TVARIT

Source / Link: https://www.tvarit.com/

Technology area:	Type of good practice:	Target market segments:
☒ Artificial Intelligence	☒ Company	☐ Discrete (smart) manufacturing
☐ Big Data	☐ Project	☐ Automotive
☐ Digital Twins	☐ Initiative	☐ Aerospace
☐ IoT and IIoT	☐ Programme	☒ Metal processing
☐ Cybersecurity	☐ Other	☐ Consumer goods
☐ VR/AR		☐ Pharmaceuticals and chemistry
☐ Robotics		☐ Food and agriculture
☐ Automation		☐ Health
☐ System Integration		☐ Textiles
☐ Smart Sensors		☐ Others
☐ Additive Manufacturing		
☐ Other		

Summary:

TVARIT GmbH is a leading European AI company for industrial artificial intelligence. It aims to help the metalworking industry worldwide achieve sustainable growth and efficiency by complementing human capabilities with industry-specific AI models to reduce disruptions in production and optimize resource utilization. This is also TVARIT's vision: to lead the world towards sustainable and zero-waste manufacturing. As experts in the application of artificial intelligence for process optimization in foundries, Tvarit GmbH helps its customers to reduce rejects, reduce CO2 emissions, avoid machine failures and increase productivity with the help of the analysis of production data. With the help of Tvarit GmbH software solutions, companies like MAXION, KAMAX, and HINDALCO have achieved proven results by successfully reducing scrap in their metal casting processes by more than 35%. The software uses a unique hybrid algorithm based on the metallurgical equations of the specific casting process and uses machine learning to get more accurate insights from production data.

Detailed description

TVARIT's AI-powered technologies are applicable in a range of industries, but the company has gained significant traction in the metal production and processing industries. Steel mills, for example, are massive in data, and learning algorithms only get better as they learn. Steel mill owners confront to

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enhance their quality and profits glamorously from investment in AI, since AI can expose unforeseen business possibilities as well as operational competences. AI can concurrently increase safety and environmental impact – serving to prognosticate caster breakouts or decreasing overall plant waste and CO2 emissions. To reach these benefits, process specific hybrid AI models are used to analyze how the various influencing factors in the individual industrial process affect the quality of the final product. To derive these insights, the AI model uses a variety of data, such as domain input data, input material data, industrial machine data and quality control data. By analyzing this vast amount of information, the AI algorithms are able to make quality predictions that help to recognize deviations in real-time. Additionally, root cause analyses can define the reasons for failures, and all of this data can be used for the creation of recommendations for optimal casting settings that help to reduce scrap.

Beneficial Results

The use of AI in the metals production and processing industries has been proven to lead to a number of benefits for the organisations, some of which are:

- Up to 1.100.000 € of savings per plant by reducing waste of man, machine, material & energy;
- Up to 5% increased OEE through increased productivity & reduced scrap;
- up to 7,2 GJ reduced energy consumption per plant due to reduced rework;
- Up to 60% reduced scrap with suggestions for optimal casting parameters.

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