

PAM 4.0 - The intelligent skimming machine for hot operating conditions

Steel is one of the most widely used and multifunctional construction materials of nowadays. During the processing of raw iron or secondary steel, the so-called slag is produced as a quality-reducing side product. This slag is currently removed by a machine manually controlled from a control stand located in the immediate proximity of the hot melting pots.

In the project "The intelligent slag removal machine for hot operating conditions", PAM4.0, the AMT Institute, together with TML Technik GmbH, designs a functional and marketable new slag removal machine with an automated and improved slag removal process for the first time. The aim is improve the safety as well as the efficiency of the complete process.

On the first hand, the geometry, statics, kinematics and control of the entire machine, in particular the support arm and the deslagging shield, are being redesigned. This will make automation possible with the aim of optimising slag removal while conserving resources. On the other hand, a suitable sensor system is being developed that detects the floating slag on the up to 1500 °C hot melting surface and recognises the relative position of the deslagging tool to the melting ladle. With the help of this sensor data, a specially developed software programme determines the best possible deslagging route. From the newly added teleremote stand, the deslagging process can be monitored from a safe distance. Automation is engineered with the aim of optimising slag removal as efficiently as possible.

This project thus contributes to increasing work safety, improving the overall efficiency of the deslagging process and producing steel in a way that conserves resources. The automation and digitalisation of dangerous and difficult work processes contributes to a safe, efficient and responsible supply of raw materials.

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