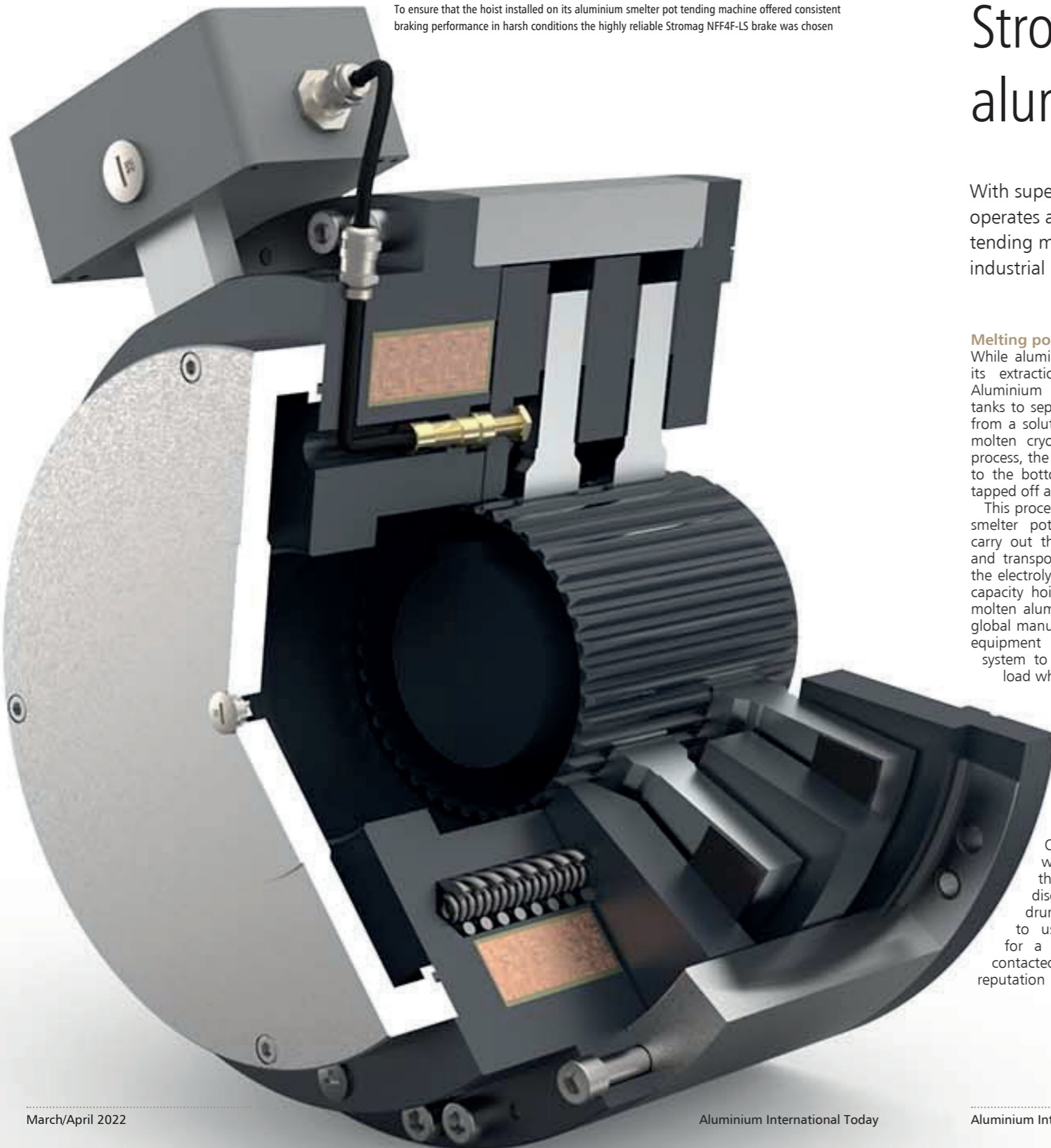


To ensure that the hoist installed on its aluminium smelter pot tending machine offered consistent braking performance in harsh conditions the highly reliable Stromag NFF4F-LS brake was chosen



## Stromag brake takes the heat on aluminium smelter pot tending machine

With superheated molten metal moving through the facility, aluminium smelters need equipment that operates at the highest level of reliability. To ensure that the hoist installed on its aluminium smelter pot tending machine offered consistent braking performance in harsh conditions, a global manufacturer of industrial process equipment opted for a highly reliable Stromag NFF4F-LS brake.

### Melting point

While aluminium is an abundant metal, its extraction is not straightforward. Aluminium smelters utilise electrolysis tanks to separate pure aluminium atoms from a solution of aluminium oxide and molten cryolite. During the electrolysis process, the pure molten aluminium sinks to the bottom of the tank, where it is tapped off and transported via machines.

This process is supported by aluminium smelter pot tending machines, which carry out the metal tapping, extraction and transport of liquid aluminium from the electrolysis tanks. Featuring a 27-ton capacity hoist to lift large quantities of molten aluminium, one machine from a global manufacturer of industrial process equipment required a robust braking system to reliably stop the hazardous load when overspeed was detected.

### No heated discussions

During the build, the pot tending machine manufacturer identified design limitations regarding the standard hoist braking system proposed by the crane OEM. Replacement options were limited by the fact that there was no room to install a disc on the flange of the hoist drum; this eliminated the option to use calliper brakes. Looking for a solution, the manufacturer contacted Stromag based on its global reputation for providing reliable and

robust braking systems for cranes.

Laurent Desprez, Business Development Manager at Stromag, continues: "We have a close relationship with this customer thanks to years of technical collaboration. To identify a suitable brake for the machine, we worked with the customer's design engineering team, exploring all potential solutions. After this consultation, we decided that a custom size of our Stromag NFF4F-LS brake would provide the reliability and performance required."

### Reliability at melting point

Specifically designed for heavy duty crane and industrial applications, the compact NFF4F-LS brake is a double disc spring-applied electromagnetic brake dedicated to low-speed applications. It delivers very high brake torque - ranging from 4,000 Nm to 40,000 Nm - with strong wear resistance. The brake is excellent at dissipating heat - a definite advantage in the hot atmosphere of a metal mill. Adapted for maximum performance in harsh environments, the NFF4F-LS is a closed design with an ingress protection rating up to IP66. Major brake components feature a special nitrocarburated and postoxidated surface treatment to further enhance durability.

"Such an application required us to make dedicated calculations to ensure that the brake would fulfil the performance criteria in terms of the time and distance of the suspended load," Laurent explains. "Using this data, we produced a custom size of the NFF4F-LS brake specifically

for this application - the largest we have ever manufactured of this model. This bespoke approach ensures we can deliver a solution perfectly adapted to face the challenges of prolonged operation in an aluminium smelter."

The brake was installed on the second low speed shaft of the reducer, in line with the drum on the hoist. This overcame the inability to mount a brake disc on the drum itself.

### One-stop-shop

As a global brake OEM and a leading brand of Altra Industrial Motion Corp., Stromag was able to deliver a complete braking package. To set the limits of movement of the load, a Stromag Series 51 limit switch was included in the design. This was paired with an overspeed detector and encoder to control the brake. Sourcing all braking system components from a single, trusted supplier ensures consistent product quality, truly optimised brake performance and maximum reliability. Furthermore, gaining access to spares and maintenance support is much easier.

"Despite some design constraints, we were able to deliver an optimal braking system for this challenging application. Our collaboration with the customer, backed by a strong existing relationship, meant that we could deliver a complete package for the hoist that offered maximum braking reliability - exceptionally important when moving molten metal through a busy facility," Laurent concludes. ■