

Mechanical Circulator

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SUSTAINABLE ENVIRONMENT DEVELOPERS
(Formerly Spray Engineering Devices)

Mechanical Circulator

Mechanical circulators are installed in vacuum pans of sugar industry in order to reduce the boiling time. It is also used for reducing sugar color and increase in pan yield. In batch pan, mechanical circulator improves exhaustion, capacity and maintains uniform pan boiling & crystal formations. SED's innovative Mechanical Circulator technology has achieved remarkable success in the sugar industry.

Quality Management

Improved crystal size distribution and low sugar color due to uniformity of fluid conditions within the vacuum pan. This is a consequence of the better circulation leading to more homogeneous crystallization conditions within the pan. The crystal grows more evenly and there are non-sugar liquor inclusions. There is less-color in sugar and reduced risk of sugar losses by local overheating.

Homogeneous Massequite

Homogeneous massequite with reduced fine grain formation, conglomerates and color formation.

Recovery

A high massequite dry substance concentration is possible, leading to a higher crystal yield and lower purity of molasses.

Reduction in Water consumption

In addition, stirring also reduces centrifugal wash water consumption by 50% due to uniformity of crystals.

Height of Massequite

The height of massequite above the calandria may be pushed considerably above what is reasonable with natural circulation. Hence a gain in capacity and a decrease in graining volume.

Capacity Enhancement

The mechanical circulation improves heat transfer rate and so shortens the duration of the batch boiling, thus improving capacity.

Energy Efficiency

Low ΔT between heating steam and massequite are only possible with the use of stirrers. A reliable operation without stirrers (mechanical circulation) is not possible and may lead to sedimentation of the crystals. The use of lower pressure vapours becomes possible (e.g. shifting 2nd to 3rd to 4th evaporator effect), resulting reduction of the factory steam requirements.

Less Fouling/ Scaling / Deposition on Calandria Tubes

There is less fouling/ scaling / deposit on the tubes, due to the abrasion effect by friction of the circulating crystals.



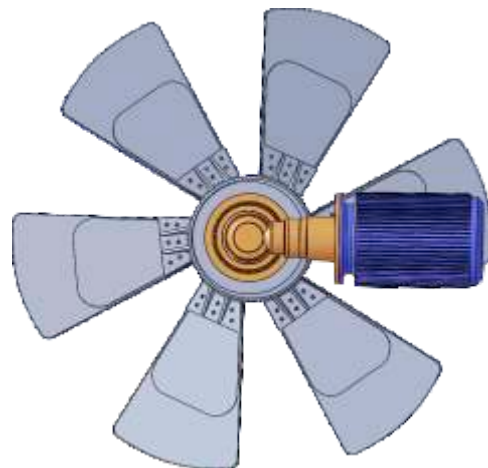
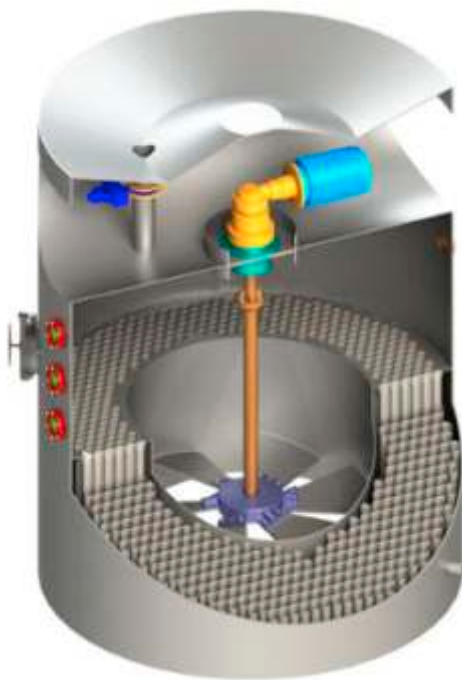
Distinct Features

- Enhanced Circulation capacity due to more number of blades
- Reduced/Minimized boiling time.
- Variable speed circulation better heat transfer rate
- Uniform and improved crystal size with sparking luster.
- Reduced centrifugation time and wash water quantity.
- Unique compact design mechanical circulator.
- Lower hub size with higher sweeping volume.
- Easy installation due to direct mounting without any structure of platform.
- Highest efficiency with inline planetary drives.
- High quality mechanical seals.
- Casted bearing housing design.
- Having high efficiency to protect any air/fluid leakage.
- Suitable for high temperature and pressure conditions with extended life and low maintenance.
- Detachable impeller blades for additional flexibility.
- Low power consumption.
- Fully automated control and monitoring system.
- Low maintenance requirement.
- Available in various models as per capacity.

S. No.	Pan Capacity	Installed Power
1	25t — 30T	22 kW
2	30T — 40T	30 kW
3	40T — 60T	45 kW
4	60T — 80T	55 kW
5	80T — 100T	75 kW
6	100T— 120T	90 kW
7	120T— 150T	110 kW

Benefits

- Saving in strike time up to 30%
- Good circulation maintained throughout the strike.
- Produce more uniform grain
- Increased pan capacity by 25-30%
- Increase in crystal yield up to 5%.
- The color removal has improved from 87% without circulator to 95% with circulator.
- Sugar conglomerates counts have been reduced by about 85%
- Strike level in pans can be raised by 30-40 cm with use of stirrer.
- Increase in heat transfer coefficients from 0.78 kW/m²/°C with stirrer.



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