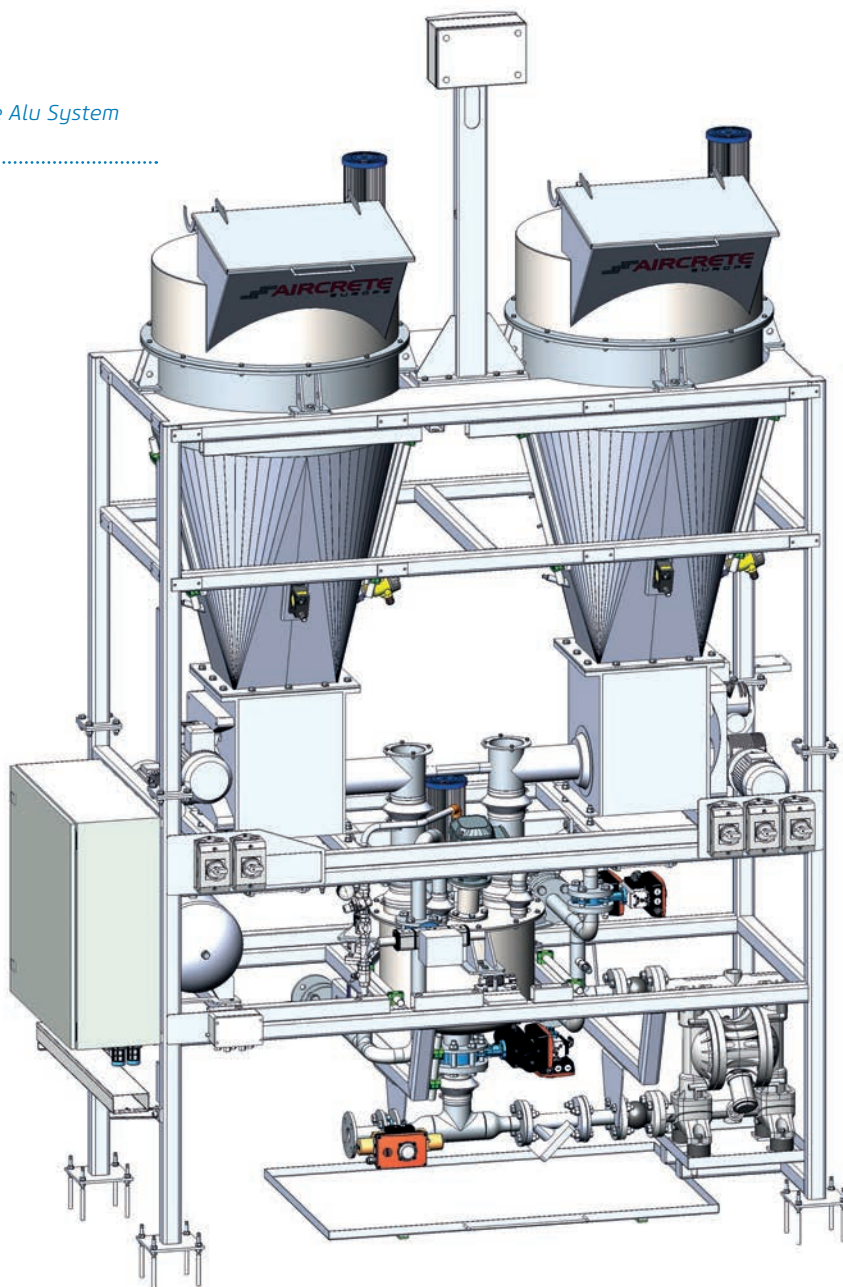


New Generation Aluminium Dosing System

From the onset of the industrial age, the chime of progress has resonated through the halls of factories and production lines. The evolution from steam engines propelling the Industrial Revolution to the digital systems birthing the modern age has been guided by the art of innovation. The new Aircrete Europe Aluminium Dosing System (Fig. 1) is a statement of continuous innovation that brings new solutions to the market to follow market trends and meet customer demands. This article delves into the heart of the Aircrete Alu System, a new generation Aircrete solution that holds the promise of improving the norms of safety, precision and efficiency and of dosing the aluminium paste in the production of high quality Autoclaved Aerated Concrete (AAC).

Fig. 1: New Aircrete Alu System



Aluminium is an essential component in the production of AAC: by adding the aluminium into the slurry, the foaming reaction takes place which lays the vital foundation of the porous structure. Therefore, aluminium dosing equipment must be very accurate and reliable, as there is a certain precalculated amount of aluminium needed per cake. Slightly too little dosing and the required densities will not be met; slightly too much dosing will result in the same issue, and, on top of that, it can result in a big mess (which can affect the production process) as the slurry may rise over the mould. The aluminium dosing equipment is traditionally placed further away from the rest of machinery because there are corresponding safety guidelines related to the flammability of the aluminium powder that had been often used in the AAC production.

Safety

Aluminium powder, also known as aluminium dust, is highly flammable and had caused many explosions and fires throughout the history of AAC production. Moreover, this substance, or the fire caused by it, cannot be put down with water because aluminium powder produces heat if in contact with water. Aluminium powder contains very fine particles that, if inhaled by humans, can cause serious health issues – therefore, not only powder dosing equipment must ensure proper filtration so that aluminium dust does not spread over the factory, workers must also wear proper safety equipment (respirators and masks). To reduce the associated risks of using aluminium powder, the industry is more and more shifting towards the use of aluminium paste instead.

Although aluminium paste is safer in handling and use than powder, it still is flammable and toxic for humans. Therefore, Aircrete's Alu System introduces the new pressure nozzle cleaning system that is able to water down every component of the machine, thus reducing the amount of manual interference to the minimum and ensuring a steady flow of emulsion. Every vessel of the machine is equipped with a filter that can screen particles as little as 10 µm, practically making it suitable even for powder use and thus ensuring the highest level of safety.

Precision

One of the arguments to continue using aluminium powder was the higher precision which used to be achieved with aluminium powder because weighing technology being used for powder dosing used to be more developed. Due to the characteristics of the aluminium paste, the previous solution was to pre-mix

aluminium paste with water in large tanks. This did not only require special cooling system, but also reduces the accuracy of the aluminium dosing. Today, the Aircrete Alu System is able to batch-by-batch dose the aluminium paste in a “dry” stage and hereby achieve a dosing precision of ± 10 grams during a cycle of 3 minutes. The special Aircrete dosing system (Fig. 2) was designed to create the steady flow and eliminate the sticking issue. The brand-new technology of the paste cutoff system can provide highly controlled batch infeed of the Aircrete Alu System mixer. Both the Aircrete Alu System mixer and the main mixer's aluminium weighing bin contain the newest sensor systems, making sure that precisely the needed mass is mixed into the cake. Temperature is controlled on every stage of the aluminium emulsion preparation.

Fig. 2: Outside of the Aircrete special dosing system





Fig. 3: Inside of the dosing mixer (agitator and pressure nozzle)

Efficiency

The Aircrete Alu System contains 2 aluminium tanks that provide an option of dosing of 2 different types of paste. The increased volume of the tanks can provide sufficient storage for one day, and thus reduces the amount of manual labour at the plant. Aircrete Europe understands the importance of reserves in case of emergencies and, therefore, the new Aircrete Alu System was designed with the uninterrupted power supply for 30 minutes to be able to finish the ongoing processes or execute emergency procedures in case the power is cut out. Generally, the Aircrete Alu System is prepared to execute its emergency procedures to prevent damage, for example in case of overheating, at any moment.

A popular inconvenience of installing a new piece of machinery is long downtime. To prevent that, Aircrete has incorporated the so-called plug and play method: the Aircrete Alu System is supplied as a completely pre-fabricated solution, and can therefore be installed as fast as in 3 days. The earlier mentioned unique pressure nozzle cleaning system keeps the dosing system's mixer and the weighing bin clean (Fig. 3), prevents any sticking at any stage and thus reduces the maintenance intervals as much as to once every 6 months.

While modern world is in pursuit of the better future, many years of experience in the AAC industry allows the engineers of Aircrete Europe to stay at the forefront of innovation. As the new Aircrete Alu System became safer, more precise and more efficient, Aircrete Europe keeps looking for ways to optimize and improve every aspect of AAC machinery and the AAC production process.



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