

WRITTEN BY



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# WHERE THE TRADITIONAL MEETS THE NEW

Eastern Slovakia possesses several elements that make it conducive to developing a robust innovation ecosystem, which could be defined as a complex network of individuals, organizations, institutions, and resources that interact and collaborate to foster innovation and economic development. With its rich industrial heritage, skilled workforce, and research and development (R&D) capabilities, the region has the potential to transform into a hub of innovation. The presence of a steel mill can play a pivotal role in shaping this ecosystem.

U. S. Steel Košice, USSK, is the largest flat steel producer in Central Europe. With a capacity of over four million tons of steel, USSK exports over 90% of its production to customers in automotive, construction, packaging or machinery industries. USSK consists of over ten division plants, each of which has its specific process and unique challenges. Hence, USSK can be seen as a perfect playground for innovation in all shapes and forms – just imagine a fenced area of 12km<sup>2</sup> with over 300km of railway, 100km of roads, hundreds of cranes and individual production lines processing millions of tons of various material.

Moreover, steel is a globally traded commodity and the industry demonstrates forces typically described in economic textbooks (such as oversupply, marginal costs, substitution, etc.) in

real life. Steel players can typically focus on cost reduction (to be able to undercut competition or enjoy better margins) or differentiation through proprietary products (e.g. higher strength steels). Both strategies require innovation and finding ways to make steel in a more efficient way or make better steels, or ideally both.

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USSK has its own R&D which has traditionally focused on developing new products and improving our production processes. Moreover, USSK has closely collaborated with universities, especially the Faculty of Metallurgy, Materials and Recycling at

TUKE, since the mill started operating. In recent years, we have added another dimension to our innovation efforts – digital and analytics to turn the gigabytes of data our production lines produce every minute into assets. We have built a structured program to drive value creation through adoption of new technologies such as machine learning, generative AI or machine vision. For example, we developed a suite of advanced optimization models helping us procure key raw materials or a suite of machine learning models advising our operators in the steel shop. In addition, we have developed a tool to automatically analyze drone footage for leaks from mains or identify quality defects on our coils. To drive more value faster, we have turned to the local ecosystem for inspiration, knowledge and new ideas and started working with established partners in new ways and with new partners altogether.

We started new ways of collaboration with universities. At TUKE, we have started to support PhD students in a newly established AI4Steel Lab, where they work on data science problems applicable to USSK. Moreover, we entered into the Live IT (Zive IT) program in which student teams develop solutions for companies – already the first cohort delivered a truck loading optimizer which is now saving money

The city of Košice has been an important regional center of business for centuries. In the 1960s, it was thanks to steel making that the city grew to its size and shape we know today. However, the IT sector in Košice now employs more people than steel making and is growing further. Does that mean that writing code will fully replace casting steel? Not necessarily.



in real life. At UPJS, we set up a data science academy for our employees, best graduates of our internally run data and analytics bootcamp.

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We have also started scouting local companies, established and new, for expertise and potential

projects. We have already completed several such efforts and, for example, are now working with Deutsche Telekom IT Solutions on a pilot in our hot strip mill and identifying use cases for augmented reality in our maintenance activities, or having discussions or ongoing projects with several smaller companies (such as Blue Lemons or Nordics.io just to list a few examples).

A thriving innovation ecosystem can drive technological advancement and economic growth in Eastern Slovakia. We believe Eastern Slovakia has the potential to create a flourishing unique ecosystem where traditional industry and new economy can live in symbiosis. The collaboration between USSK and other ecosystem players can enhance the competitiveness of the mill while providing a springboard for other players. We firmly believe that our contribution to the ecosystem will position the region as a center for innovation attracting other companies, investors and entrepreneurs.