

## GERTEC CLC- Technology

### Plant concept

An air-setting mineral foam created from mineral binding agents has considerable advantages when used for insulation. Ranging from its simple, inexpensive and low-energy production, through to its simple application and easy recycling at the end of its service life. To be used as insulation, however, the mineral foam production must meet high requirements. Even when applied with very low densities, the mineral foam layer must be as strong and as homogeneous as possible.

These requirements rule out well-known, conventional production methods for mineral foam using open paddle mixers, because the achievable foam quality is simply not adequate. The mixers, which are usually used for making concrete and mortar are not suitable for mixing very light foamed concrete and mineral foams with the intensity and care necessary to achieve a stable foam structure.

GERTEC Maschinen- und Anlagenbau GmbH has developed a new, innovative mixing method to produce foamed concrete and mineral foams as well as the corresponding mixing technology. This mixing technology can be used to create a mineral foam of the highest quality continuously and on demand, so to speak. This foam can then be installed directly from the plant. Due to great differences in the components' density (foam: slurry approx. 1:35), conventional mixing methods actually prevent homogeneous mixing. The GERTEC engineers have therefore made use of these density differences in an ingenious way. The density and amount of foam is just as variable and controllable as the density and amount of the final mineral foam. The plant can thus be optimally adapted to the various formulas and mixtures.

To produce the mineral foam, first a binding agent slurry is made from water and the selected binding agents (cement, powdered limestone, etc.) in a colloidal mixer in batches. This slurry is stored temporarily in a buffer tank. From here the slurry is fed continuously into the foamed concrete mixing plant where it is mixed with the foam which is also continuously produced by the system. The result is an absolutely homogeneous and extremely stable mineral foam. The foaming and mixing processes take place in a hermetically sealed system. The plant's measuring and control systems ensure the mixture's constant quality and the necessary consistency of the physical properties. The new mixing method, which is optimally tailored to the requirements, enables the production of extremely stable mineral foams and light foamed concrete in the density range of approx. 80 to 800 kg/m<sup>3</sup>. Even at great filling heights, these foams do not tend to slump or have differences in the porosity.

Because it is a continuous process, the actual mixer is very small compared to the high throughput performance; therefore, both the plant and the air-setting mineral foam produced by it boast an unrivalled energy efficiency.

By means of simple modifications to the dosing- and mixing elements, the mixing plant can be adapted optimally to the formulas for foamed concrete with a high density and the whole range of lightweight building material made from aerated concrete. Another application area of the new method will be the thermal insulation of prefabricated parts and hollow stones. All the plant's components can be scaled to size ranging from a small laboratory system to a large industrial plant and thus all application areas can be covered.

Although originally developed for stationary use, the foamed concrete mixing plants have a high throughput performance despite being extremely compact and they can be designed for transporting. This means there is no reason they cannot be used on construction sites, for example, to level flooring, to fill in cavities or for thermal insulation.

The advantages of the GERTEC concept at a glance:

- High reproducibility of the foamed concrete's quality and stability
- Homogeneous pore structure
- High early- and final strength thanks to a colloidal mixing method when producing the slurry
- Continuous production of mineral foam
- High throughput performance despite small plant size
- The density of foam and foamed concrete can be adjusted variably
- The amount of foamed concrete can be adjusted variably
- Scalable from a small laboratory system to a large industrial plant