

Alcoa Kitts Green is the UK's largest Aluminium rolling mill. The facility is part of Alcoa's Global Rolled Products business and predominately serves the Aerospace, Defence and General Engineering Markets with Rolled Plate, Cast Slab, and Aluminium Lithium Plate & Billet. Mechatherm were awarded the contract to install RFI & Pressure Controls to their existing furnaces.

With environmental and Health & Safety legislation getting ever tougher, more and more Aluminium producers are looking to improve the safety and efficiency of their existing equipment and operations. This is often done by the integration of new technology.

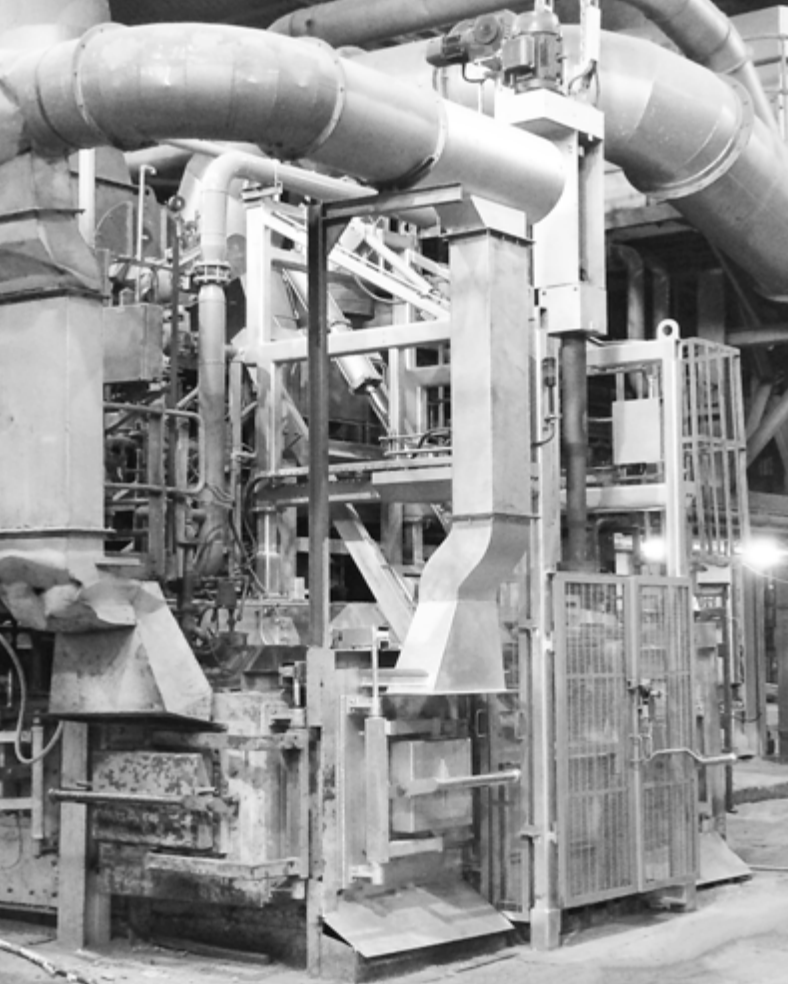
Mechatherm have recently received an order from Alcoa Kitts Green UK to supply, install and commission three automated rotary flux injectors and mechanical furnace pressure control systems onto their existing holding/casting furnaces.

The remit of the project is to reduce Chlorine emissions, reduce cycle time and operator involvement and better control furnace pressure output to newly installed fume abatement system.

Mechatherm working closely with Pyrotek, the manufacturer of the RFI, developed a custom engineered solution that can not only be located within a constrained operating space but also meet stringent performance and emission levels.

The units are mounted on the side wall of the furnace. In the vertical standby position, the mixing shaft and impeller are completely removed from the furnace and easily accessible. For operation, the mixing shaft and impeller pivot into position. The impeller is completely submerged in the molten aluminium, maximizing the





BENEFITS OF RFI & PRESSURE CONTROLS:

- **Reduced chlorine emissions**
- **Reduced cycle times**
- **Reduced hydrogen, alkali & inclusion levels**
- **Improved bath circulation & homogeneity**
- **Improved operator safety**

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mixing action, while providing efficient degassing for metal cleaning.

The scope involved extensive modification to the furnace wall and roof structure to implement the new access door. The structure was FEA modelled prior to manufacture. The wall, roof and hearth refractory were replaced and a ceramic tile was installed under the rotor position. The RFI is mounted on a support frame connected to the furnace structure and foundations. A RADAR system was installed to monitor the metal depth and prevent RFI operation if it is insufficient.

The damper is of the butterfly type, using high temperature steel and operated via a pneumatic positioning cylinder located within the existing ductwork.

Additional safety features were incorporated with regards to RFI operation and holding furnace door operation.

The installation and commissioning were carried out working around the clock in order to fit within the shutdown timeframe.

Performance trials proved very successful with considerable reduction in Chlorine, improved metal quality, bath homogeneity and pressure control with reduced operator involvement.

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