Cush-Cush Screen Area and DSM Screen Width

Area of a cush-cush (fine bagasse) screen per t cane/h and its share by mill (Hugot ch. 22), and the width of a DSM curved screen for the juice flow.

Method: Hugot; Handbook of Cane Sugar Engineering; ...

Input parameters

Unit system: SI

Parameter	Value	Unit
Crushing rate	250.00	t/h
Number of 3-roller mills (crusher not counted)	5.0000	
Juice flow to the DSM screen	260.00	m³/h
DSM bar spacing	1 mm (7 500 L/h per dm)	

Calculated results

Parameter	Value	Unit
Cush-cush screen area	20.000	m²
Area for the first mill	7.5000	m²
Area for the second mill	5.0000	m²
Area for each following mill	2.5000	m²
DSM screen width	3.4667	m

Notes for this case

- Hugot: 0.07 m² per t cane/h for 12–14 rollers, 0.08 for 15–17 and 0.09 for 18–20; shares 3 : 2 : 1 : 1 ... from the first mill.

Formula and method

$$S = A(0.03 + 0.01 N_m), \quad S_1 : S_2 : S_n = 3 : 2 : 1, \quad W = \frac{\dot{V}_j}{q_{dm}}, \quad q_{dm} = 7.5 \text{ m}^3/\text{h per dm } (1 \text{ mm}),\ 6.0\ (0.7 \text{ mm})$$

Variables

A	Crushing rate	kg/s
N_m	Number of 3-roller mills (crusher not counted)	-
$\dot{V}_j$	Juice flow to the DSM screen	m³/s
spacing	DSM bar spacing	-
S	Cush-cush screen area	m²
S_1	Area for the first mill	m²
S_2	Area for the second mill	m²
S_n	Area for each following mill	m²
W	DSM screen width	m
q_{dm}	DSM capacity per dm of width, by bar spacing	m³/s per m

Method and standards

Hugot's area and capacity rules.

Assumptions and limits

- Hugot's rules for normal preparation; fine preparation needs more area.
- The line 0.03 + 0.01 N_m reproduces Hugot's figures for four to six mills (12–20 rollers); outside that a note says the area is extrapolated.
- With two mills there is no following mill, so S_n is not shown.

References

- Hugot
- Handbook of Cane Sugar Engineering
- 3rd ed. (Elsevier, 1986)
- ch. 22
- screen area and the D.S.M. screen
- pp. 354–356

Report details

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Release checks	2 reference cases of this calculator, computed independently, are checked on every release

Results are for engineering estimation. Verify critical designs against the referenced standards and your own data.

This calculator online

https://calc.firecad.com/sugar-ethanol/milling/cush-cush-screen-area

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.