Electric Heating Plate-type Filter Equipment

I. Application Scope

The plate-type filter equipment has a lining with an ultra-long service life and adopts new high-silicon melting manufacturing technology. It is mainly used for purification of aluminum alloy products with high added value and high technical performance requirements.

It carries the filter plate to filter inclusions and tiny particles in the aluminum liquid. Choosing European standard filter plates can replace the high-cost Cartridge filter equipment and Deep-bed filter equipment in the industry.

Plate-type Filter Equipment

II. Equipment Structure

1 Lifting Device
2 Heater
3 Inlet and Outlet Launders
4 Box Cover
5 Box Body
6 Discharging Device

III. Equipment Model and Parameters

Standard model	Operating flow Q (t/h)	CFF size (in) Empirical value		Filtration efficiency		Remarks
		Single-stage filtration	Double-stage filtration	Single-stage filtration	Double-stage filtration	
EG-D-6	6	15'	15'*2			
EG-D-10	10	17'	17'*2			
EG-D-15	15	20'	20'*2			
EG-D-25	25	23'	23'*2			
EG-D-35	35	26'	26'*2	30%-50%	60%-85%	1. High precision, relatively reduced filtration capacity. 2. For alloys with Mg≥1%, the filtration capacity is relatively reduced.
EG-D-45	45	26'	26'*2			
		23'*2	23'*4			
EG-D-55	55	23'*2	23'*4			
EG-D-65	65	26'*2	26'*4			

IV. Working Principle

CFF is placed inside the box. When the aluminum liquid pass through the filter box, the impurities in the aluminum liquid are captured by the CFF, thereby improving the purity of the aluminum liquid.

To bake the CFF inside the box and heat the aluminum liquid, this equipment uses electric heating. After the silicon carbide rods on the box cover are energized, heat is provided to the filter box by radiation.

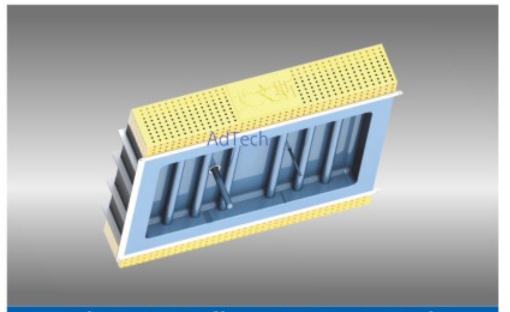


Plate-type Filter Box Cover and Matching Silicon Carbide Rods

V. Design Philosophy

1. Control System Design

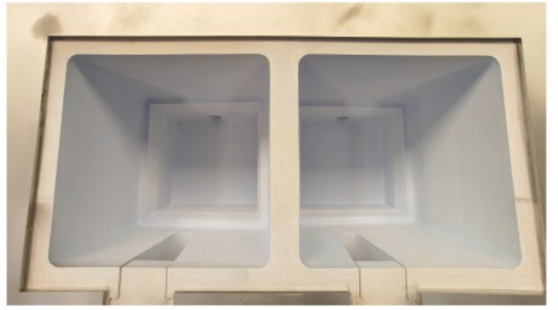
The electric heating plate-type filter equipment can be controlled by two methods: intelligent instrument and PLC. Both control systems include two temperature-controlling methods: Chamber gas temperature control and aluminum liquid temperature control, to ensure that the box body will not be over-burned during use.

2. Structural Design

The company improved the structure of the filter basin through simulation tests and designed a certain inclination angle, which solved the air bulging phenomenon often occurring in the industry, avoided the floating of the filter plate and ensured the smooth flow of aluminum.

3. Lining Material

The lining uses the non-stick aluminum high-fused silica developed by Adtech. The material has advantages such as good non-stick aluminum performance, high erosion resistance, small expansion coefficient, and no delamination.



4. Design of Cover-Opening Method

The opening method of the Adtech's filter box cover adopts pneumatic lifting with manual rotation, or electric lifting rotation, or hoisting methods, which greatly reduces the labor intensity and improves the working environment for replacing the filter plate.