Press Release

Hardheim, September 2019

EIRICH receives increased orders for the preparation of extruded fiber-reinforced concrete

Fibers – preferably steel, glass or plastic fibers – are added to concrete to improve its cracking and fracture behavior. In order to achieve the expected properties, the fibers need to be distributed as evenly as possible in the concrete. This places tough demands on the mixing technology, particularly if concrete with little water and fine grain sizes is processed into small precast parts (in contrast to unreinforced concrete, in the context of fiber-reinforced concrete the term "concrete" is also used for concretes where the largest grain size is < 4 mm). For this reason, more and more manufacturers of precast parts made of extruded concrete are opting for mixing technology from EIRICH.

The fine-grained concrete used for small extruded components / precast parts has a stiff-plastic consistency. To ensure that the workpieces taken from the extruder offer sufficient cohesion, plasticizers and e.g. plastic fibers are added to the concrete. Ensuring homogeneous distribution of the plasticizer and a defined separation of fibers, which are often entangled or matted, is regularly a major challenge for concrete mixers.

Standard mixers often run into problems on account of their design. The mixing tools run slowly because they also need to transport the material in the mixing pan. Increased speeds lead to excessive wear of the tools and of the lining of the mixing pan, but also to demixing, as is described in the literature for various mixer types. Plant operators get around this by significantly reducing the amount of material in the mixer and by using much longer mixing times.

Hardheim, September 2019

When it comes to processing fine-grained concretes of any consistency, with or without added fibers, the system design of the EIRICH mixers offers major advantages. The mixing system is a further development of the ring-trough and planetary mixer. In contrast to these mixers, in this case a rotating pan transports the material being processed to the mixing tool. In combination with a stationary material deflector on the wall of the pan, an intensive three-dimensional material flow is established in the mixing chamber.

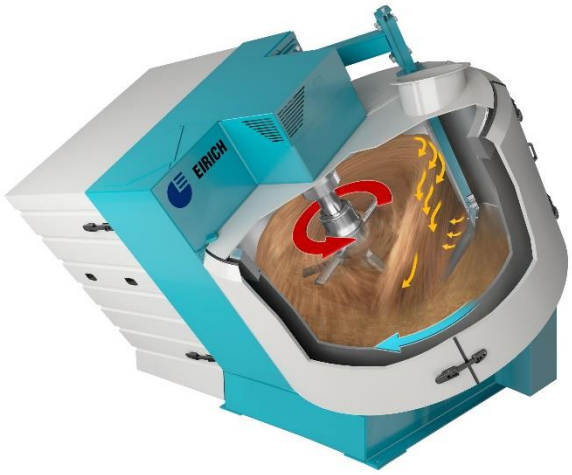

Figure 1: Unique EIRICH Mixing principle for highest quality of the mixing material

What sets this design apart is the fact that the tool, which is known as the rotor, can run at any speed up to 30 m/s – and this with or against the direction of rotation of the container. As a result, the power input into the mix can be carefully adapted to the relevant process and to its specific requirements.

Depending on the geometry and speed of the rotor, very high specific mixing energy input (> 10 kW/100 kg) into the mixing material is possible. With the mixing pan and rotor tool normally running in opposite directions to each other, high speed differences are generated, with correspondingly high shear forces. As a result, the EIRICH mixer is also ideal for preparing very stiff concrete mixes with added fibers. In the process, the mixing quality that can be achieved is not normally available with other mixing systems. The mixing principle with a rotating mixing pan, rotor and material deflector ensures complete agitation of all the material with every rotation of the mixing pan. Dead zones of the type that can occur on other mixing systems are prevented because every partial volume of the mixing material is fed to the mixing tool. This also reliably rules out demixing in the mixer, as is known from other mixing systems.

Press Release

Hardheim, September 2019

Technical trials at the test center in Hardheim regularly demonstrate improved mixing results to potential customers, particularly in terms of fiber separation. For production plants, as well as the mixers EIRICH can also supply the entire plant engineering (with conveyor systems, dosing systems and weighing equipment, and plant control systems). Table feeders – used by EIRICH in many other areas – allow material from a batch process (mixing) to be fed into a continuous process (here: extrusion).

EIRICH can look back on many decades of experience in many applications, including the production of concrete roofing tiles or spacers – experience that will benefit new customers.

Further information:
Contact: Stefan Berberich, e-mail: stefan.berberich@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.