

CEN 212 FLUID MECHANICS

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AGITATION and MIXING of FLUIDS

Agitation of liquids

Agitation refers to forcing a liquid by mechanical means to flow in a circular or other pattern in a vessel

Mixing implies the taking of two or more separate phases, such as a fluid and a powdered solid or two fluids, and causing them to be randomly disturbed through one another

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Agitated vessels

The equipment consists of a tank with an insulated jacket, baffles, shaft with motor, impeller, and other accessories such as thermometer and dip-leg.

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Flow patterns in agitated vessels

There are two principal currents in the vessel during agitation:

- (1) **radial** (perpendicular to the shaft)
- (2) **axial** (parallel to the shaft)

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Types of impellers

- Two types of impellers:
 - Radial flow impellers (flow is induced in radial or tangential directions)
 - Axial flow impellers (currents are parallel to the axis of impeller shaft)