Industry Presentation

Title: **iForge – Automated Final Inspection**

Lukas Heyer

Authors: ***Martin Scholles, Axel Rossbach, Lukas Heyer***

Speaker: **Lukas Heyer**

Company: **SMS group**

Part of Product Management & Product Development at SMS group – Forging Plants since 2023, mainly working on Closed-die forging products

Abstract:

With iForge Final Inspection, SMS group introduces a comprehensive tool on the road to digitalization of the die forging process, focusing on the final inspection stage of the production chain. Traditionally, this inspection has always been a manual process, but the demand for automation is growing due to the monotonous and physically demanding nature of the work. Our innovative system uses bin-picking robots and multiple camera systems to instantly inspect parts, reducing reliance on human labor and increasing efficiency. Unlike conventional methods that compare CAD models with laser-scanned point clouds, our approach processes synthetic image data from CAD models, which is scalable and adaptable to various products. This method leverages AI trained on a synthetic model preloaded with all possible defects, allowing for rapid and precise defect classification without extensive retraining. The system offers significant advantages, such as unlimited data generation, simulation of diverse surface textures, and dynamic environmental conditions. It ensures an objective, certifiable, and future-oriented inspection process, compliant with IATF 16949 standards, and eliminates human errors and subjective judgements. The financial benefits of this automated solution are substantial, with the potential to replace several employees and produce 3.3 million parts annually, resulting in significant cost savings and process efficiency.