

Vertical crystallisers and massecuite reheater



→ The preferred crystalliser worldwide

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- More than 200 references
- Stationary straight tube elements up to 450 m³
- Mobile tube layers up to 700 m³

Very competitive equipment thanks to local manufacturing

Outstanding performance

- High heat transfer coefficient and low temperature difference between massecuite and water (10°C)
- Maximum exhaustion by combined control of massecuite shear rate and cooling

- Strong and robust
- 1% to 2% sugar extraction recovery
- Low electricity consumption: 0.03 to 0.05 kWh per ton of cane

Easy installation and operation

- Self-supporting on a reduced footprint
- Height/Diameter ratio 3.5 minimum in order to enhance the plug-flow effect
- Automated operation
- Welds outside the shell: easy check
- Minimum maintenance requirements

Optimisation of the final molasses exhaustion is an important aspect in the modern sugar industry. For that reason Fives Cail has produced more than 300 crystallisers and reheaters meeting all the requirements of factories - beet, cane or refinery.

Fives Cail crystallisers and reheaters **maximize molasses exhaustion** and prepare your massecuite for maximum centrifuge performance.



1,300 m² reheater - BRAZIL

Massecuite reheater range

Useful capacity	m ²	100 - 400	400 - 1,300
Width	m	1.0 - 2.5	2 - 3
Length	m	2.8	5.8

Massecuite reheater

Improved mother liquor or molasses separation

- ⚡ High heating surface (up to 1,300 m²) and optimised upstream flow characteristics with no dead zone
- ⚡ Designed to avoid sugar losses and any invert or burn sugar
- 🟢 The right amount of heat to improve centrifugation

Optimised sugar quality

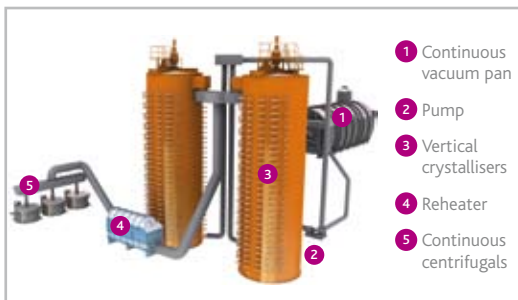
- ⚡ Rapid heating without crystal dissolving (roughly 2 hours: 75% less residence time than in a vertical crystalliser)
- ⚡ Totally enclosed system, no contamination

Simplification of installation and maintenance

- 🔧 ⚡ Simple construction with no moving parts: no maintenance
- ⚡ Small and compact with high throughputs
- 🟢 ⚡ Control system can be adapted to suit factory conditions



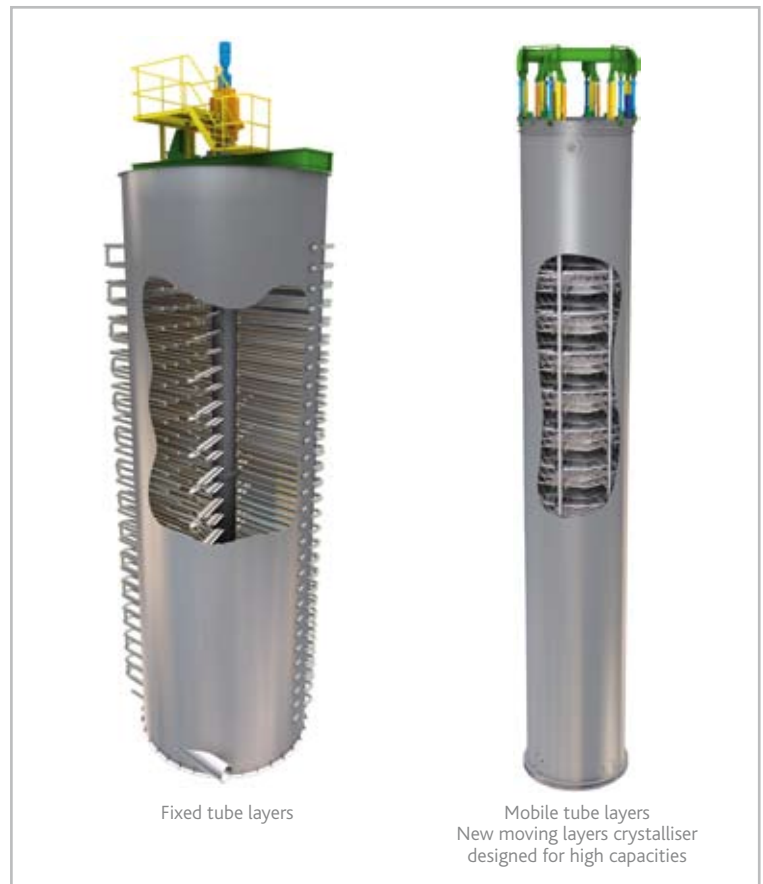
The best installation for sugar recovery



Vertical crystalliser range

Useful capacity	m ³	90 - 150	100 - 250	200 - 450	450 - 700
Tank diameter	m	4.0	4.5	5.75	5.75
Height	m	10 - 15	9 - 19	12 - 19	9 - 30

Vertical crystalliser: two technologies



Outstanding performances

- ⚡ S/V ratios from 0.9 to 2.2 m²/m³
- ⚡ Cooler available with heating tubes

Drive

- Gearbox drive
- Planetary gearbox
- Worm wheel

- 🟢 Low operating cost
- 🟢 Ease of use

- ⚡ Cleanliness / Hygiene
- ⚡ Yield / Productivity

- 🟡 Safety