Radial Flow Impeller Types

Rushton Turbine

The Rushton turbine is a radial flow impeller used for many mixing applications. The design is based on a flat disk with vertical, flat blades vertically mounted. Rushton turbines are very effective for gas dispersion. To some extent, this can be attributed to the way the rotating disc on the turbine captures gas released below the impeller and channels it into the regions of high turbulence near the blades.

Advantages

- Rushton turbines are very effective for gas dispersion.
- The effectiveness of gas dispersion in stirred vessels is controlled by the size and structure of the ventilated cavities behind the impeller blades.
- Rushton turbines are often chosen for their gas-handling capacity, as they can be operated with relatively high gas flow rates without impeller flooding.

Applications

- The rushton turbine commonly for gas dispersion applications.

Technical features

- At high gassing rates or low stirrer speeds, the impeller is blanketed by gas, indicating impeller flooding. Under these conditions, the flow pattern is dominated by buoyant gas–liquid flow up the middle of the vessel.
- At higher stirrer speeds or lower gas flow rates, the impeller is loaded as gas is captured behind the impeller blades and dispersed towards the vessel walls.
- Further increase in stirrer speed or reduction of the gas flow rate produces complete gas dispersion.

Thai Industrial Business Company Limited
Tel. : +66 (0) 65 265 4555 (Hotline), +66 (0) 2 180 6456
E-mail : sales@tibflow.com

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