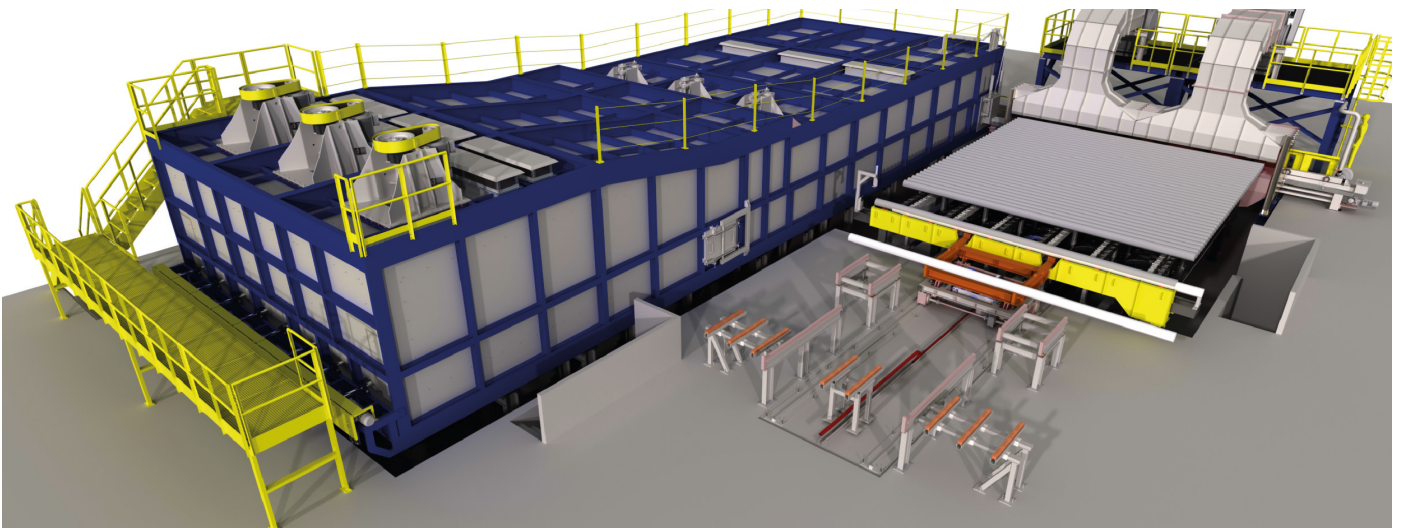


New age of continuous type homogenizing furnaces: Electrical rather than fossil fuels



Sider Alloys Italia is reviving Alcoa's old smelting facility located in Portoscuso, Italy with a significant investment. The company has invested in a continuous type homogenizing furnace for its plant with Sistem Teknik's partnership. Since their advantages over batch-type furnaces with cooling cabinets, continuous-type homogenizing lines are now more in demand as the global aluminum industry expands quickly. Cycle time and energy consumption are both reduced by half compared to batch-type homogenizing lines as a result of process optimization.

The continuous homogenizing furnace can provide thermal balance since each billet in a continuous homogenizing line can go through equal heating and cooling processes. The circulation fan creates a horizontal airflow inside the furnace while the billets are being transported to it by a conveyor system, ensuring excellent mechanical properties. The fans' unique design allows for homogeneous heat distribution within the furnace environment.

Although Sistem Teknik has built many continuous type homogenizing furnaces before, this furnace stands out as an exciting new journey for the company because of the use of electricity. The homogenizing process becomes environmentally friendlier since the furnace

uses electricity instead of natural gas in the heating stage. Electrical cassette heaters increase temperature homogeneity and allow the billets to move in a single line while holding the temperature with ± 3 degrees tolerance. Furthermore, since the heating is provided by an electrical system rather than a burner flame, high accuracy temperature control is provided. With this control system, air temperature is programmed to meet precise and variable needs, process continuity is maintained, and the furnace operates under the desired thermal conditions.

The billets are continuously fed into the furnace one after another. The thermal balance of the billets is ensured by the electrical heater cassettes and fans in the furnace, and the billets achieve the desired microstructure. The billets are then taken out of the furnace using the same method, transferred to the turbo cooling system through the conveyor, and cooled at high speed. As a result, in addition to preserving the desired microstructure, the process time is greatly reduced.

Furthermore, using electric heating cassettes instead of flame burners increase process efficiency by up to 75%. The absence of chimneys and waste gases reduces the product's carbon footprint and the environmental impact of the homogenization process. With this

feature, homogenizing technology not only becomes more sustainable for the environment but also for investors. This new furnace design stands as a crucial opportunity for the aluminium industry to reduce its dependence on fossil fuels and as well as its vulnerability in face of global energy crises. With the rise of investments in sustainable generation of electricity, electrical furnaces become increasingly more feasible.

Last but not the least, electrical continuous type homogenizing furnaces save equipment and costs. The absence of burner and therefore chimney systems in this furnace reduces the costs by a high percentage in addition to increasing the safety of the process since unexpected explosions will not occur. The use of less equipment provides ease of maintenance, and the investment costs are reduced.

This project is scheduled to be completed by the end of 2023 with the collaboration of Sider Alloys Italia and Sistem Teknik. The project, which will be very useful for the European Commission's 2050 targets to achieve zero carbon, will also serve as a model for future projects. Both companies hope to work on new solutions to reduce the aluminium industry's dependence on natural gas in the long term and continue making aluminium production environmentally friendlier. ■