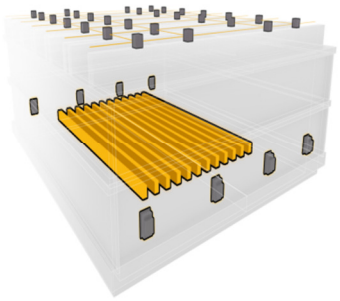
OPTIMIZED MEASUREMENT OF STEEL SLAB TEMPERATURE WITH RADAR TECHNOLOGY

Project goals and vision

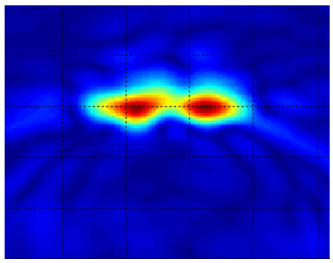


Project aims to optimize energy consumption of heating furnaces with radar technology and achieving more consistent quality in the steel industry. This is performed by measureing expansion of steel slabs in a furnace in order to determine the temperature of the slabs. This information can be used to optimize manufacturing regulations and furnace control. The goal is to determine temperature of slabs better than ±10°C.

High accuracy

"The project has improved radar accuracy, and we are now reaching a resolution of less than 0,1 milimetres", says Patrik Ottoson, CEO at Radarbolaget. This has gone hand in hand with increment of dynamics in the system, *i.e.* to reduce noise and interference effects on the radar signal. Sandvik has invented an expansion-to-temperature model linked to temperature, size, grade, and pre-heating parameters.

SAR-imaging



The project is mainly focused on accuracy of measurement and modelling. In order to measure with high accuracy, it is important to know what is being measured (corner or edge of slabs, billets or blooms). Therefore, radar imaging and SAR (synthetic aperture radar) is important. In most furnaces, dimension varies continuously, which affects hit area of the radar signal. In cooperation with the Swedish Defense Research Agency, Radarbolaget has implemented SAR-imaging on furnaces.

Online tests at SSAB and Sandvik

Developed of radar systems, modeling, accuracy and dynamics are almost finished and ready for online tests under real circustances at SSAB and Sandvik. On-site and online solutions will be implemented in order to acquire a lot of data during the project time.

Radarbolaget

Radarbolaget is an innovative company using complex measurement systems with radar sensors for the steel and metal industry, energy and paper, and process industries. We have proprietary technology and comprehensive solutions for monitoring of hot and difficult processes. We also hold a worldwide patent for measurement in heat treatment furnaces with radar sensors. Customized projects are constantly evolving new solutions in measuring and sensor technology.

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