

CHEMICAL PLANT & ENGINEERING

40 Years of Manufacture and Supply Experience



DAIRY PROCESSING AGITATION



CHEMICAL PLANT & ENGINEERING

Chemical Plant & Engineering (CPE) is a world leading designer, manufacturer, and supplier of field process technology, and a division of CEM International Pty Ltd which is a wholly owned Australian company.

CPE specialises in global supply of Liquid Agitation, Filtration, and Powder Mixing solutions to a wide variety of industries including Wine and Spirits, Food and Beverage, Mineral Processing, Chemical and Pharmaceutical, Environmental, and Oil & Gas industries.

Headquartered in Melbourne, Australia, the company enjoys multiple strategic manufacturing partnerships and licensing agreements across the world. CPE's global presence is strengthened via agents and partners in New Zealand, SE Asia, South Africa, Europe, and America.



Agitators



Filters



Powder Blenders

DAIRPRO AGITATORS

DAIRY

CPE is the world leading designer, manufacturer and supplier of Dairy Mixing Solutions, DAIRPRO™. With decades of knowledge, experience and market exposure, we thoroughly understand the stringent sanitary requirements of the Dairy industry.

CPE has numerous installations in major dairy processing plants throughout the APAC Region.



DESIGN SCOPE

SANITARY FOCUS

- DAIRPRO™ is designed and manufactured in compliance with the stringent standards of the dairy industry.
- The focus of our design has been elimination of bacterial growth, CIP compatibility, and ease of cleaning.

APPLICATIONS

INDUSTRY

-  Milk, Flavoured Milk
-  Plant Based Milk
-  Cream
-  Cheese, Cream Cheese
-  Yoghurt
-  Ice Cream

OFFERINGS

CPE DIFFERENCE

- **World leading technology:** fast mixing at a fraction of energy input offering significant cost savings
- **Optimised Product Quality**
- **Maximum Plant Utilisation**
- **Laboratory and Pilot Plant Testing**
- **Aftermarket Services:** process optimisation, failure analysis

IMPELLER OPTIONS

DAIRPRO™ is offered in a range of agitator configurations to meet various customer and process requirements. Pilot plant units are available for on-site or laboratory testing to ensure the result meets customer expectations.

High Efficiency Hydrofoil (RTF4)



Low Shear Mixing
Solid Suspension
Mass & Heat Transfer

High Shear Rotosolver™ (RS)



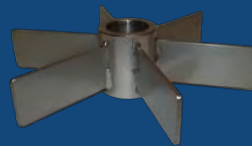
High Shear Mixing
Dissolving
Homogenisation
Other Difficult Mixing

Pitched Blade Turbine (P Series)



Medium Shear Mixing
Solid Suspension
Dissolving

Flat Blade Turbine (S Series)



Low Liquid Level Mixing.
Used when foaming is an issue (placed at liquid level) or for suspending heavy precipitants (placed close to tank bottom)

ViscoPro Series (Anchor, Helix, Counter Rotating)

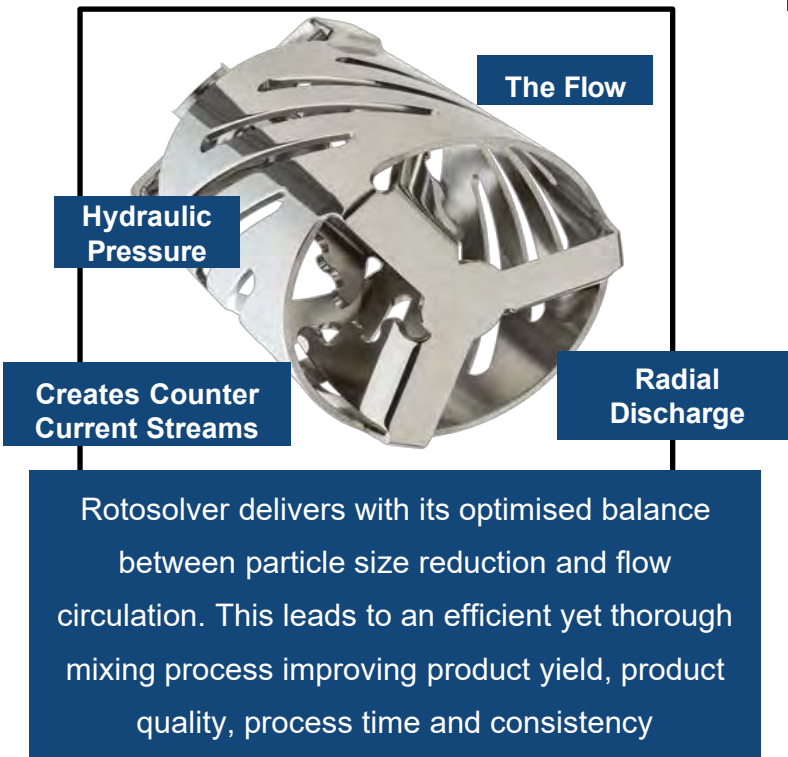
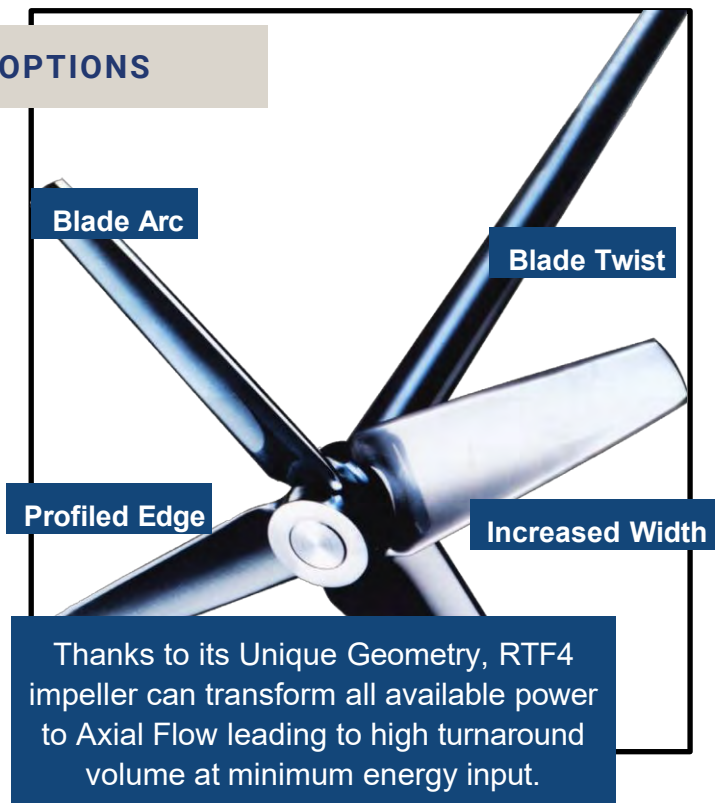
High Viscosity Mixing



IMPELLER OPTIONS

Hydrofoil Technology - RTF4

- Suitable for fast and thorough mixing and effective solid suspension.
- Efficient with minimum energy input to achieve desired results, leading to major cost savings
- Fast heat stabilisation
- Anti-scaling



High Shear Technology - Rotosolver

- Maximum efficiency and intensity
- Fully dissolves and hydrates powder in a short time at lower energy input
- Guarantees volume scalability
- Optimises the balance between shear rates, particle size reduction, and tank flow/circulation

DAIRPRO™ Configurations



- Top, side, and bottom tank entry points (portable agitator available)
- Direct drive and gear reduced motors (agitators equipped with gear reduced motors offer higher efficiency with same flow, as direct drive agitators, at lower power intake)
- Retractable agitator to conduct maintenance with full tank
- Various seal options (mechanical, lip, hydraulic)
- Special agitator system for operation under high tank pressure

Agitation Process Optimisation

At CPE, we can conduct in-depth analysis of your process and recommend cost-effective solutions to optimise your process.

When to Retrofit an Agitator?

- Ineffective solids suspension
- Time to uniform mixing is long or never!
- Frequent mechanical failure or maintenance shutdown
- Excessive energy consumption
- Considerable change in physical properties of the slurry

Why Agitators Fail?

- Undersized agitator (impeller or motor)
- Wrong impeller design
- Wrong flow rate/pattern
- Low service factors in agitator design

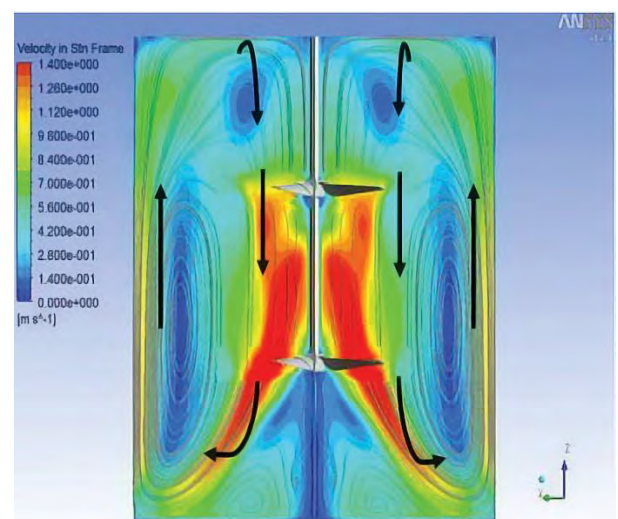
In most cases, retrofitting of an existing agitator involves impeller replacement (same size or different) without changing the motor and gearbox.

BENEFITS of agitator retrofits with RTF4 Technology

CPE has a long history of retrofitting underperforming mineral processing agitators to provide enhanced performance and efficiency.

Our world leading **RTF4 impeller technology** offers:

- quicker mix time at the same power input
- lower power consumption and maximum plant utilisation
- effective solid suspension
- increased mixing capacity
- lower power loadings, thus longer lasting agitator



Flow analysis of a top entry hydrofoil agitator

Why Use DairPro™ ?

- Decades of design, manufacture and global supply experience.
- Superior agitation technology with many installations worldwide.
- Manufacturing facilities in Australia and strong global partnerships.
- We can custom design agitators to your specific process needs.
- A range of agitator configurations to suit various application requirements.
- Sanitary design attributes & CIP friendly.



Additional Sanitary Bearing

Applications & Processes By Impeller Type

Impeller Type	Process	Application
High Efficiency Hydrofoil (RTF4)	Low Shear Blending Solid Suspension Homogenisation	Milk Flavoured Milk Yoghurt (culture dispersion)
High Shear Rotosolver™ (RS)	High Shear Mixing Liquid/Liquid, Solid/Liquid Dispersion Dissolving & Hydrating Powders Maintaining Homogenous Mix Other difficult mixing applications	Cream Cheese Ice Cream
Pitched Blade (P series)	Immiscible Liquid Blending Additive Dissolving Medium Viscosity Liquid/Liquid Dispersion Homogenisation Emulsification	Milk Yoghurt (maturation, holding) Cheese
Flat Blade (S series)	Slow Blending Low Liquid Level Mixing	Mixing of Foaming Mixtures Mixing of Heavy Precipitants
ViscoPro Range (Anchor, Helix & Counter Rotating)	High Viscosity Mixing Low to Medium Shear Slow Mixing	Yoghurt (ultra high viscosity) Cheese, Cream Cheese

Aftermarket Services:



Process analysis using CFD modelling for failure analysis and process optimisation

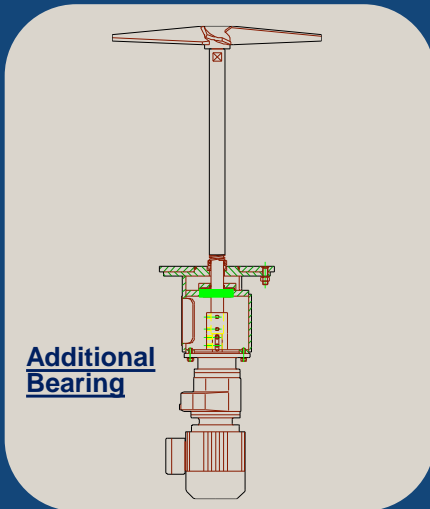


Supervision of installation and commissioning



Retrofitting of existing agitators to enhance performance or reduce energy consumption

Sanitary Design Attributes



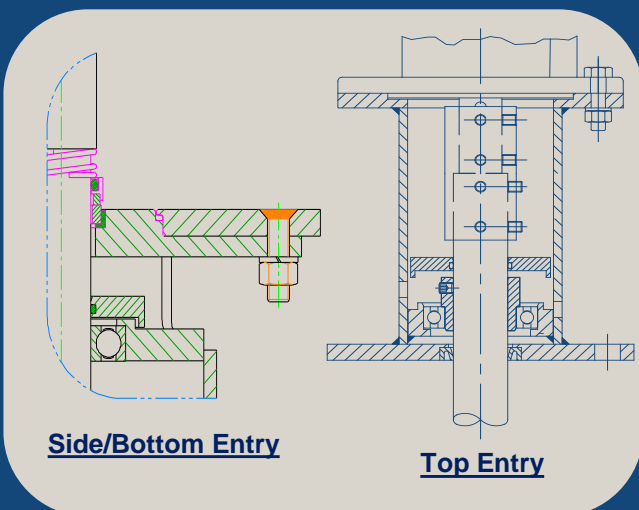
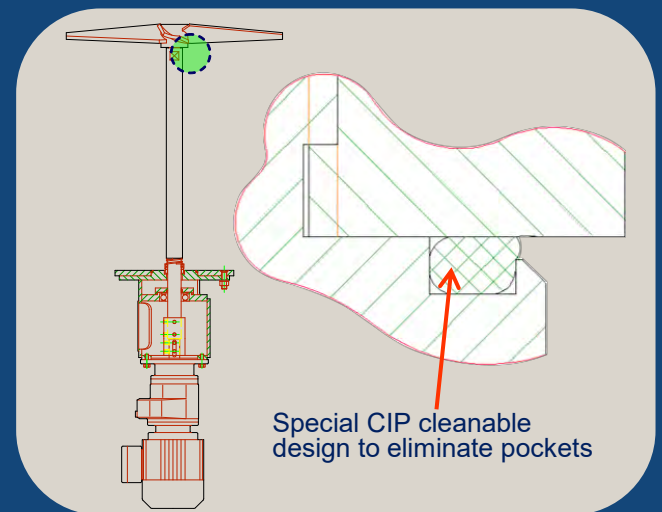
Varying Tank Operating Levels

Bottom or side entry agitators are prone to suffer hydrodynamic load fluctuations as the tank operating levels vary considerably in the dairy industry.

- CPE has developed a special pedestal with a bearing in the flange
- This significantly reduces the stresses on the gearbox and mechanical seal

Trapping Points

- Spacing between tank flange and agitator flange is designed to allow CIP
- 'O' rings are employed between mating surfaces
- Precision machining ensures 'O' ring is compressed to produce a profile which is easy to CIP
- Crevices that are hard to clean are minimised
- Sanitary tank flanges are supplied



Removal of Condensate

In some dairy processing operations condensation is inevitable. DairPro™ has a modified pedestal which allows any condensate to drain.

Chemical Plant & Engineering

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