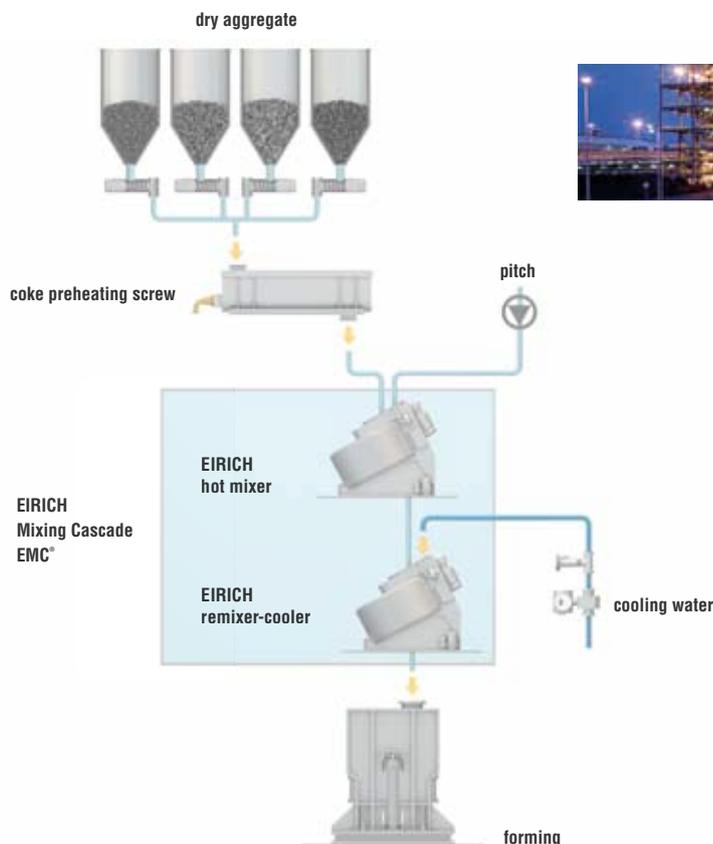


EIRICH Mixing Cascade EMC[®] for Anode Paste Preparation

The Cost-Optimized Solution for
Anode Paste Mixing and Cooling



EIRICH Mixing Cascade EMC[®] for anode paste preparation

Based on own expertise of more than 30 years and in close cooperation with some of the biggest aluminum producers in the world, EIRICH developed the machines for the so-called EIRICH Mixing Cascade EMC[®], a continuously operated system which is working without any use of conventional kneaders.

The main achievements are:

- same or higher paste quality compared to a classical line with two kneaders in series
- lower investment costs
- lower operating and maintenance costs

Preparation technology

The key element of the EMC[®] is the EIRICH intensive mixer which makes it possible to replace “short-time pitch penetration by means of kneading forces” with “long-time pitch penetration

by careful intensive mixing”. The retention time in the machine is approx. twice as long as in a conventional kneader.

Since the introduction of liquid pitch, the hot mixing temperatures have been raised to 175 °C or even higher. However, with the paste viscosity being lower now, conventional kneaders need a very narrow outlet gap to ensure their specific mixing energy. Particle degradation is the consequence!

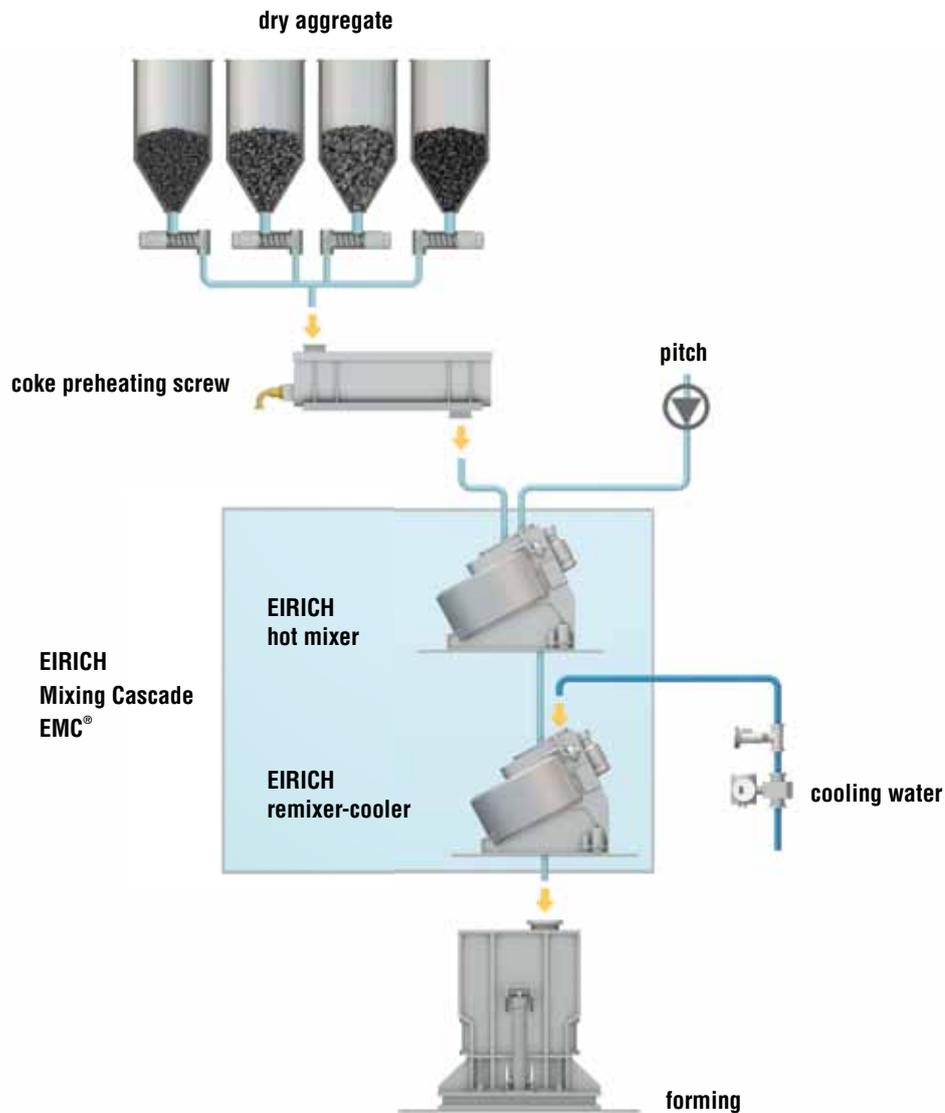
Intensive mixers are well-known for their high homogenization effect which is based on a strong horizontal and vertical mass flow caused by the rotating mixing pan together with one or two rotor tools.

A relatively low energy input is already sufficient to produce anode paste of high green density. Compared to a conti kneader, the retention time variation during the mixing process is significantly reduced.



Benefits of the EIRICH solution

- Low capital expenditure (CAPEX): savings of at least 40-50 % per line
- Low operational expenditure (OPEX): savings of at least 30 % per line
- Perfect adaptation to low raw material qualities and property fluctuations
- Throughput rates of more than 60 t/h in one single line
- Low variation of retention time during mixing
- Optimum mixing and cooling conditions for excellent paste quality
- Simple machine design
- Vibrocompacting of anode paste up to 165 °C without vacuum system



The EMC® process

Coke preheating screw

HTM circulates inside the screw spirals from the coke discharge end to the feeding end, thus showing a very efficient countercurrent thermal exchange. The heat exchange is completed by an additional flow of HTM circulating inside the double envelope of the screw trough. A variable speed drive unit allows to keep the product filling level above the screws independent of the production rate, thus maximizing the active heating area and avoiding any wear problem on the screw spirals at the feeding end.

EIRICH hot mixer

The preheated dry aggregate together with the binder pitch (in liquid or solid form) is fed into the hot mixer. The continuous mass flow through the machine is controlled by means of a swiveling discharge gate in the center of the mixing pan

bottom. The mixing tools are easily accessible from outside. All wear parts are small and of simple shape. One maintenance shift (8 hours) is sufficient to replace the rotor blades completely.

EIRICH remixer-cooler

The paste coming from the hot mixer is remixed and cooled simultaneously. Mixing tools and continuous mass flow control are similar to those of the hot mixer. The intensive cooling effect is achieved by injection of water into the anode paste and subsequent immediate evaporation. The discharge temperature is precisely controlled with a variation of less than $\pm 3\text{ }^{\circ}\text{C}$.

Steam and pitch fumes are led to the exhaust air treatment center by means of saturated air flowing through the machine. Most of the EIRICH remixer-coolers are connected to dry scrubbers made by Fives Solios.

EIRICH preparation technology in operation



Paste plant at Sohar Oman

EIRICH worldwide unique mixing principle

