

Hardheim, February 2017

EIRICH granulating technology – now also available for finer granulates

In the ceramic and chemical industry, it is often necessary to manufacture granulates from powders or powder mixtures. The properties of these are tailored to the requirements of subsequent processing, with requirements relating e.g. to the size of the granulate, strength, density, pourability, freedom from dust and porosity. Fundamentally, different mechanical and thermal granulation techniques are available. Among the mechanical techniques, users regularly praise the advantages of build-up granulation in the EIRICH mixer – which is now also available for granulates down to 100 µm.

In recent years, many manufacturers of technical fine ceramics have opted for EIRICH mixers for their build-up granulation. Whereas, in the past, granulates were primarily demanded in sizes ranging from 500 µm to several mm, today customer requirements tend towards much finer ranges, down to 100 µm or even finer. For this reason, EIRICH has developed rotor tools with a special geometry (patent pending) that can be used to manufacture granulates with even finer grain sizes. Even in this fineness range, the width of the grain spectrum or the grain size distribution can be modified with the aid of parameters like the tool speed, granulating time and granulation moisture, and adapted to the particular requirements of the relevant application.

In the size recommended for granulating, the EIRICH mixer used for granulating only has one rotor tool, which can run at tool speeds of up to 30 m/s. This makes it possible to generate high shear forces and distribute liquids quickly. The new rotor tools are also available for laboratory mixers (from 1 liter). Particularly in the ceramic industry, it is often necessary to manufacture granulates with grain sizes ranging from 100 to 500 µm at laboratory scales. To date, only thermal methods have been available for doing this, such as fluidized beds or spray drying. Here, a lot of parameters had to be set up on the systems and equipment. As a result, it took many hours until the first usable granulate was produced. The complex cleaning of the systems and equipment then took up further time.

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By contrast, there are only a few parameters for the build-up agglomeration process in the mixer. It is normally possible to start producing a usable granulate within a short space of time. Mixing containers and tools can be cleaned quickly and easily.

In comparison to spray drying or fluidized bed methods, granulating in the EIRICH mixer also offers significant energy advantages because it no longer requires the production of pumpable slurry with a high proportion of water, which then needs to be evaporated off later on in the process. This also means that the specific energy consumption is significantly lower as a result. The system-related properties of the EIRICH mixing technology also make it easy to scale up this solution, with the process parameters being transferable to larger production machines.

In cases of new applications, EIRICH will help interested parties to find the best conditions for the granulating process. Process engineers are available to help with this at the Test Center in Hardheim and all locations of the EIRICH Group worldwide.

More information:

Contact (North America): E-Mail: industrialsolutions@eirichusa.com

Contact (Europe): Marcus Mueller, E-Mail: marcus.mueller@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 applications for these processes are in the ceramics, refractory, foundry, construction materials, plaster, rechargeable battery, battery compound, fertilizer, glass and ore dressing industries. 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.