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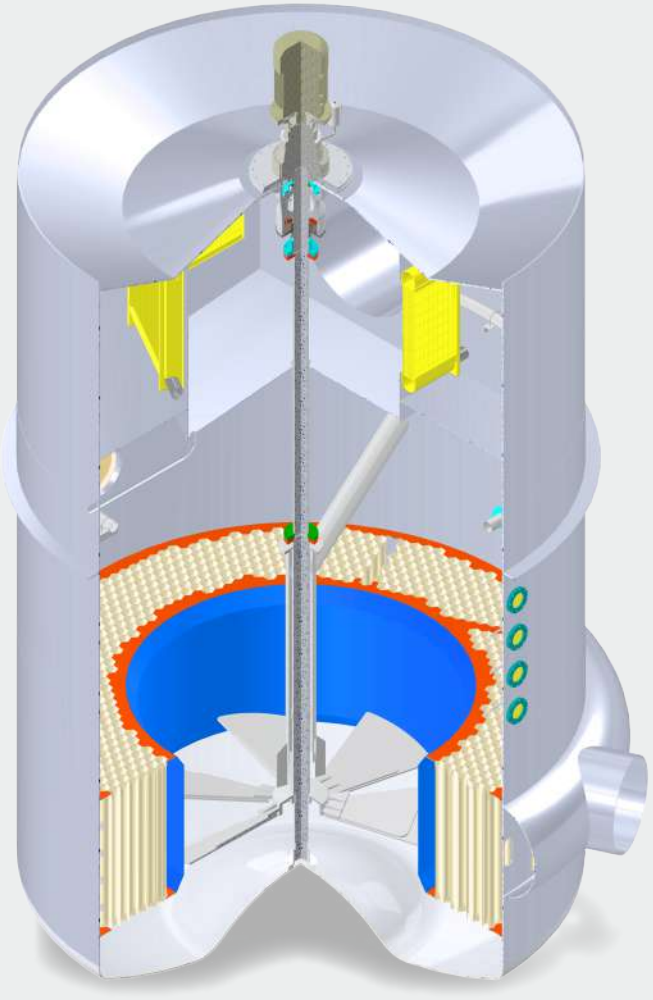
Development

SED



Batch Pan
with Honeycomb Heating Surface

"Sugar Crystallization using low temperature vapour (70-80°C)"

Greater Exhaustion & Superior Quality along with Low ΔT Operation

- Higher S/V ratio & less footprint area.
- Operation at 50-100% capacity without using movement water.
- Higher crystal growth & higher sugar exhaustion.
- Improved circulation through Honeycomb Calandria.

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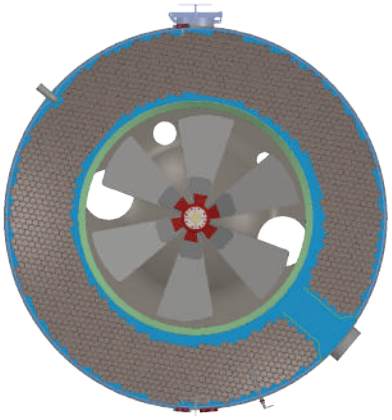
PREAMBLE

The enthusiasm of sugar technologists to use low temperature & pressure vapors for crystallization which can possible with improved massecuite circulation and high S/V ratio design vacuum pans to maintain exhaustion of sugar into crystal, crystal size & quality of sugar crystals. An increased heating surface and S/V ratio with relatively less increment in graining volume is characteristic of the honeycomb arrangement. Honeycomb calandria reduces the head loss during massecuite circulation in passing through the tubes and returns by the down take in ascending and descending passages both. No crystal is retained above the honeycomb tube sheet. Agitation to liquor is provided mechanically along with thermal convection and consequently the crystallization is made highly energy efficient.

SED's Batch Pans offer significant improvements in terms of yield and reduced energy (steam & power) requirements have been achieved with the use of specially designed and patented honeycomb calandria with circulators.

DISTINCT FEATURES OF BATCH PAN

- Faster crystal growth and greater sugar yield
- Minimal conglomeration and false grain formation
- Minimal color inclusion during crystallization to produce 100 % bold crystals
- Optimum operating power required in mechanical circulator
- Hydrostatic effect is largely negated through highly energy efficient volumetric flow mechanical circulation and use of honeycomb calandria with increased tube length
- Enhanced circulation due to honeycomb calandria resulting in reduced friction
- Better massecuite quality due to uniform saturation throughout the pan and improved massecuite circulation
- Suitable for all types of massecuites (Refined, Raw, A, B and C)
- Improved steam economy due to the capability of the design to handle high syrup brix with low temperature evaporator
- Higher S/V Ratio
- Maximum reduction of mother liquor purity with improved crystallization rates
- Pan is completely automated and controlled from DCS



PERFORMANCE PARAMETERS

Particulars	Parameters
Designed capacity range	From 30 Ton/strike to 150 Ton/strike
Graining volume	45-50%
S/V ratio	7 - 8.5
Operating temperature	70 - 80°C
Designed outlet vapor temperature/pressure	55-60°C/17-20 kPaA
Effective temperature difference between boiling	30-35°C
Crystal content range	30-56% depends upon massecuite purity

Actual Data may vary from site to site

ADVANTAGES

- Improved heat transfer leads to higher crystallization rate and increased throughput
- Use of vapors from later evaporator effect becomes possible
- Lower sugar color due to uniformity of fluid condition within the vacuum pan
- Good circulation prevents stagnant regions, hot and cold zones that can induce differences in the super saturations level and crystal growth rate
- Reduce formation of fine grains & conglomerates
- Abrasion effect by friction of circulating crystal results less deposit (scale) on tube
- Reduces centrifugation time and hot water consumption for sugar washing due to fewer amounts of conglomerates and false grains
- Higher purity massecuite concentration is possible
- Compact and most efficient planetary drives results low power consumption
- Easy maintenance with less wear and tear
- Cost effective, quick and easy installation

CONTROL ADVANTAGES

- Ease of operation
- Provision for flow, temperature, pressure, level and consistency measurement
- Auto cleaning/rinsing cycle of valves & sensors to minimize shutdowns
- Seed/Feed ratio control for least crystal variation
- Fully automated system resulting no skilled man power requirement

DESIGN FEATURES

- Improved circulation with no hindrance above calandria
- Higher heat transfer area
- Least deposition
- Effective in arresting any air/fluid leakages
- Suitable for Low temperature and pressure condition

AUTOMATION

- Feed Material can be controlled based upon brix, agitation or BPE
- Inlet Vapour Control
- User configurable batch cycle
- Complete process monitoring, controlling and data logging
- Alarming for abnormal situations
- Calculations for critical process data for analyzing process
- Default switchover to manual mode

130+
Installations

Full Pan Assembly

SED

INNOVATIVE TECHNOLOGIES FOCUSED ON SUSTAINABILITY

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