Continuous Centrifugal Screens from Western States

Get the most out of your continuous centrifugals by selecting the right screens for your process.

The right screen can increase capacity, decrease purity rise and reduce screen changes and maintenance. **Western States** offers a large selection of screens for beet, cane and refinery continuous centrifugals. We also supply screens for *BMA, Broadbent, Silver Weibull, Fives Cail, Buckau Wolf* and other centrifugals. **Western States** offers ***Standard***, ***High-Capacity*** and ***Long-Life*** continuous screens to meet your particular needs.

Screen Features	Screen Type: STANDARD	HIGH-CAPACITY	LONG-LIFE
Pure Nickel with Hard Chrome Working Surface	√	√	√
Screen Sets Hand Selected to be Balanced within ±2%	√	√	√
Conical Slots (front-to-back) Reduce Clogging	√	√	√
Radially Arranged Slots Promote Smooth Flow	√	√	√
100% Increased Open Area for Maximum Throughput		√	
50% Increased Open Area for Increased Throughput			√
50% Thicker for up to Twice the Standard Screen Life			√

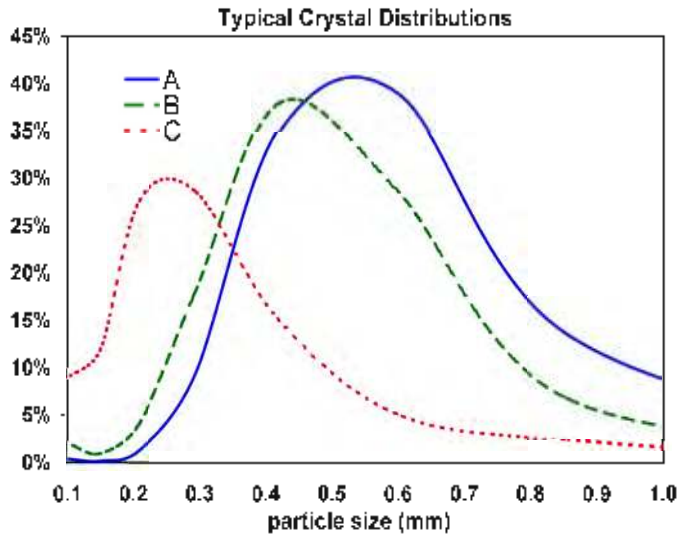
Screen Selection:

1. Determine MA (mean aperture) of crystals in mm. *Typical crystal distributions are show in the graph to the right.*
2. A good starting point for determining slot size is to use 1/5 (20%) of the mean aperture of the crystals.
3. Use the result of (MA x 0.2) and find the closest *Slot Width* from the table below.
4. Select ***Standard***, ***High-Capacity*** or ***Long-Life*** screens based on your need for capacity, purity rise and screen life.

Example:

1. A sample of "C" massecuite has a crystal MA of 0.28mm.
2. 0.28 x 0.20 = 0.056 mm
3. From the table below select a screen with a slot width of 0.06mm or 0.04mm*.

*0.04mm slot screens are often used in refinery recovery because of the lower viscosity. Mill "C" is usually too viscous for a 0.04mm slot.



Model	Slot Width	Slot Length	Thickness	Open Area
STANDARD	0.04	1.67	0.31	4.2%
HIGH-CAPACITY	0.04	1.19	0.33	9.9%
STANDARD	0.06	1.69	0.29	6.4%
LONG-LIFE	0.06	2.65	0.42	9.0%
HIGH-CAPACITY	0.06	1.20	0.33	15.0%
STANDARD	0.09	1.72	0.28	9.6%
LONG-LIFE	0.09	2.68	0.42	13.5%
HIGH-CAPACITY	0.09	1.21	0.33	22.7%

Need screens or parts quickly?

Western States understands the urgent needs of our mill and refinery customers. Call us at any time of day or night and we will ship your screens and parts ASAP.

Western States
where innovation happens everyday™

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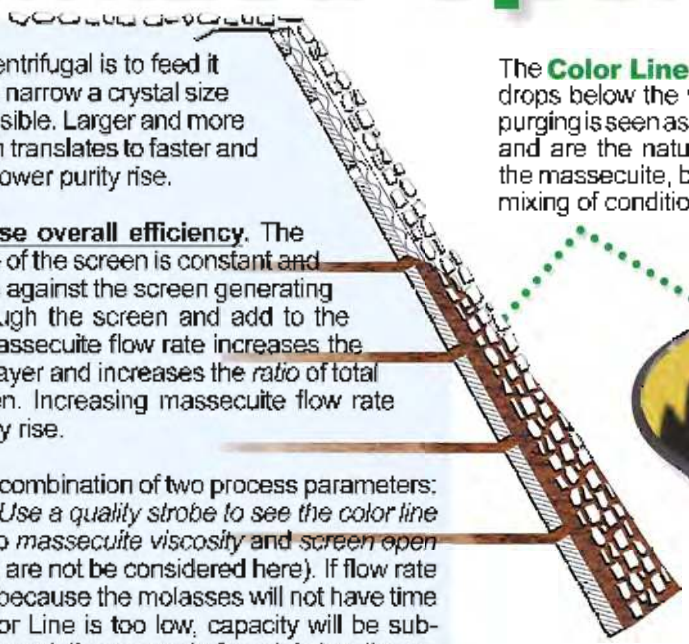
Continuous Centrifugal Optimized Operation

The best way to increase performance of a centrifugal is to feed it as large a crystal (MA, mean aperture) and as narrow a crystal size distribution (CV, coefficient of variation) as possible. Larger and more consistent crystals improve permeability which translates to faster and more complete purging, higher capacity and lower purity rise.



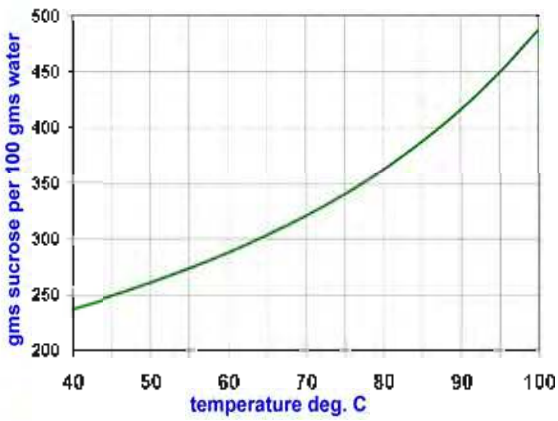
The **Color Line** is the point at which molasses drops below the visible crystal surface. Uneven purging is seen as "fingers" which are unavoidable and are the natural result of inconsistencies in the massecuite, broad crystal distribution or poor mixing of conditioning water and massecuite.

Maximize massecuite flow rate to increase overall efficiency. The amount of sugar sliding directly on the surface of the screen is constant and the high G forces grind some of these crystals against the screen generating "fines". Some of these "fines" will pass through the screen and add to the purity rise of the molasses. Increasing the massecuite flow rate increases the percentage of sugar riding above this lowest layer and increases the *ratio* of total sugar relative to the layer against the screen. Increasing massecuite flow rate results in both higher capacity *and* lower purity rise.

Color Line Position represents the resultant combination of two process parameters: massecuite flow rate and purging efficiency. (*Use a quality strobe to see the color line clearly.*) Purging efficiency is directly related to *massecuite viscosity* and *screen open area* (MA and CV affect purging efficiency but are not be considered here). If flow rate exceeds purge rate, the color line will be high because the molasses will not have time to fully separate from the crystals. If the Color Line is too low, capacity will be sub-optimal and purity rise will increase because the relative percent of crystal abrading on the screen will be high. Too low a color line can also cause the crystals to become too dry. Controlling these factors will give the maximum capacity and lowest purity rise.

For "C" sugar, the Color Line should be 1/2 to 2/3 of the way up the basket depending on crystal purity requirements. For "A" and "B" sugars the Color Line should be about 1/2 way up the basket. The lower color line allows more complete purging and increased crystal purity. The color line can be controlled as follows:

1. **Increasing massecuite flow rate** will raise the color line.
2. **Decreasing massecuite viscosity** will increase purging efficiency and lower the color line. Viscosity reduction can be accomplished by direct dilution or temperature increase:
   a. **Adding Water** to the centrifuge feed will decrease viscosity (i.e., direct dilution), increase purging rate and lower the color line. The general practice is to add 2/3 of the water to the feed and [optionally] 1/3 of the water to the spray inside the lower half of the basket.
   b. **Injecting Steam** into the massecuite just before it enters the centrifugal decreased viscosity and increase purge rate. A 10°C increase in massecuite temperature will lower viscosity by approximately half, thus doubling the purge rate and thus lowering the color line. Be certain not to increase temperature too far beyond the saturation point where crystals will start to redissolve. *See saturation temperature curve at right.*



3. **Increase Screen Open Area** - Assuming the open area of the basket itself is not the limiting factor*, the screen open area will be a limiting factor to molasses purge rate. Increasing the purge rate will lower the color line and allow the massecuite flow rate to be increased. *Open area can be increased by using larger slots, but more small crystals will pass through the screen and increase molasses purity rise.* The best method to increase screen open area is to use **Western States High-Capacity** screens which have twice the open area for a given slot size. ***Western States baskets have the greatest amount of basket open area and can take full advantage of the High-Capacity screens.***

Check Screens Often - Worn screens can increase purity rise dramatically. Visually inspect screens weekly and monitor purity rise to detect possible screen wear and look for whole crystals in the molasses as indicators of severe screen damage. **Standard Screens** in "C" applications can last 3-6 months if properly installed and maintained **- Long-Life Screens** can last 6-12 months.

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