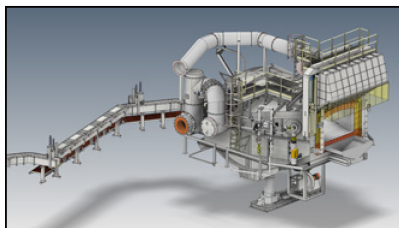


## Hydro Sunndal to Improve Efficiency with New Furnace

**H**ydro Aluminium AS is investing in a new tiltable type aluminum melting furnace with a molten metal capacity of 78 tons, which will be installed at its Sunndal facility in Norway. Hydro selected Sistem Teknik Industrial Furnaces as their project partner for the new furnace.

The new furnace at Sunndal will have a unique design with a circular, deep bottom to save space, while providing higher efficiency. The design allows the furnace to be tilted from both the front and the back using hydraulic cylinders. The bidirectional tilting simplifies slag removal and molten aluminum delivery. When the furnace is tilted backward, two pivot points in the front are unlocked, and the molten aluminum is transferred to the launder system through the spout at the back of the furnace. Meanwhile, when the empty furnace is tilted forward, the two pivot points on the back are unlocked, moving the furnace into a more convenient position for slag removal.

The furnace has a cold air burner



Sistem Teknik's Melting Furnace to be installed at Hydro Sunndal.

that adjusts the oxygen levels in the furnace atmosphere. This burner maintains the stability of molten aluminum, which reaches 720°C (1,328°F). Thermocouple temperature measurements are transferred to the PLC system, ensuring that the temperature of the aluminum remains constant as it is relocated to the launder system. If it does not, the burners are automatically activated to increase the temperature of the furnace.

Since air bubbles can form when molten aluminum comes into contact with air, argon gas is pushed into the furnace through porous plugs located at the bottom while the molten alu-

minum is being stirred. This stirring process also results in a more homogeneous heat flow in the molten aluminum. Flowmeters are used in order to provide programmable and real-time gas flow control as well as pre-degassing.

Another innovation of the furnace design is the door sealing mechanism, which provides a more environmentally friendly user experience. Since the door seals are formed by ceramic fiber blocks rather than gaskets, the furnace doors maintain maximum tightness, stabilize the furnace pressure, and reduce fuel consumption and cycle time. It also prevents unexpected openings. Since door seals can be replaced without removing the door, malfunctions can be resolved without halting production, which speeds up maintenance procedures.

The new furnace represents a collaboration between Hydro Aluminium and Sistem Teknik to reduce energy consumption and improve material efficiency in aluminum production. The project is expected to be completed by the beginning of 2023. ■