

Two corrugator plants, Turkey

24.75 % and 21.20 % less energy per tonne

A closed steam and condensate cycle with Jetomat® (Baelz 590) thermocompressors took the steam traps off the corrugators at two plants. Unit energy consumption, logged month by month, fell by about a quarter at the first plant and a fifth at the second.

-24.75 %

Plant 1: energy per tonne
Jun-Dec 2019 vs 2018

-21.20 %

Plant 2: energy per tonne
Jan-Nov 2018 vs 2017

No plume

outside Plant 2
gone with the
thermocompressors

20-45 %

savings, 17 plants
in Turkey; payback 7-
18 months

01 The plant and the duty

PLANTS	Two corrugated-board plants, Turkey
PLANT 1	Corrugator line; 13 bar g main; two Jetomats, discharging at 8 and 10 bar g
PLANT 2	Corrugator with two single-facer groups and a double-backer group; 11 bar g main
EQUIPMENT	Jetomat® (Baelz 590) variable-nozzle thermocompressors, separators, a hot-water pump
MEASURED	Unit energy consumption (UEC), m³ per tonne, every month

02 Before

Steam from the main fed every corrugator user, each draining through its own steam trap. The condensate went to an open condensate tank, where its flash steam vented to atmosphere in a visible plume.

03 What changed

- The steam traps came out. Each group of users is fed by a Jetomat® (Baelz 590) driven by steam from the main.
- Each group drains untrapped into a separator, and the separator's vapour is that Jetomat's suction: a closed recirculation loop.
- At Plant 1, two Jetomats on the 13 bar g main take suction at 7.5 and 9.5 bar g and discharge at 8 and 10 bar g. Condensate cascades from the 9.5 to the 7.5 bar g separator; a hot-water pump returns it to the boiler.

04 Results

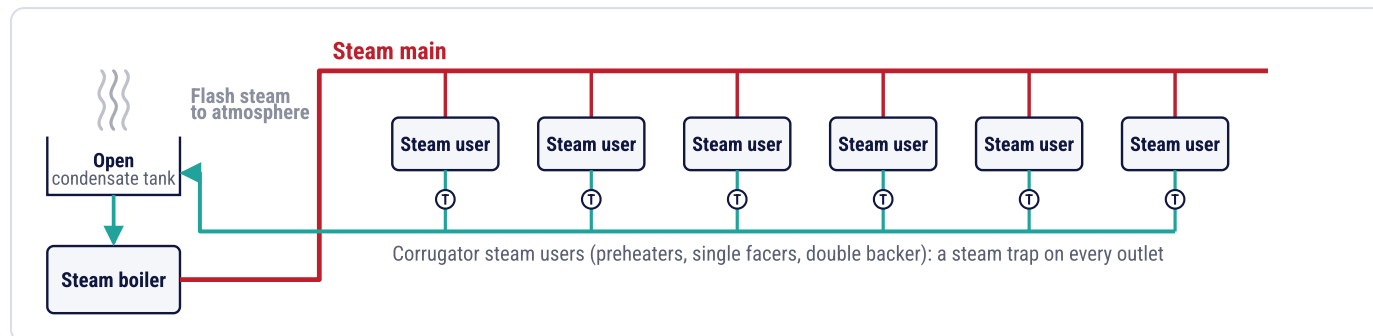
- Energy per tonne fell in every month logged: by 24.75 % on average at Plant 1 (June to December, 2019 against 2018) and by 21.20 % at Plant 2 (January to November, 2018 against 2017).
- The steam plume outside Plant 2, visible while it ran on steam traps, is gone.
- Across a group of 17 corrugator, paper and textile plants in Turkey with the same closed system (installed 2015-2023): average savings 20 % to 45 %, payback 7 to 18 months.

PLANT 1 · UNIT ENERGY CONSUMPTION, M³ PER TONNE

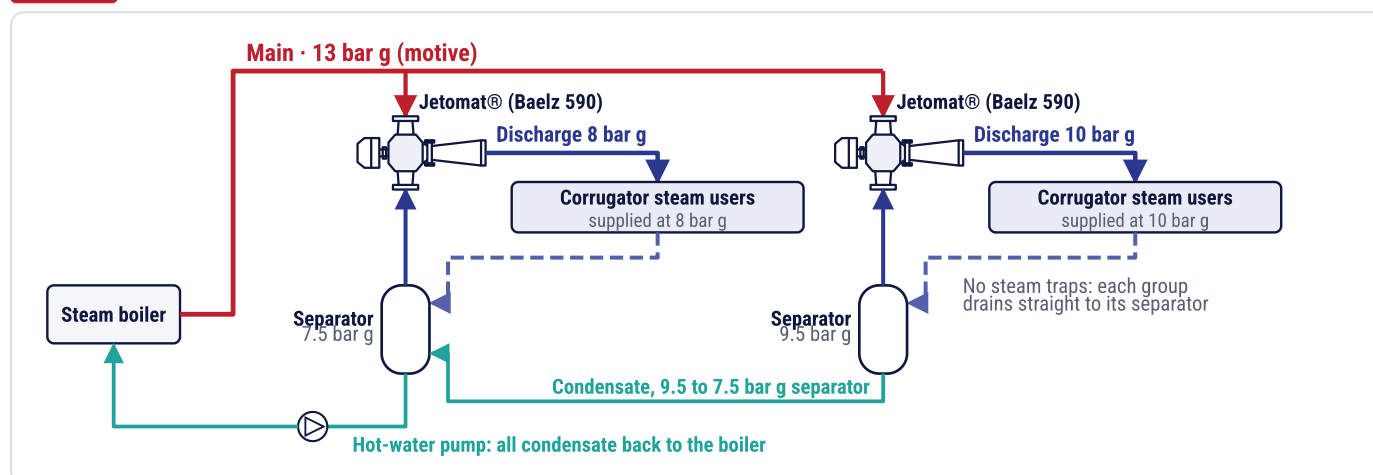
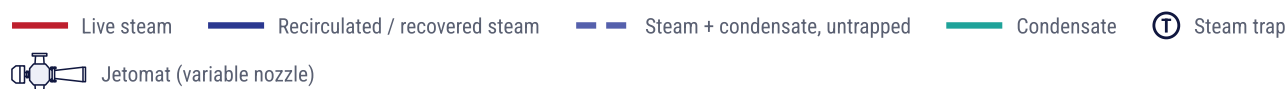
	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg.
2018	33.19	32.93	37.60	36.87	35.83	35.42	38.41	35.75
2019	28.76	26.35	26.97	25.94	25.82	26.29	27.53	26.81
Saving %	13.35	19.98	28.27	29.64	27.94	25.78	28.33	24.75

05 Plant 1's steam system, before and after

BEFORE



AFTER



PLANT 2 · UNIT ENERGY CONSUMPTION, M³ PER TONNE

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Avg.
2017	25.39	24.82	23.91	23.41	21.77	21.96	22.13	21.21	22.27	22.99	22.68	22.96
2018	19.41	18.79	18.05	17.76	17.56	16.93	17.44	17.70	17.57	18.37	19.16	18.08
Saving %	23.55	24.29	24.51	24.13	19.34	22.91	21.19	16.55	21.10	20.10	15.52	21.20

06 Why it works

A steam trap holds condensate back until it opens, so on a corrugator's rolls and hot plates a film of condensate and air sits on the heating surface. In the closed cycle there are no traps: the Jetomat keeps a small, steady pressure drop across each group, so steam blows through every user and sweeps condensate out continuously. The separator's vapour goes back to the Jetomat suction instead of a vent, the variable nozzle holds each group at its pressure, and the hot condensate returns to the boiler. Less energy goes into every tonne of board.

SOURCE Unit energy consumption measured monthly by the plants (m³ per tonne, as logged); the 17-plant figures are the installation partner's reference list.

07 On site at Plant 2 and Plant 1

BEFORE



Plant 2 roof vents on steam traps: a steam plume.

AFTER



The same vents with the closed cycle and thermocompressors: no plume.

BEFORE



Plant 1 before the change: flash steam escaping at the condensate pipework, the steam the closed cycle now keeps in the system.

PHOTOS Installation photos: Baelz installation partner.



Spend once. Use twice.

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