Volkswagen operates a cutting-edge, energy-efficient foundry in its Hannover factory, which supplies cast parts to the engine factories and for automotive engineering. In this foundry, Siemens has carried out several validations of PROFINET networks to help keep the equipment plant working properly.

Production equipment in a foundry are critical systems, since malfunctions can lead to unscheduled melt cooling and thus cause considerable damage to the plant.

An unscheduled shutdown would significantly disrupt the production workflow. It would also be time-consuming to correct and cost an enormous amount of money, so measures are taken to prevent such events from happening in the first place. For the plant portion of the PROFINET data communication network, this is done through validation.

When the new melt lines 3 and 4 were built, Siemens was therefore hired to carry out not only the necessary electrical and automation work but also to validate the PROFINET network.
Siemens PROFINET validation – a powerful portfolio
When commissioning new plants or during upgrades, Siemens checks the conformity of its PROFINET network with the applicable standards of the PROFIBUS & PROFINET International umbrella association, and also provides other benefits through additional services:

• Network design and planning check (identifying planning and configuration errors)
• Physical check of the network infrastructure (identifying load peaks and communication bottlenecks)
• Data check (identifying topology deviations and telegram errors) and
• Data stress check (locating vulnerabilities and transparency in network reserves).

These checks supply the necessary information on whether the plant was built according to specification, identifies deviations, and sheds light on the available network reserves. The validation results are documented in a detailed report.

Finally, the PROFINET validation can also be used for fault analysis when faults occur in existing PROFINET networks.

Validation passed – high plant availability and ready for Industry 4.0
For the foundry department, the validation confirmed that the PROFINET networks of the new melt lines 3 and 4 were constructed according to specification, are in proper working order and have sufficient capacity reserves for reliable plant operation.

This reduces the likelihood of network infrastructure malfunctions, which increases plant availability.

Proof of sufficiently dimensioned, stable data networks also provides a solid foundation for increasing digitalization in production. The PROFINET validation from Siemens is thus a fundamental building block on the path to Industry 4.0.

“PROFINET validation is an important building block for us to ensure the highest possible plant availability.”

Heiko Tegtmeier, Electrical Planning, Volkswagen Komponente, Foundry Department, Hannover