

Hardheim, November 2019

A popular choice: EIRICH systems for the preparation of compounds for graphite electrodes

In the production of compounds for graphite electrodes, coke is mixed with pitch and additives at temperatures around 180°C. This process is a key factor in determining the quality of the final product; as well as optimizing the mixing of all the recipe ingredients, it is necessary to fill the pores of the coke as best possible with pitch and to coat each and every coke particle with pitch. Many manufacturers around the world work with preparation technology from EIRICH. Since the start of 2018, a further 15 companies from China, India and Russia have opted for this technology.

There are several methods for the preparation of compounds for graphite electrodes for electric arc furnaces. Sigma kneaders can be used, for example, but on account of their design these kneaders struggle to achieve optimum mixing of the input materials. If Sigma kneaders are replaced with EIRICH intensive mixers, this will lead to a significant improvement in quality.

The EIRICH mixing system, which offers controllable power input via the shape and speed of the mixing tools, allows both mixing and kneading. This ensures rapid homogenization. The cooling process from the mixing temperature of 180°C to e.g. a processing temperature of 120°C, which involves water injection into the mixer (flash cooling), is incredibly simple with this system, allowing the temperature of the compound to be adjusted to within +/- 2°C.



Fig. 1: EIRICH Mixer Type R33

Hardheim, November 2019

Thanks to these advantages, the use of EIRICH mixers – known in the industry as “EIRICH Mixer Coolers” – has become established as the industry standard in the last 50 years or so. All around the world, many renowned producers of high-quality graphite electrodes trust in the preparation technology from EIRICH. A single EIRICH mixer can replace up to 12 kneaders. Productivity can be boosted by up to 200% – and this at lower investment and maintenance costs, thanks to which the procurement costs are amortized in just a few years.

In addition to mixing, kneading and cooling, the process of heating the coke up to the processing temperature has been much simpler with EIRICH for almost 40 years now as well. With the aid of a direct electric resistance heater known as the EWK, the coke is quickly and cleanly heated to the required mixing temperature without any risk of fire, which would otherwise be a hazard on simple heating systems, and with only low energy input requirements. For smaller plant output rates, it is worthwhile combining the heating and mixing processes; EIRICH offers mixers with induction heating for this for mixing temperatures up to 300°C, which is especially interesting for manufacturers of specialty graphite or carbon products.



Fig. 2: EIRICH plant scheme for the preparation of carbon pastes

Hardheim, November 2019

In particular for the preparation of UHP (Ultra High Performance) electrodes with large diameters (> 600 mm), EIRICH preparation technology – comprising the electric resistance heater EWK, mixer and table feeder, which continuously feeds the mixing material – has really proved itself, as has been demonstrated by the recent sales successes.

Alongside the preparation of electrode compounds for steel production, EIRICH also offers industrial preparation solutions for aluminum production. Anodes and cathodes are used in fused-salt electrolysis. For cathode preparation in batch mode, similar machines are used as for graphite electrode preparation, consisting of EWK, mixer and a table feeder as the paste feeder. Anode compounds are normally prepared in continuous production processes. Here, in the form of the Eirich Mixing Cascade EMC©, EIRICH offers state-of-the-art equipment for cost-effective production of superior-quality anodes.

Further information:

Contact: Torsten Henk, e-mail: torsten.henk@eirich.de

The EIRICH Group, with Maschinenfabrik Gustav Eirich as its strategic center in Hardheim, is a supplier of industrial mixing, granulating/pelletizing, drying and fine grinding machinery, systems and services. EIRICH has core expertise in processes and techniques used for the preparation of free-flowing materials, slurry and sludge. The main fields of application for such technologies include e.g. ceramic and refractory materials, foundries, building materials such as concrete and plaster, battery pastes, fertilizers, glass and the processing of ores. Close co-operation between our own test centers around the world and collaboration with the research and academic community enables the "hidden champion" to provide solutions for innovative, cost-efficient products and processes. The family-managed company was founded in 1863 and operates from twelve locations on five continents.