

Press Release

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Continuously operating Ploughshare® Mixer KM "All-in-one" process for feed and fertiliser production

Lödige Process Technology developed a process engineering solution for the production of monocalcium phosphate (MCP). The powder, which is an essential component of feed and phosphate fertilizers, can thus be produced economically in an "all-in-one" process.

Monocalcium phosphate (MCP) is formed by the reaction of pure phosphoric acid and calcium carbonate. Powerful process technology is just as important to the production of high-quality MCP as the quality of the raw materials used. Lödige offers a solution that is specially designed for this application, based on a type KM Ploughshare® Mixer for continuous operation.

Ploughshare® Mixer with application-specific design

The Ploughshare® Mixer for continuous operation uses the mechanically generated fluid bed system that was introduced to mixing technology by Lödige: Ploughshare® shovels in their basic shape patented by Lödige in 1949 rotate close to the walls of a horizontal, cylindrical drum. The circumference speed and geometric shape of these plough-like mixing tools are designed so that they pick up the raw materials for the mixture completely and throw them into the free mixing compartment. During this process, the material is lifted off the drum wall against the centrifugal force. This generates a mechanical fluid bed, in which the entire product mixture is constantly gripped, resulting in extremely thorough mixing, even with high mixture throughput and short retention times. The mixing elements are shaped to ensure product transport. Additional choppers in the mixing drum break up agglomerated material and permit systematic granulation during the mixing process.

The result is a continuous "all-in-one" process. This means all process phases of MCP production can be performed in a single machine. Other units and process steps are no longer necessary. Moreover, the mixer offers great stability and minimised cleaning intervals. A special wear protection shields mixing tools and shovel arms against the high mechanical and corrosive stress caused by contact with the mixture.

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Production process

The MCP production process has three phases: mixing – reaction – granulation. In the first step, the two base materials, phosphoric acid and calcium carbonate, are mixed to form a highly homogeneous substance. In the second phase of the process, an exothermic reaction is produced under defined conditions, resulting in a conversion of the base materials into monocalcium phosphate. This is followed by granulation in phase 3. The granulate properties can be adapted specifically to the customer's requirements. The final process step, granulation, offers a variety of advantages over ungranulated MCP: It improves the pourability of the substance and makes transport and storage easier. It allows the product to be packaged dust-free and permits perfect dosing.

A variety of different machine sizes is available for throughput rates in a range from 1t/h to 50t/h.



Caption: Lödige offers a solution for the production of MCP, based on a type KM Ploughshare® Mixer for continuous operation. (Source: Lödige)

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