

Axial Flow Impeller Pump Systems

Frings



Main Features:

- ✓ Custom-made agitation devices for special applications
- ✓ Individually designed to achieve defined mixing times and pump rates
- ✓ Clearly defined shear forces for fragile solids and crystals
- ✓ Seals and materials resistant to aggressive and abrasive media
- ✓ To be installed in standard reactors, draft tubes and in pump housings

Products for Chemical Industry



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Application Example

Central impeller pump as a key component of industrial DTB crystallizers

Controlled recirculation of large volume flows with special flow rates, impulse dispersions and specific shear forces is essential for the control of crystallization processes, in particular with regard to crystal size distribution, average crystal size and heat transfer.

Average crystal sizes larger than 1 mm, which are commonly used for straight fertilizers, such as ammonium sulfate, potassium chloride, etc., are mainly produced by draft-tube-baffled (DTB) crystallizers. DTB crystallizers are equipped with axial flow pumps which stand out by their large diameters. The pumps, which are installed in a central draft tube, keep the crystals suspended that are formed in a continuous process.

High recirculation rates are required to control the supersaturation, which is the primary driving force in crystallization processes. On the other hand, the crystals have to be handled with care to avoid their breakage, attrition or the formation of secondary nuclei. Crystallization processes occur in an enormous number of applications in inorganic and organic chemistry. For this reason, the material of construction has to be selected carefully.

Frings axial flow pumps are made of stainless steel 1.4306. They are bottom-flanged pumps with shaft lengths of 1 – 2 m reaching to the bottom part of the draft tube, where the impeller is installed. Their diameters range from 850 to 1,570 mm. Frings axial flow pumps achieve recirculation rates between 3,000 and 8,500 m³/h for suspensions with a specific density of 1.2 to 1.3 g/l (containing up to 40% (w/w) crystals). They are driven by geared motors with a power range from 11 to 30 kW. Sealing is provided by stuffing boxes.



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