# VMAP analytics

## Energy-saving furnace control enhances sustainability and quality in the steel industry

In industries that produce steel and other metal products, achieving optimal heating and quality control is crucial for ensuring efficient production and minimising defects. The Furnace Optimisation Control System (FOCS), co-developed by VMAP analytics project partners Prevas and Swerim together with Swedish industry organisations, offers advanced features such as precise temperature calculations, zone temperature control, and intelligent pacing control. 90% of all steel produced in Scandinavia is heated in furnaces controlled by FOCS. However, even with such sophisticated capabilities, challenges like skid marks (insufficiently heated spots) on reheated slabs in walking beam furnaces persist, causing quality issues during subsequent processing stages such as hot rolling.

The 'Furnace use case' developed by Prevas and Swerim in the ITEA project VMAP analytics addressed the skid mark problem using FOCS. The FOCS solution is a specialised 3D model to handle skid marks during slab heating. This model works online with the factory machine, accurately calculating temperature differences and quickly figuring out where the skid marks are making things too cold. Then, FOCS adjusts how the furnace heats things up to avoid making skid marks.

Fixing skid marks with FOCS helps a lot of people. It means the metal coming out of the furnace is better quality and there's less waste. Factories save energy too because they don't have to redo things. Implementing the FOCS system on an existing furnace typically leads to 5-10 % energy savings, making the metal-making process smoother and more cost-effective. Additionally, the use of a digital twin allows FOCS to continuously optimise its performance, helping the steel industry becoming more robust and environmentally friendly.

**More information:**
https://itea4.org/project/vmap-analytics.html