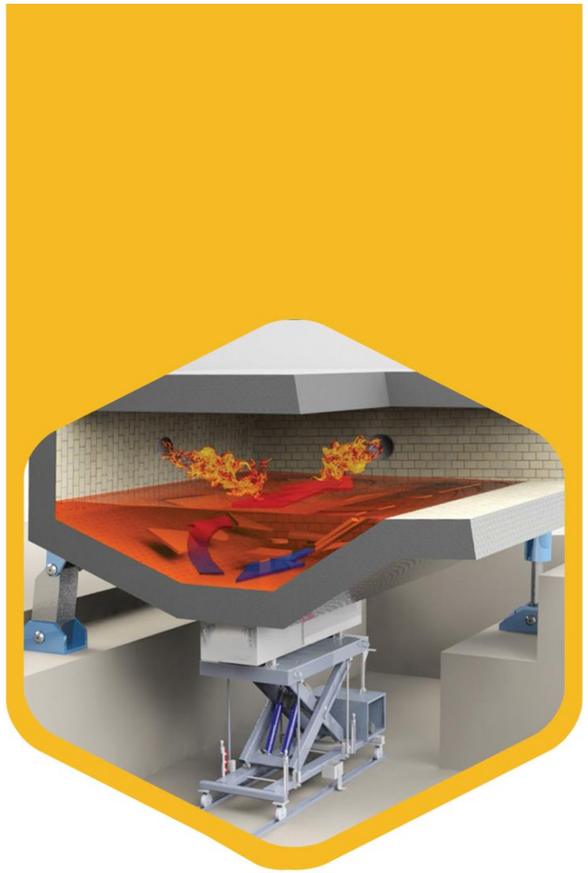

FAKHR ALAA TABRIZ

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Knowledge-based company

Manufacturer of smelting and homogenizing furnaces

- Scrap recycling with high surface to volume ratio
- alloy making
- Design based on the proposed capacity
- Innovation in the homogenization process

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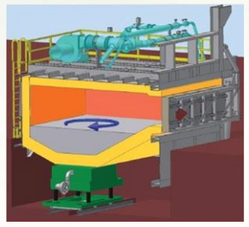
Science and technology are constantly evolving. The only condition for survival in this competitive market is to keep up with modern technology and correct the shortcomings of industrial equipment, which leads to increased product quality. Looking at the world around us, it is easy to see that the smelting and alloying industry, as well as aluminum recycling, is one of the most efficient industries in the world. In the aluminum smelting and alloying industry, melt homogenization is one of the main challenges for activists in this field. The most common tools used for this purpose are oars and forklifts, which have several problems. One of these problems is the inability to fully and effectively

homogenize large volumes of melt;The paddle shakes only the surface of the melt and the depth of the melt is not affected by this movement. Another problem is the entry of impurities and foreign substances into the melt. New magnetic homogenization technology does not have these problems. The magnetic melt homogenizer is able to move and mix large volumes of melt without impurities entering the melt. By reducing the temperature difference between the depth and the surface of the melt, it significantly reduces the surface oxidation and increases the melting efficiency. This system is very effective for melting waste, especially soft drink and waste cans, because by creating a vortex flow from the melt, it draws the charge materials into the depth of the melt and reduces their oxidation, in addition to increasing the speed of the melting process.

Melting Furnace

Smelting furnaces in factories mostly operated in tradional and semi-industrial methods with low efficiency and significant material loss, especially with low thikness raw materials. Power supply of this furnace is using natural gas fuel. This technologyies based on the Materials Specifications and enables us to movethe melt inside the furnace without manual intervention and without any tools andaccessories and by creating a vortex flow, we eliminate the possibility of contact of the molten material with air's oxygen and as a result, we see a sharp reduction in melting losses and prevention of the conversion of these materials into its oxide. Due to the method of this furnace, special materials and equipment has been to use.



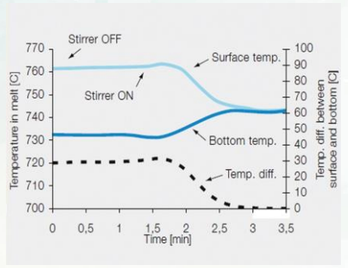
The torch used has two separate flames for melting operations and optimal maintenance of melt temperature. The furnace has two separate feeding places and slag for raw materials with different thickness and shapes. Due to the special design of this furnace, there is the ability to perform simultaneous smelting and maintenance operations wich eliminates the need for two separate furnaces for these two purposes.

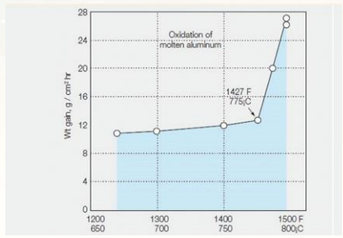
Homogenizers

This idea and method is a good alternative to traditional homogenization methods.

In this device, using special and strong magnetic fields, all aluminum Spins are located in one direction, and despite the non-magnetic nature of the aluminum element under normal conditions, it is possible to induce the magnetic field and create vortex current Becomes acceptable and move the melt in rotation. equipment is installed in the lower part of the furnace and operates automatically. The magnetic current generator can be moved along the z and y axes which can be moved to several specific positions under the furnace. This device has the ability to control the field intensity, rotation speed as well as temperature.

The temperature difference between the surface and the molten floor is caused by the thermal conductivity mechanism. it is necessary to eliminate this temperature difference by creating a convection flow. Initially, the temperature difference is in the range of 50 to 150 ° C. When the stirrer device is turned on, a convection current is created inside the melt, which after an approximate period of 100 seconds, the temperature difference disappears and stabilizes at a certain temperature. In addition, the convection flow inside the melt minimizes the difference between the viscosity of the surface and the floor of the furnace and most importantly, makes the chemical composition of the melt uniform. According to Ellingham Richardson diagrams, metal is in equilibrium with its oxide.





This balance also changes based on temperature changes. In the case of aluminum up to a temperature of 775 ° C, per square centimeter of the molten surface, something about 12 grams per hour is converted to oxide, while with an increase in temperature above 775 ° C, this amount as The exponentiality changes and at less than 25 ° C the increase reaches 24 grams per hour per square centimeter of molten surface. Therefore, to control the amount of metal oxide, it is necessary to control the temperature. The convective current inside the melt helps the hot surface of the molten metal to be in constant exchange with its underlying melt. As a result, the oxidation process of the metal on the surface is reduced.

One of the advantages of this method is the possibility of producing extrusion billets with fine granulation. The four most important advantages of this method are : 1. Removal of inclusions and wastes from the melting and oxidation process 2. Reduction of losses during melting 3. Uniform composition of the resulting ingot analyses 4. Possibility of converting aluminum scrap into alloying ingots.