

WESTERN STATES AUTOMATIC MASSECUITE CONDITIONING SYSTEM



Patent 230992 , 12-Nov-2003, Proveedora Azucarera S.A. de C.V.

PERFORMANCE INCREASE & ECONOMIC BENEFITS:

- Increase in centrifugal throughput up to 35% by improving the massecuite flow and crystal separation properties even at temperatures below 50°C.
- Reduced molasses purity rise by eliminating:
 - Crystal breakage caused by friction in filtering screens.
 - Crystal dissolution caused by hot spots (heat exchanger water temperature is kept below 60°C).
 - Crystal dissolution caused by the use of water and/or steam by the centrifugals as it is minimized or eliminated altogether.
- Avoidance of higher than desired molasses temperature by reducing or eliminating steam used at the centrifugals.
- Constant and uniform feed stream to centrifugals as measured in brix and volume.
- Longer life of filtering screens due to the improved lubrication of massecuite.

TYPICAL METHODS OF REDUCING MASSECUITE VISCOSITY:

While the addition of final molasses to massecuite has been used before to reduce massecuite viscosity, the problem has always been the lack of thorough mixing due to differences in viscosity and flow properties. Another method employed involves the use of steam or water in heat exchangers or centrifugals, however its effectiveness is limited as hot spots and inadequate heat transfer in the former or very short contact time in the later cause sucrose losses in final molasses and waste energy.

SOLUTION:

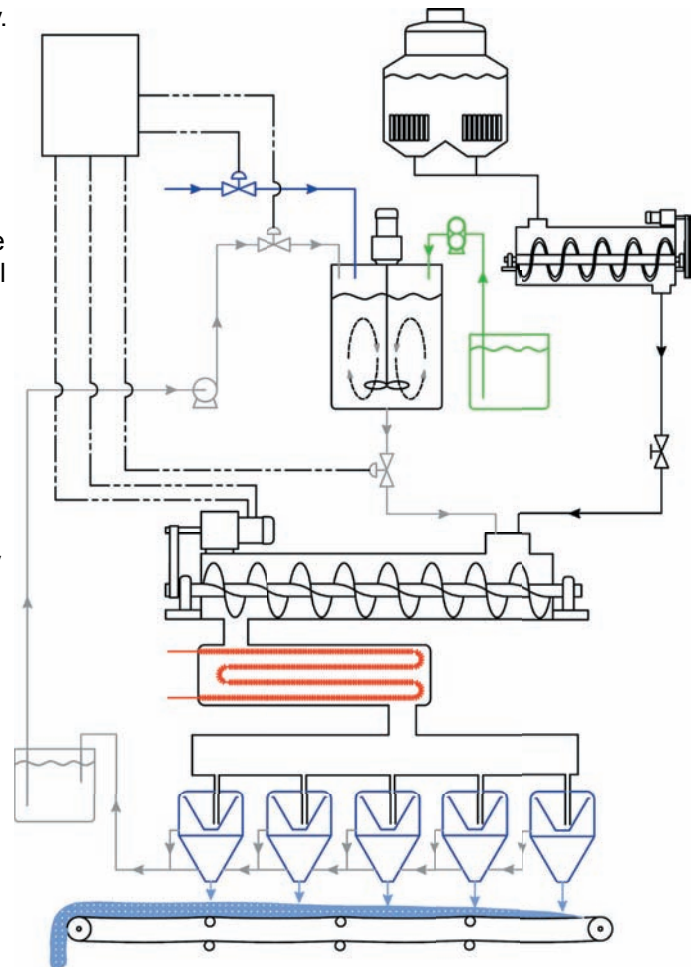
The Western States Massecuite Conditioning System combines a precisely brix controlled molasses stream with the massecuite. Because the molasses are partly saturated with sucrose, dissolution of the sugar crystals is negligible. The molasses and massecuite streams immediately enter a special mixer which gently blends them for a predetermined amount of time. The conditioned massecuite shows an immediate improvement in its flow properties and it is then fed to the centrifugal feed tank or manifold.

CONTROL:

Conditioned massecuite viscosity is controlled by monitoring the power usage of the mixer motor. The higher the power required by the motor to turn the mixer, the higher the viscosity and the more molasses are needed. This feedback is then used to adjust the amount of brix controlled molasses that is added to the massecuite until the desired viscosity is obtained.

SYSTEM COMPONENTS:

- PLC controller, readout, operator interface
- Molasses dilution tank and mixer
- Surfactant tank and pump (optional)
- Transfer and metering pumps.
- Control valves.
- Temperature probes
- Massecuite+molasses mixer conveyor



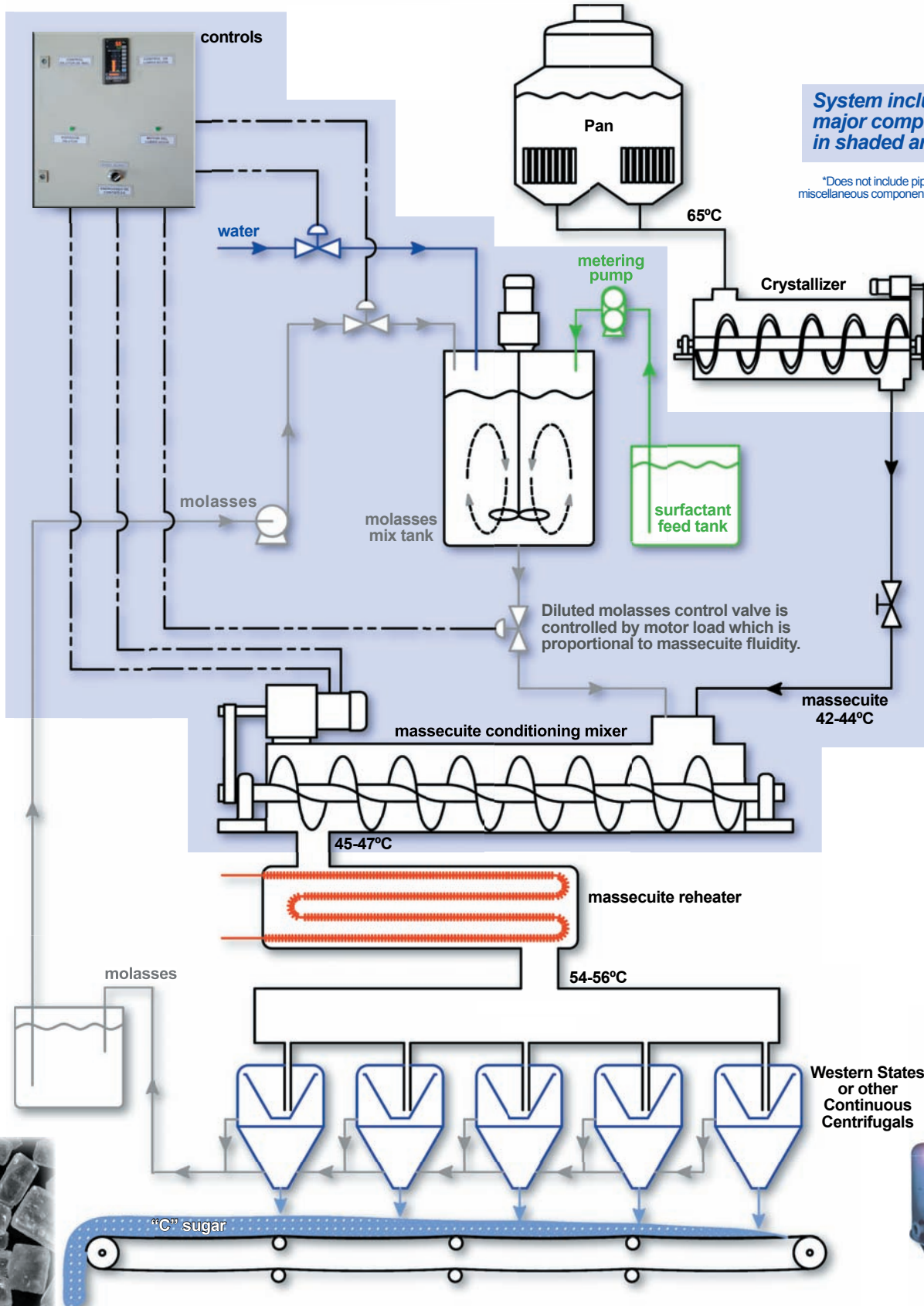
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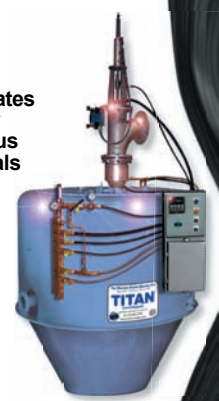
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System includes major components* in shaded area:

*Does not include piping, wiring, miscellaneous components or installation.



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