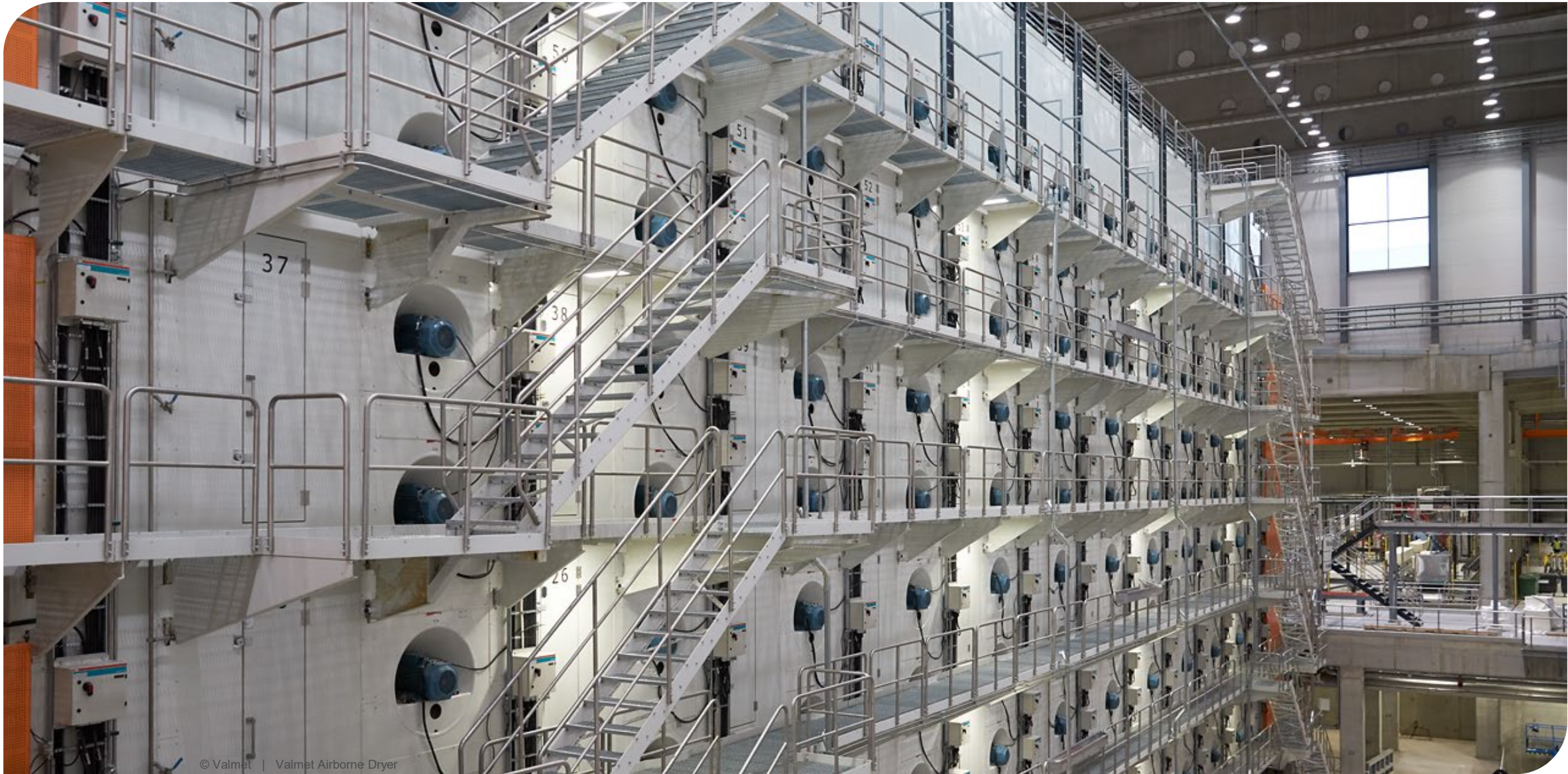




Valmet Airborne Dryer Concept

Makes your project fly



© Valmet | Valmet Airborne Dryer

Program

- Production efficiency
- Cost efficiency
- User-friendliness and safety
- Reliability
- Rebuilds
- Summary and unveiling of the new design
- Q&A

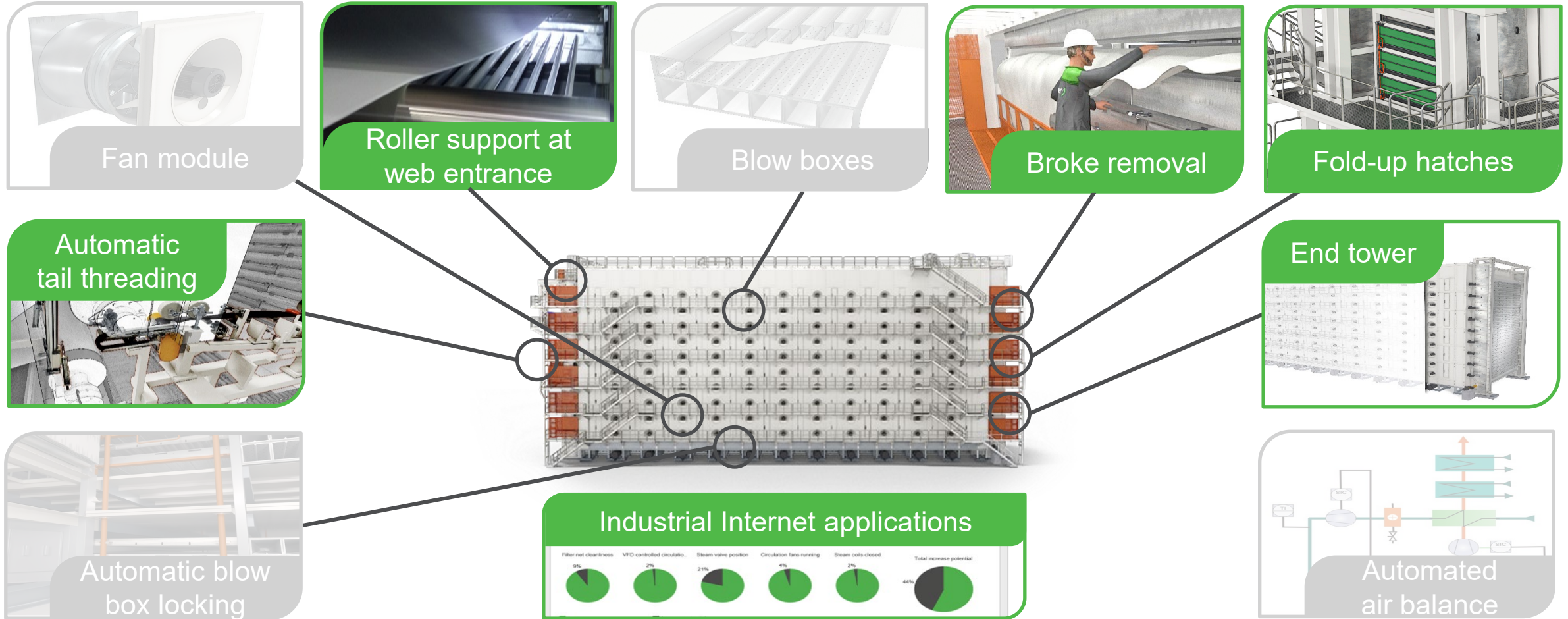




Airborne dryer production efficiency

Airborne dryer highlights

Main components



Automatic tail threading

Airborne dryer – Dry end side



Airborne dryer end hatch types

New type of Fold-up hatches increases production efficiency

Steel hatches

- Corroding material
- Heavy weight



Aluminium hatches

- Corrosion resistant
- Light weight



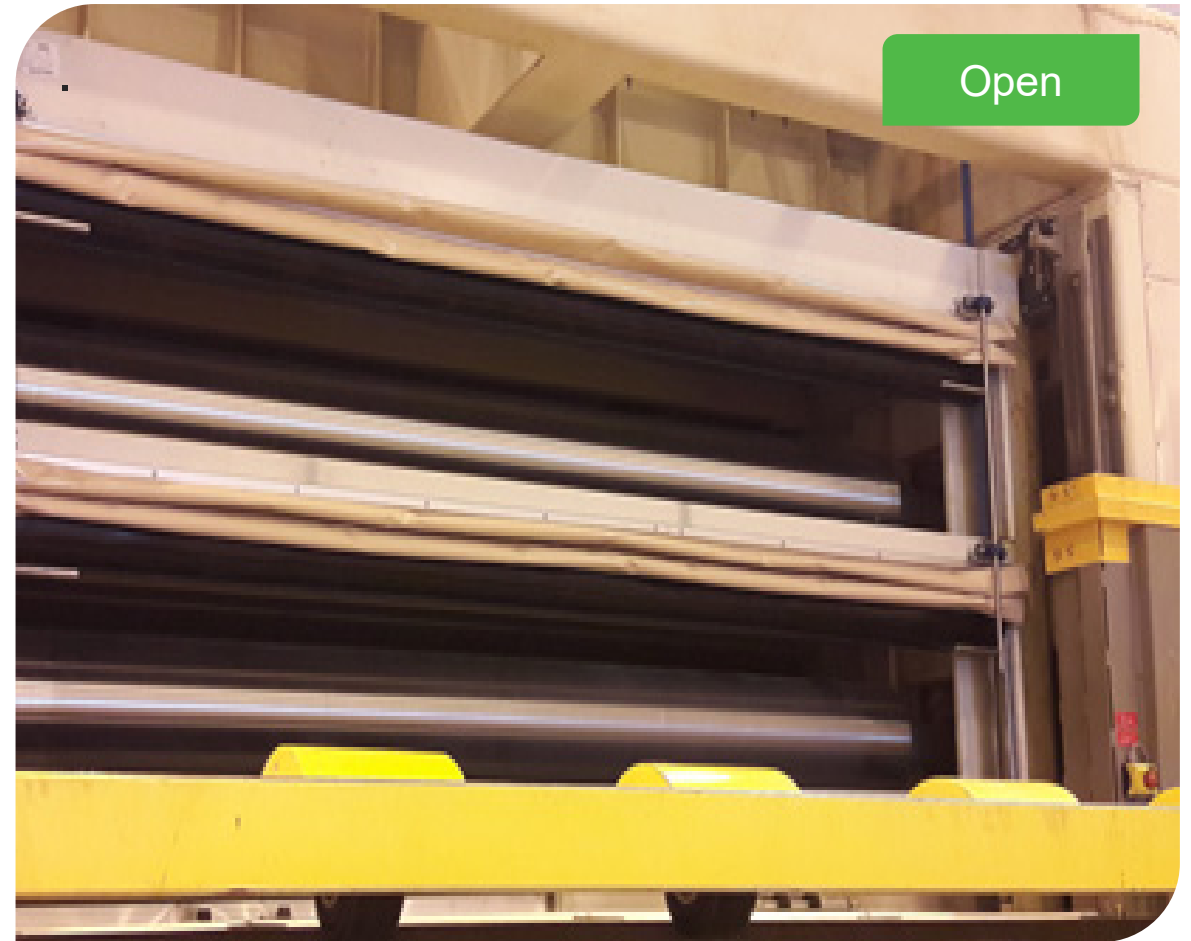
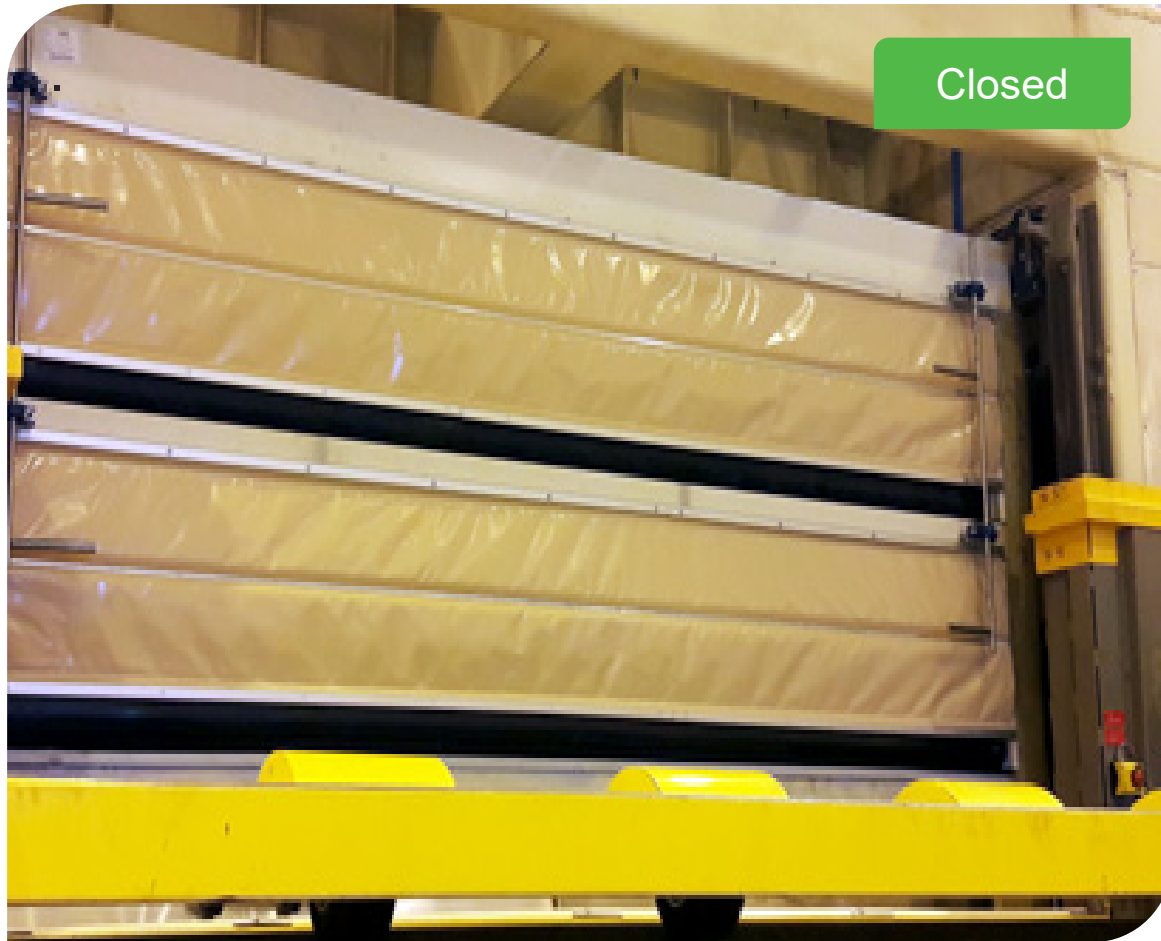
Fold-up hatches

- Corrosion resistant
- Easy & safe to use



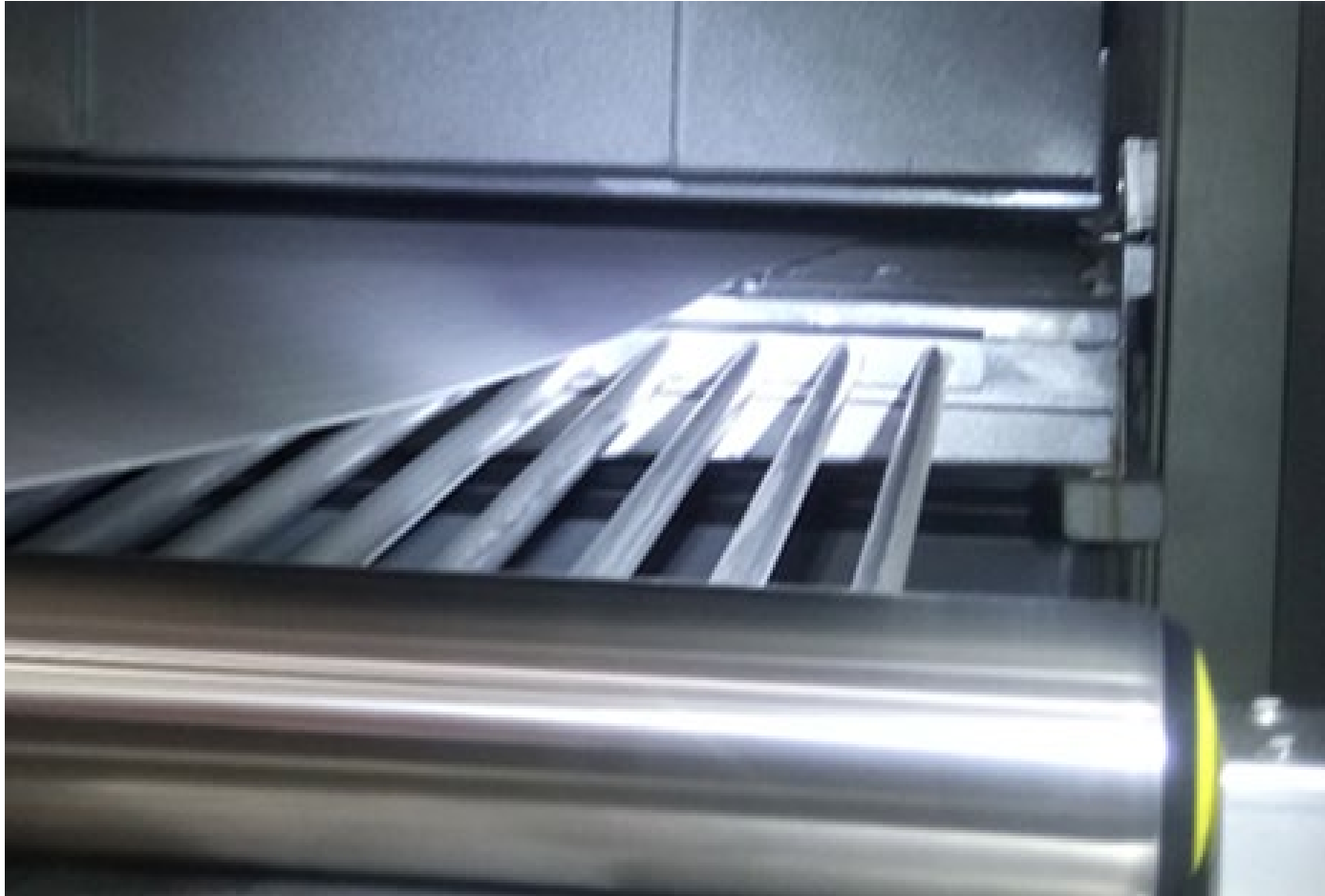
Fold-up hatches

Kaukopää, Finland - Installation September 2017



Rotating aluminum roller support at dryer inlet opening

Replaces metal list in dryer web inlet opening at the top drying deck



Reduces dust formation

– Inside and outside of the dryer

Allows optimal sheet entrance
between blow boxes

– Reducing dust formation



Valmet Airborne Dryer

Cost efficiency

Cost efficiency of the Valmet Airborne Dryer

The Valmet Airborne Dryer has been developed to keep customer's investment and operating costs to a minimum



- Modular design
- Manufacturing networks
- Efficiency in
 - Logistics
 - Site operations
 - Operating costs



Modularity

The modular structure is a great advantage to reduce capital investment costs



- Lower transport costs
- faster construction time
- better overall economy in the project.

High efficiency and low operating costs

It is not just the investment costs that are kept to a minimum with Valmet's Airborne dryer.

- The dryer delivers high efficiency and low operating costs with its key components:

- Circulation Fans
- Blow boxes
- Steam coils

- Additional improved features has been engineered to increase production efficiency

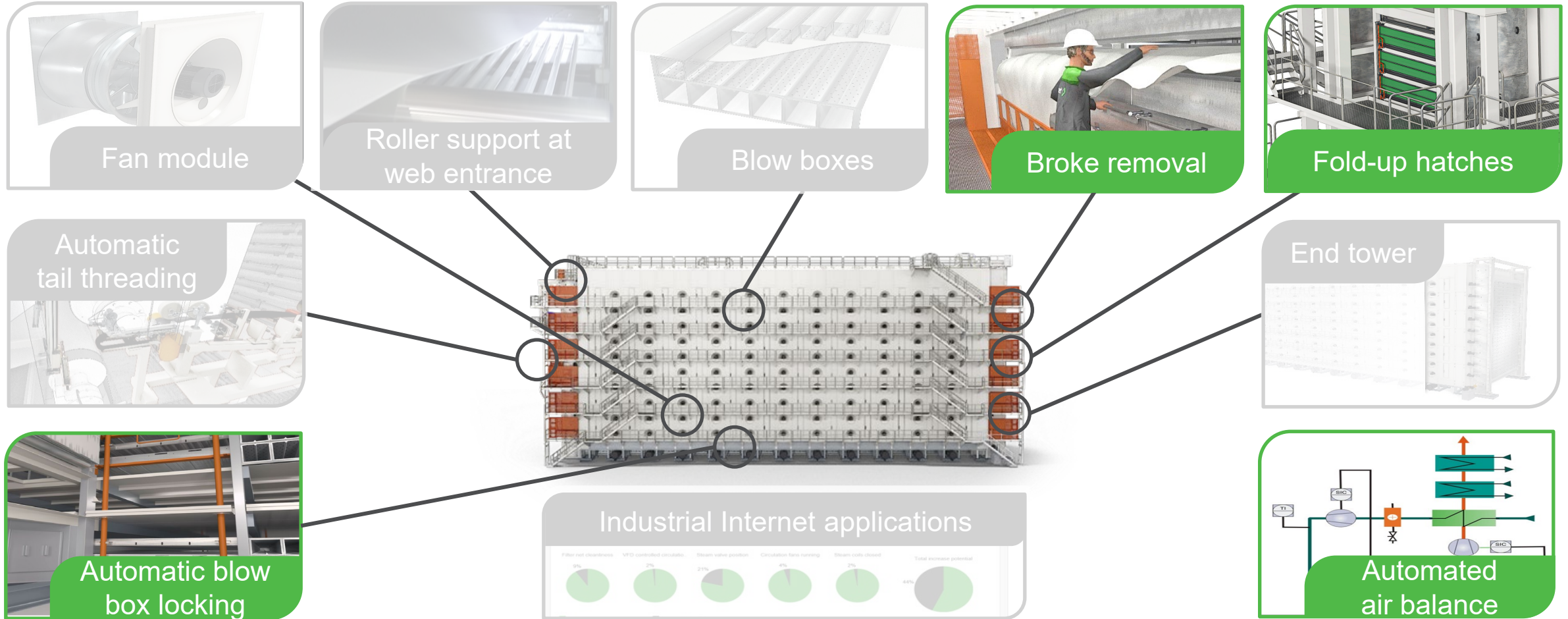
- Automatic tail threading
- Minimal dust formation
- Quick cleaning due to the fold up hatches
- End towers to reduce dust formation, to ensure higher efficiency
- Performance monitoring - Valmet's Industrial Internet



User friendliness and safety

Airborne dryer highlights

Main components



Efficient and safe work at smart dryer ends

Movable platform all the way up – enables safe checking of top deck



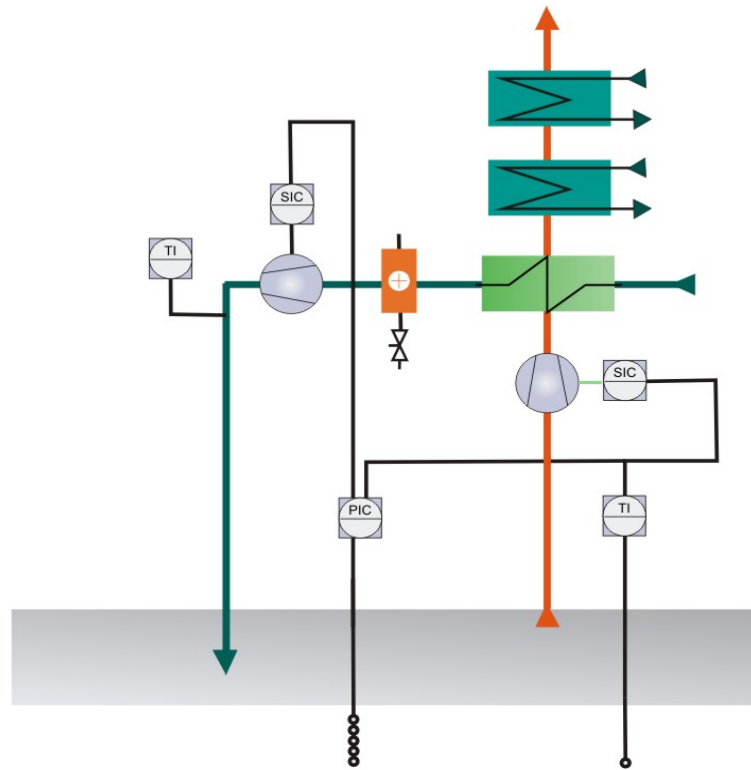
Photocell, safety light rail area

Movable rail module

- Enables safe work closer to dryer
- Enables efficient broke removal

Automated air balance of the Airborne pulp dryer

The pressure level inside the dryer is kept automatically at the set level



SIC Speed control
TI Temperature measurement
PIC Exhaust control - dryer temperature
Supply air control - dryer pressure

Benefits

- Reduced dust formation
- Energy saving potential
- Increased evaporation rate
- Prevent condensation and corrosion problem in dryer
- Reliable control
- Long calibration interval of instruments



Overall, NDP has been satisfied with the safety performance of its contractors and Valmet during the construction phase. We're expecting the new production line to be the safest in the facility."

Andrew Cooper, Mill Manager

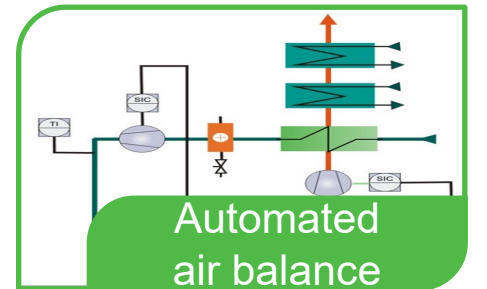
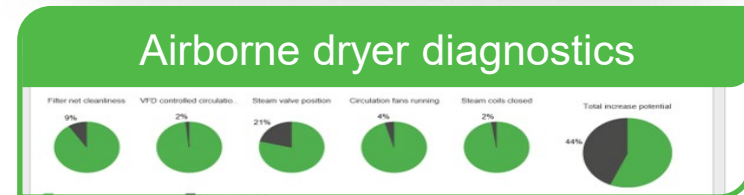
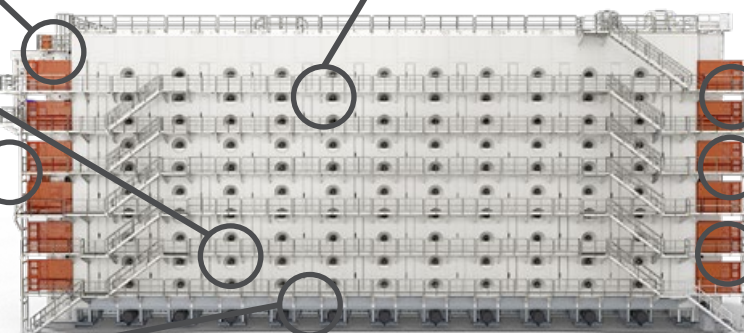
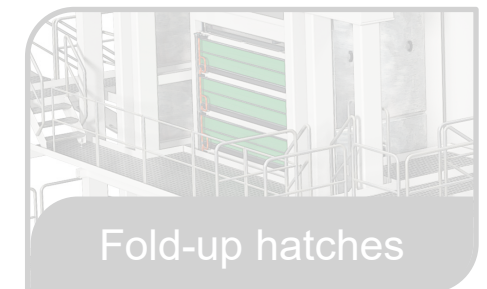
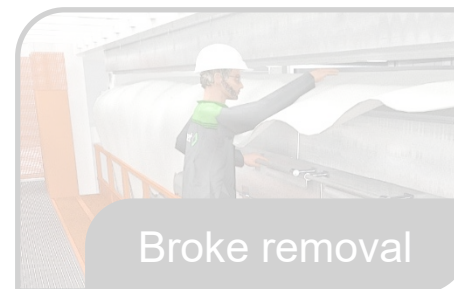
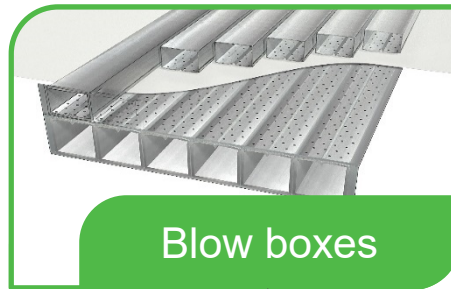
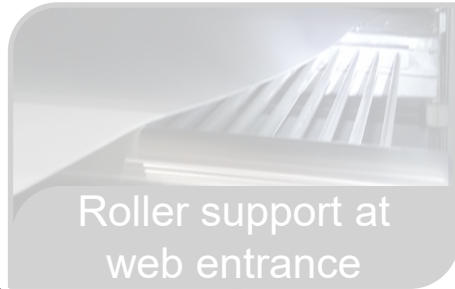


Valmet Airborne Pulp Dryer

Reliability

Airborne dryer highlights

Main components



Airborne Dryer blow boxes

The blow boxes are optimized regarding both web flotation and heat transfer

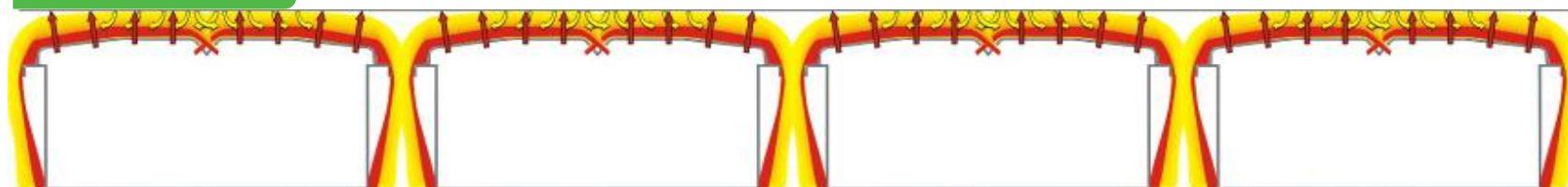
- Excellent heat transfer into the web
- Effective drying process giving a compact pulp dryer
- Blow box chamber without sharp edges
- Excellent flotation and web support
- Minimal dust formation



+8% higher specific evaporation/m²



Old model





Valmet Airborne Pulp Dryer Diagnostics

To determine the dryer evaporation capacity potential – and ensure using the full capacity

Valmet Airborne Pulp Dryer Diagnostics

Challenge:

- How to know what the unused Airborne dryer evaporation capacity potential is?
- What elements does the dryers drying capacity potential consist of?
- What needs to be done to get the drying capacity potential into use?

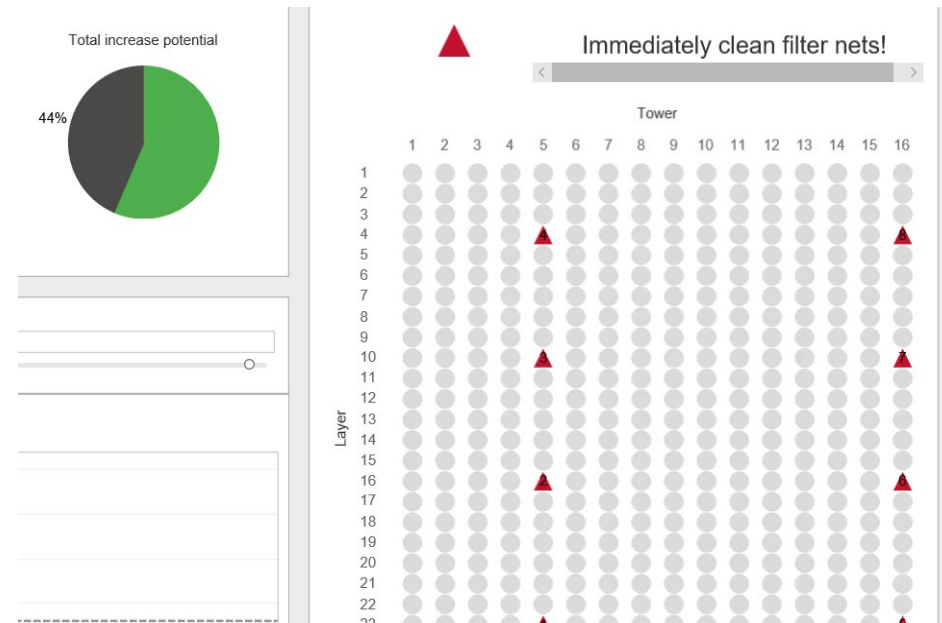


Solution:

- Airborne Pulp Dryer Diagnostics tells the drying capacity potential for increased production
- The different elements contributing to the dryers' drying capacity potential are pointed out
- Operators get feedback on needed actions

Results:

- Airborne Pulp Dryer Diagnostics increases the drying capacity and the pulp production capacity of the line





Airborne Dryer & Related System Rebuilds

Specialized in wide variety of Dryer rebuilds

- Variety of rebuilds – from small to extensive, Valmet or by others made dryers
- Focus on value adding in all aspects
- 1. Two example rebuild cases:
 - 1.1. Existing Dryer rebuild in 25 days
 - Production increase from 441 ADt/d to 750 ADt/d
 - No changes into the Dryer exterior dimensions, no impact to the machine room size
 - Complete Dryer framework & movable platforms re-utilized
 - 1. 2. Complete replacement of a Dryer with mega blocks installation method in 34 days
 - Production increase from 1 150 ADt/d to 2 100 ADt/d
 - No impact to the machine room size
- 2. Booster Dryer, Cooler and Thermo-compressor rebuilds

Case 2: Mega blocks installation, Värö

Job completed

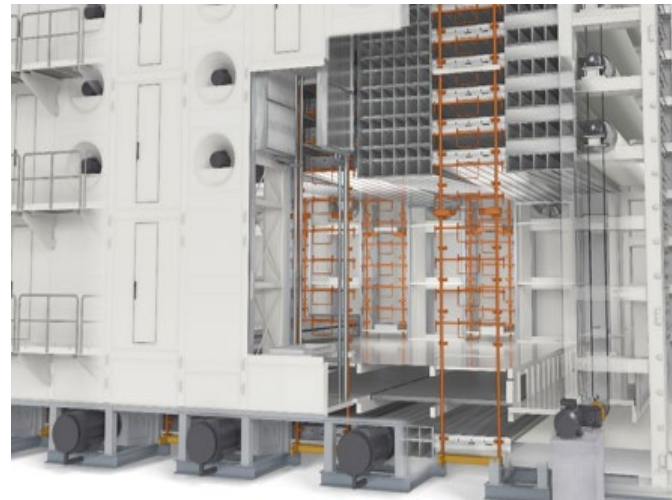
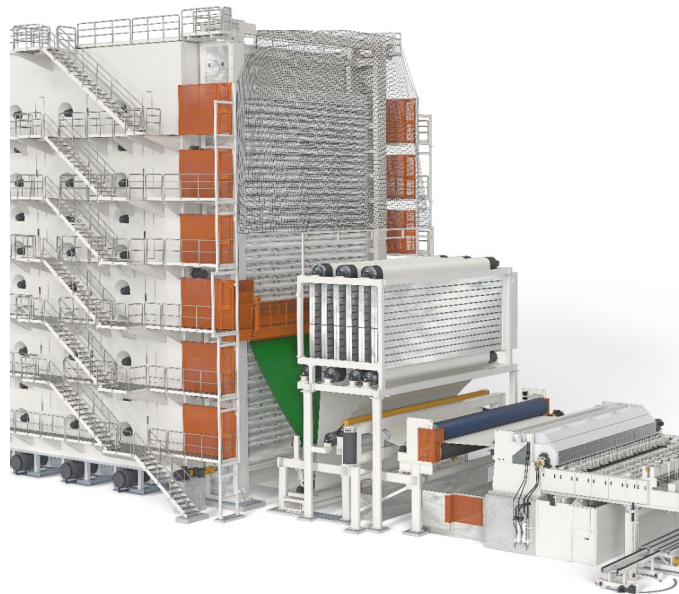
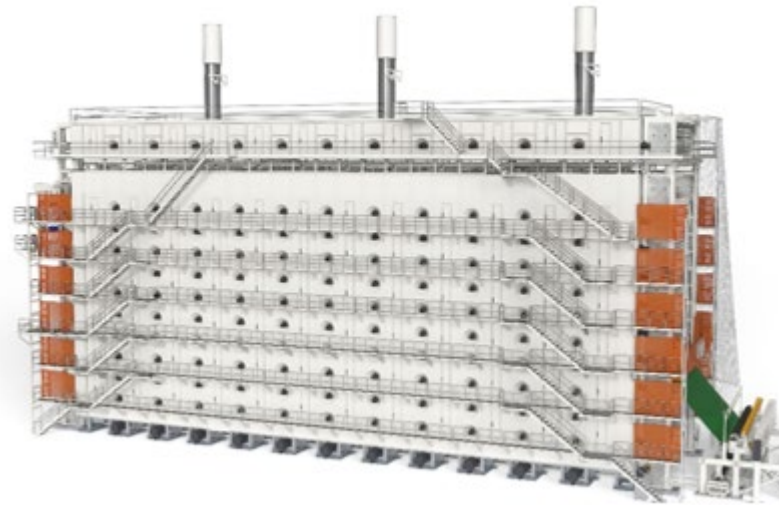
Mechanical Installation 25 days, total shutdown time 34 days



- Shutdown time 34 days (pulp-to-pulp)

- Production increase: from 1,150 ADt/d to 2,100 ADt/d
- No impact to machine room volume nor foundations

Boosters, coolers and thermo-compressor rebuilds



Two capacity increase options for Booster dryers:

- Booster dryer on top of dryer
- Convert supply air plenum for additional drying decks.

Also references of dryer capacity increase utilizing thermo-compressor
Detached coolers installed vertically or horizontally are also an option.

Summary and Q&A

- Production efficiency
- Cost efficiency
- User-friendliness and safety
- Reliability
- Rebuilds
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Valmet Airborne Dryer makes your project fly!

