

Paper mill, South Korea

About 6 % less steam per tonne of paper, against a 5 % guarantee

Jetomat® (Baelz 590) steam ejectors at the steam groups turned the cascade steam system of a 59-cylinder paper machine into a direct system. Steam per tonne of paper fell by 0.10 t/t, worth about Rs 3.6 crore a year at the 2012 output.

0.10 t/t

less steam per tonne

1.66 to 1.56 t/t (2012)

Rs 3.6 crore

saving a year

at 2012 output and steam price

About 6 %

energy saving

against 5 % guaranteed

+2.3 %

production

285.1 to 291.6 t a day

01 The plant and the duty

PLANT	Paper mill, South Korea
MACHINE	59 drying cylinders, 1,524 mm diameter, in steam groups
OUTPUT	8,091 t a month (2012 average)
EQUIPMENT	9 × Jetomat® (Baelz 590), variable-nozzle
INSTALLED	First half of 2012

02 Before

The dryer section ran as a cascade: each steam group's condensate and blow-through steam went to a flash tank, and the flash steam fed the next, lower-pressure group. The last stage ended at a condenser and a vent.

03 What changed

- The cascade became a direct system: a Jetomat® (Baelz 590) at each steam group, driven by motive steam from the header.
- Each group drains to its own separator; the group's Jetomat draws the separator vapour back into the same group.
- The condensate joins the existing return to the boiler house.

04 Results

A · THE PLANT'S REPORT FOR 2012

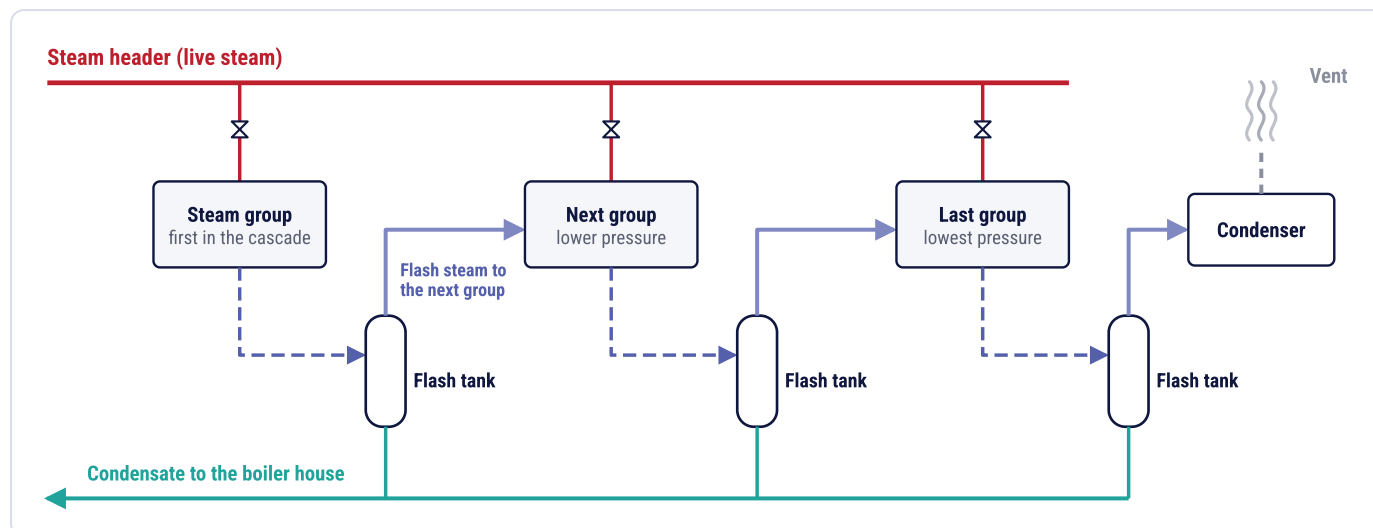
- Steam per tonne of paper fell from 1.66 to 1.56 t/t: 0.10 t/t less.
- Saving: 8,091 t of paper a month × 0.10 t/t × ~Rs 3,750 per tonne of steam × 12 months = **about Rs 3.6 crore a year**.
- That is 119 % of the ~Rs 3.1 crore energy-cost target, and 110 % of the steam target.

B · DAILY AVERAGES, BEFORE AND AFTER

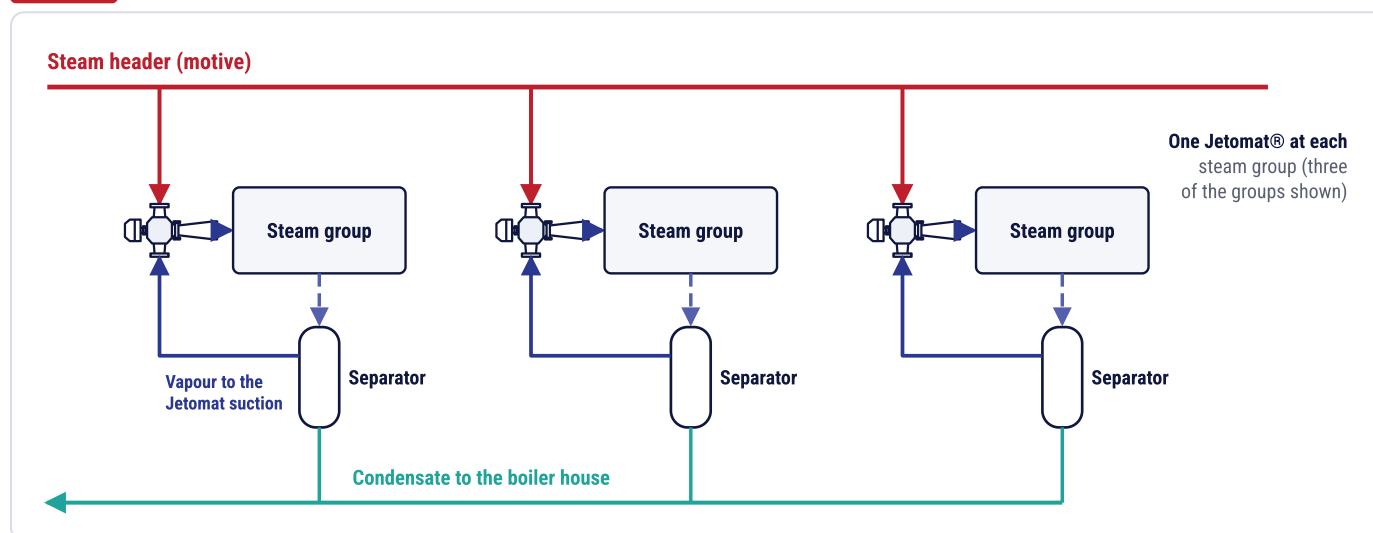
- Production rose from 285.1 to 291.6 t a day: 2.3 % more.
- Steam fell from 480 to 462 t a day: 18 t a day, 3.75 % less.
- Steam per tonne of paper: 0.10 t/t less, a reduction of 5.68 %.

05 The steam system, before and after

BEFORE



AFTER



06 Why it works

In a cascade every group lives on the flash steam of the group before it, so the pressure across each group, and with it the condensate removal, is set by the cascade rather than by what the cylinders need. With a Jetomat at each group, every group has its own pressure: the Jetomat drives the group's blow-through steam round again with motive steam from the header, keeping a steady flow through the cylinders and sweeping the condensate out. Less steam ends up at the condenser and the vent, so less steam is raised per tonne of paper.

SOURCE One paper machine, two reporting periods. A: the plant's internal report for 2012, as reported. B: daily averages of production and steam before and after installation, as reported by the Baelz installation partner.

07 The installation

AFTER



A Jetomat with its actuator at a dryer steam group



A group separator and its pipework

PHOTOS Installation photos: Baelz installation partner.



Spend once. Use twice.

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