Cogeneration Export Power per Tonne of Cane

Power exported and kWh exported and generated per tonne of cane from generation, auxiliary consumption, sugar mill power use and the crushing rate.

Method: Energy balance; kWh/t = kW ÷ t/h

Input parameters

Unit system: SI

Parameter	Value	Unit
Power generated	30.000	MW
Cogeneration plant auxiliaries (share of generation)	8.0000	%
Sugar mill power use	7.0000	MW
Crushing rate	250.00	t/h

Calculated results

Parameter	Value	Unit
Power exported	20.600	MW
Exported per tonne cane	82.400	kWh/t
Generated per tonne cane	120.00	kWh/t

Formula and method

$$P_x = P_g(1 - k_a) - P_m, \quad e_x = \frac{P_x}{C}$$

Variables

P_g	Power generated	W
k_a	Cogeneration plant auxiliaries (share of generation)	-
P_m	Sugar mill power use	W
C	Crushing rate	kg/s
P_x	Power exported	W
e_x	Exported per tonne cane	J/kg
e_g	Generated per tonne cane	J/kg

Method and standards

Energy balance.

Assumptions and limits

- Steady operation.
- Off-season (crushing rate 0) gives the export power only; the per-tonne figures need cane.

References

- Energy balance; kWh/t = kW ÷ t/h

Report details

Report reference	FCC-JR5G-JDZR (the same inputs always give the same reference)
Generated	17 November 2026, 19:50 UTC
Calculator	Cogeneration Export Power per Tonne of Cane
Method last reviewed	13 November 2026
Software release	FireCAD Calc, release of 17 November 2026
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/steam-power/cogeneration-export-per-tonne-cane

Open this case on calc.firecad.com →

Reopens the calculator with the inputs of this report.