Mixing Systems

Inner Workings of Versatile Impeller

By combining various individual components, this modular design is able to process products across all industrial viscosity ranges. Let's examine how it addresses the most diverse mixing requirements.

Variations of the Paravisc modular mixing system from Ekato Corp. are being used for the production of pharmaceuticals, cosmetics, gels, toothpastes, shampoos, and foodstuffs as well as paste-like products such as adhesives, paints, and building materials. By combining various components, the system's modular design addresses diverse mixing requirements. In other words, one vessel can be designed to perform process steps that previously had to be performed in separate vessels. Also, a single vessel can be designed to process a diverse range of products.

This type of near-wall, axial pumping impeller, which is typically used for blending highly viscous media, can mix products in the viscosity range of 1 to 1,000,000 mPa. It's a positive displacement impeller, similar to a helical ribbon impeller. However, in contrast to a helical ribbon, the design of the Paravisc requires radial arms only near the base of the vessel. Therefore, it's possible to install internal baffles and an additional eccentrically arranged agitator that covers almost the entire filling height range. Compared to traditional anchor impellers, it's engineered to provide superior blending and entrainment due to the axial flows induced.

In addition, wall scrapers can be mounted on the Paravisc using round vertical supports so that they can move to accommodate unevenness and irregularities in vessel shape. Wall scrapers are particularly useful to minimize fouling on vessel walls and when residue is to be minimized &#151 for instance, during discharge &#151 or when heat transfer must be improved. The design of the wall scrapers can be varied to address specific characteristics of the product. Non-adjustable scrapers can be used where crust formations occur, and GMP-compliant flexible scrapers can be used for pharmaceuticals and cosmetics because they adjust to unevenness with product flow.
Another versatile component is a dissolver-disc, which can be used as an off-center mixing system and combined with a Paravisc to disperse fillers such as starch, lime, silica, or synthetic powders into viscous liquids.

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