Zaporizhstal, and the working name of the solution is ForgeCheck.

Zaporizhstal is one of Ukraine's largest producers of pig iron and rolled products. Metinvest also processes slabs at this plant. According to YouControl, Zaporizhstal's revenues for the first nine months of 2024 reached UAH53.1 billion. How exactly does AI reduce the percentage of customer complaints and save the Group money?

How AI Works in Production

Metinvest has been testing artificial intelligence since 2021. According to Balanyuk, the technology was deployed at the Mariupol plants to evaluate scrap metal quality, analyse the sintering process, monitor wagon traffic and audit the movement of coil carriers on site. He noted: "The Mariupol plants' experience has been invaluable: we did not start from scratch."

Zaporizhstal began using AI for product quality control in June 2024. The solution helps employees to quickly detect defects during slab cutting. Balanyuk explained that if a defect is detected, it appears in red on the monitor. If there is a defect that the system cannot classify, it appears in yellow, while green indicates no defect.

The model's accuracy is 75-85%. Is that enough? A head of the AI practice at a large Ukrainian manufacturing company, who spoke anonymously as he was not authorised to comment, believes that this is acceptable for a pilot solution. He added: "Given the uniformity of the objects, the model can be improved to 97%."

According to Balanyuk from Metinvest Digital, the main cost saving comes from reducing the number of customer claims. He added: "We also save on electricity because the heated metal does not sit idle if slab cutting is delayed."

Balanyuk did not disclose how much Metinvest has invested in the solution. He noted: "We spent approximately 1,000 hours developing the first version."

The aforementioned head of the AI practice at a large manufacturing company stated that developing a similar

solution from scratch can cost up to US$80,000 when using open-source technologies. He noted: “Most of the expenses go towards the team’s work, with up to US$10,000 spent on infrastructure.”

Scaling Prospects

Metinvest Group’s portfolio includes 12 steel plants, some of which are located in Ukraine’s occupied territories. The parent company, Metinvest B.V., reported a profit of US$179 million in the first half of 2024.

According to Balanyuk, scaling AI solutions for slab quality control is challenging because the Group’s enterprises produce various types of products. He noted: “The priority for next year is to develop and launch the second version of the AI tool into commercial operation.”

By his calculations, this will help to reduce the percentage of product claims by 60%. Balanyuk stated: “The figure will depend on production volumes; if they increase, the financial savings will also grow.”

Metinvest is potentially ready to sell the solution to competitors. Balanyuk noted: “Once we finish testing the second version, we will prepare an offer for potential partners operating in this area.”

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https://metinvestholding.com/en/media/news/metnvest-zaprovadiv-sh-dlya-kontrolyu-yakost-produkc-na-zaporzhstal-forbes-ukraine