ANDRITZ

NOVIMPIANTI
DRYING TECHNOLOGY

PULP & PAPER

DUST CONTROL TECHNOLOGY

CONVERTING LINES

JANUARY 22ND, 2019

CHAPTER OVERVIEW

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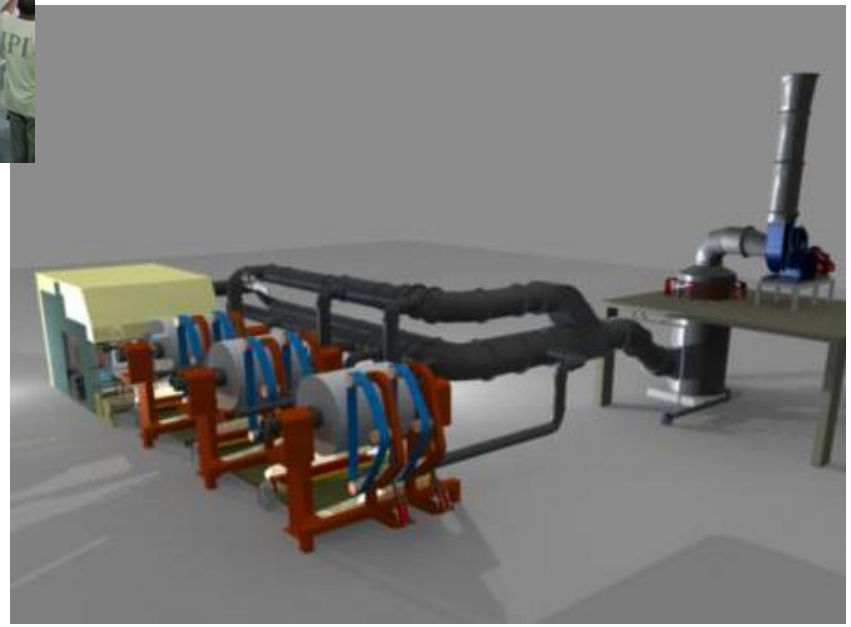
01 - CONVERTING DUST CONTROL TECHNOLOGY

Andiritz Novimpianti has developed an advanced Dust control technology for:

- Tissue machines
- Tissue winders
- Tissue converting lines



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01 - CONVERTING DUST CONTROL TECHNOLOGY

⇒Adaptations due to local needs are possible : kind of paper, layout, no interference with personnel operations …

⇒Basic system: **suction-points → dust filtering → fan**

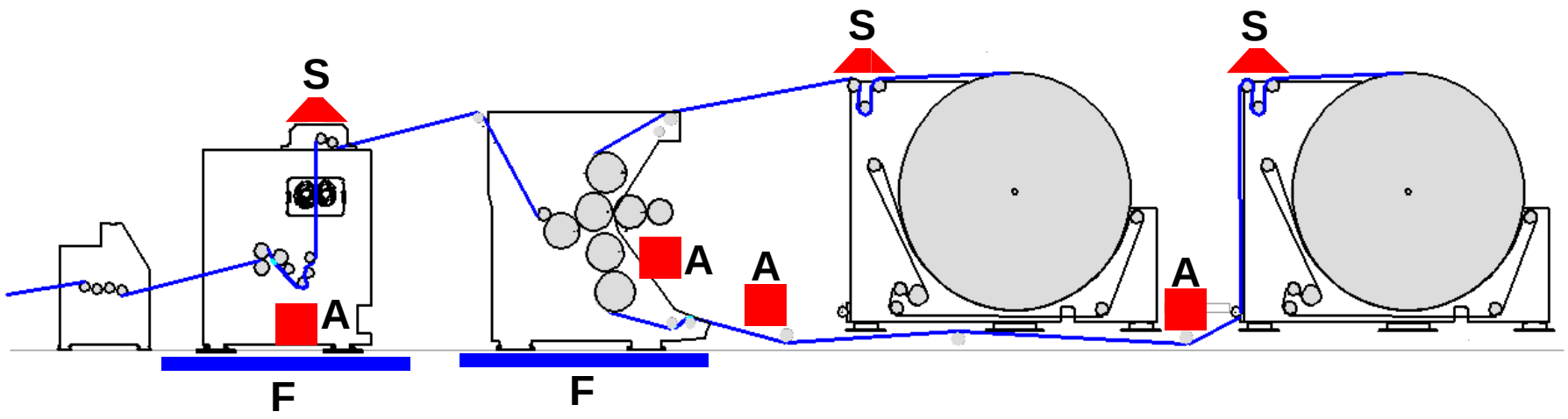
⇒Avoid oversized fans (maximize energy saving)

⇒Define position of inspection/cleaning/extinguishing-doors thoroughly

⇒Consider ATEX rules

01 - CONVERTING DUST CONTROL TECHNOLOGY

Converting Line General Overview



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01 - CONVERTING DUST CONTROL TECHNOLOGY

4 boxes total concept

Andritz Novimpianti dust control technology for converting line is based on different type and concept of suction boxes:

- ***A* Boxes** for **Across** suction

- ***S* Special boxes/hoods** for embosser/laminator and rewinder

- ***F* Boxes** (Optional) for **Floor** cleaning

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Across boxes

A Boxes are positioned on the critical points where dust is usually created :

- Where Unwinding
- Where embossing/laminating
- Where Rewinding

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Across boxes

A Boxes can achieve high efficiency in dust removing thanks to an internal design granting:

- High internal turbulence
allowing to avoid flow stagnation and dust accumulation

- Low pressure drop
granting equal captation capacity across the box span

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01 - CONVERTING DUST CONTROL TECHNOLOGY

Special dust suction boxes/hoods

S Boxes are positioned on special areas where dust is usually created:

- Where embosser/laminator presses the web with release of dust

- Where the web is rewinding

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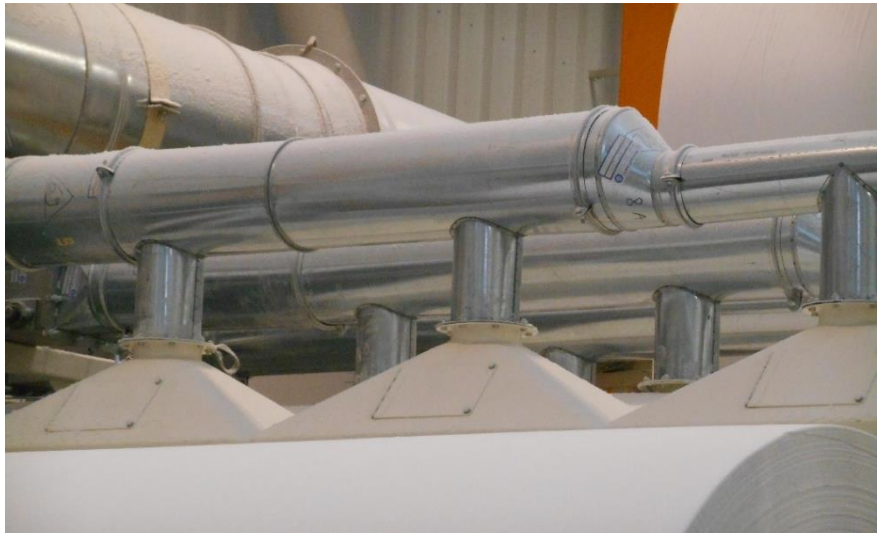
01 - CONVERTING DUST CONTROL TECHNOLOGY

Special dust suction boxes/hoods



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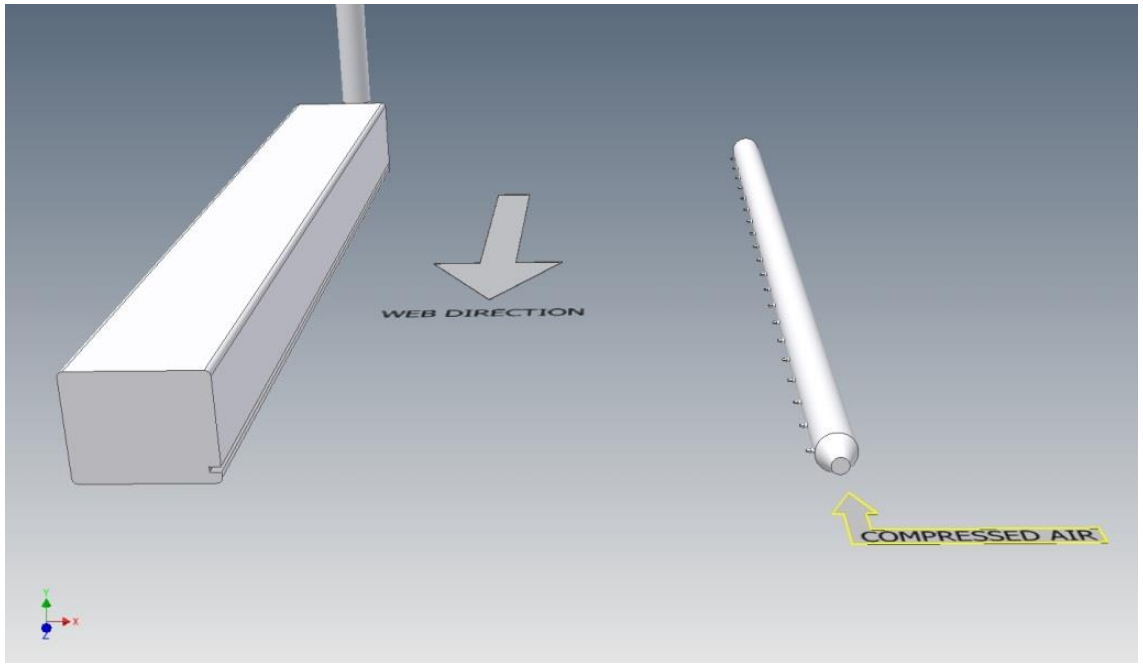
01 - CONVERTING DUST CONTROL TECHNOLOGY

Floor cleaning system



Floor cleaning system is designed to remove dust deposits on the floor under the unwinders, embosser/laminators and rewinder.

The system is composed by:

- Compressed air pipes, positioned at floor level on tender side, with nozzles to blow the dust toward the suction box (with pneumatic valve to open/close the compressed air flow)

- Suction box **F Boxes**, positioned at floor level on drive side, to collect dust moved by compressed air pipe.

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Floor cleaning system

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02 - DUST SEPARATION

The whole dust suction system is connected to an external air system.

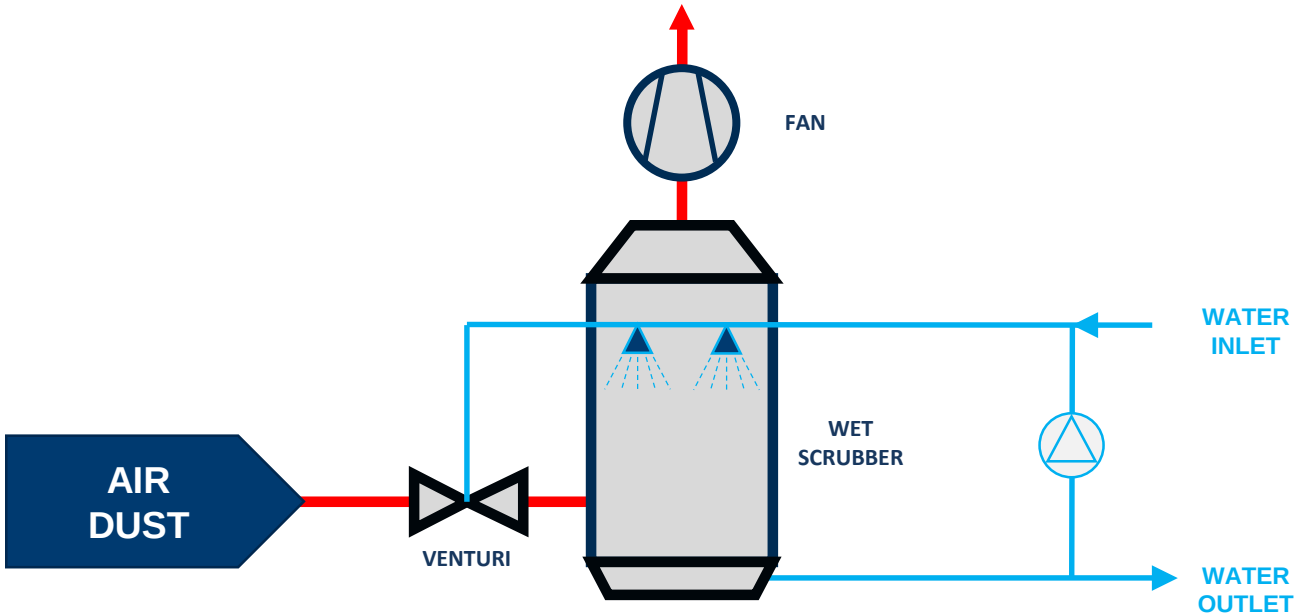
According to local water availability, the air system can be of 2 types:

- Wet Scrubbing

- Dry Collecting

02 - DUST SEPARATION

Dust separation with web scrubber: water open circuit with recirculation



ADVANTAGES

- No firing and explosion risk
- Water circuit with recirculation and water flow regulation for water consumption reduction

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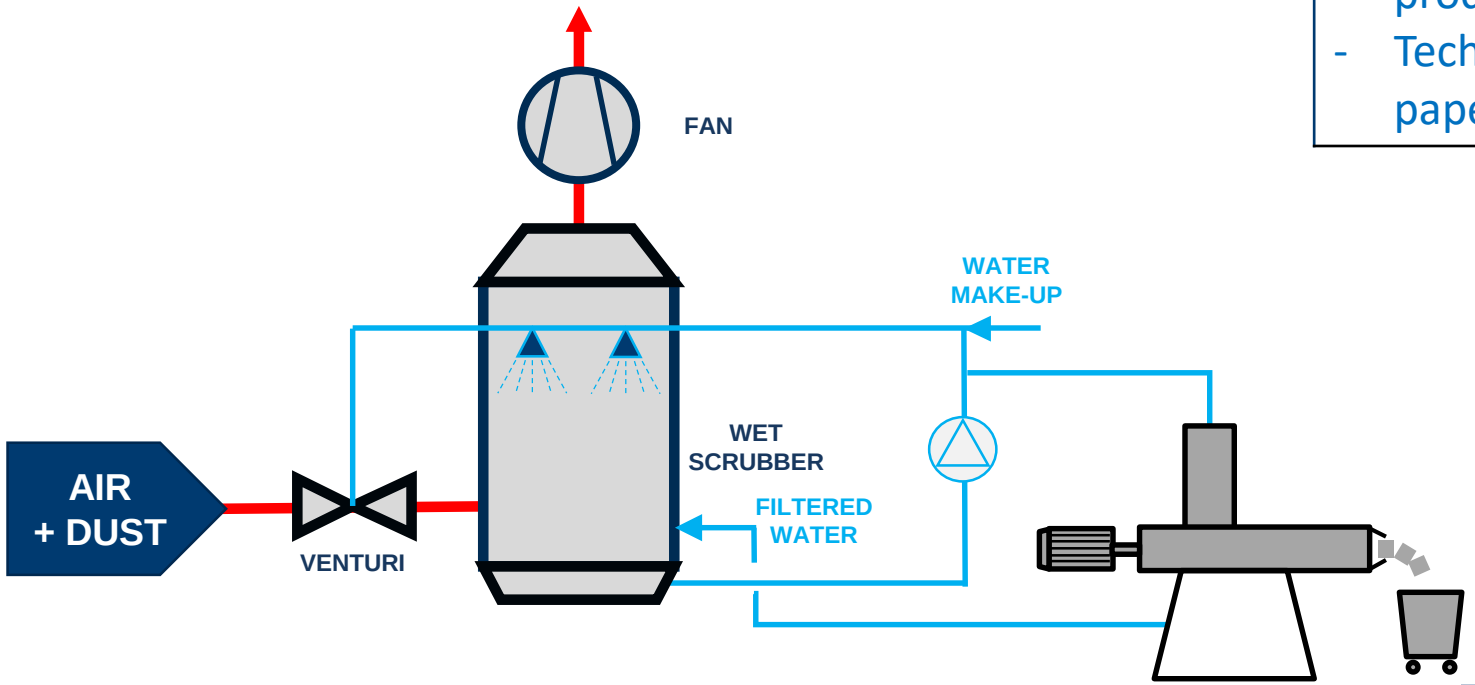
02 - DUST SEPARATION

Dust separation with web scrubber: water closed circuit



ADVANTAGES

- Minimum water consumption
- Extracted dust, rich in short fibers, is removed from production cycle.
- Technology applicable to converting plants without paper machine

Novimpianti Dust/Water separator main features:

- Dry content of paper bricks ≈ 45%
- Installed power: 2 kW

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02 - DUST SEPARATION

Dust separation with dry filtering

Dry filtering is made of:

- Ducting from converting line dust collectors
- Dry filtering group with fabric bags
- Ducts to exhaust fan

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02 - DUST SEPARATION

Dust separation with dry filtering

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02 - DUST SEPARATION

Dust separation with dry filtering

Explosion prevention membranes

Removable panels on filter roof
(for inspection and maintenance)

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02 - DUST SEPARATION

Dry filtering group

Main features of dry filtering group are:

- Filtering by fabric bags reinforced and antistatic

- Differential pressure transmitter to measure pressure drop

- High efficiency cleaning system for filtering bags with pneumatic solenoid valves

- Continuos discharge of collected dust with motorized cochlear conveyor

- Bricket Press to generate bricks with the collected dust (option)

- Accordance to ATEX rules for external installation (option for adaptation to internal installation)

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02 - DUST SEPARATION

Dry filtering group

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02 - DUST SEPARATION

Continuos dust discharge and compaction

Separated dust is discharged by dry filtering group and can be collected by standard bags or compacted with a special designed (optional) bricket press.

These pictures show a Bricket Press that generates bricks with the collected dust.

Compacted bricks can be easily moved and carried

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03 – BENEFIT SUMMARY

Low energy consumption

Paper at reel [mm]	2800
Typical suction flow rate [m^3/h]	45.000
Typical fan motor installed power [kW]	75

Andritz Novimpianti dust removal system brings low energy consumptions because :

- The system is strictly designed for customer production and converting line

- The number of working unwinding stations and converting machines “drives” the fan volume / motor power consumption

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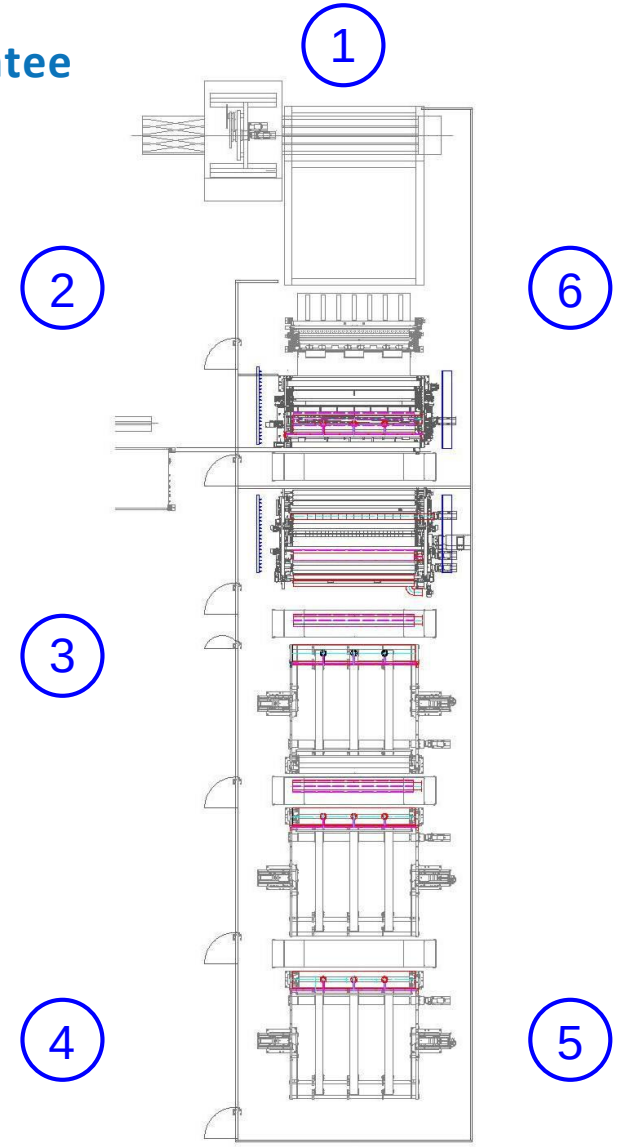
03 – BENEFIT SUMMARY

Performance guarantee



Andritz Novimpianti guarantees that the dust control system will provide an airborne exposure level at the converting line area not exceeding 5 mg/m^3.

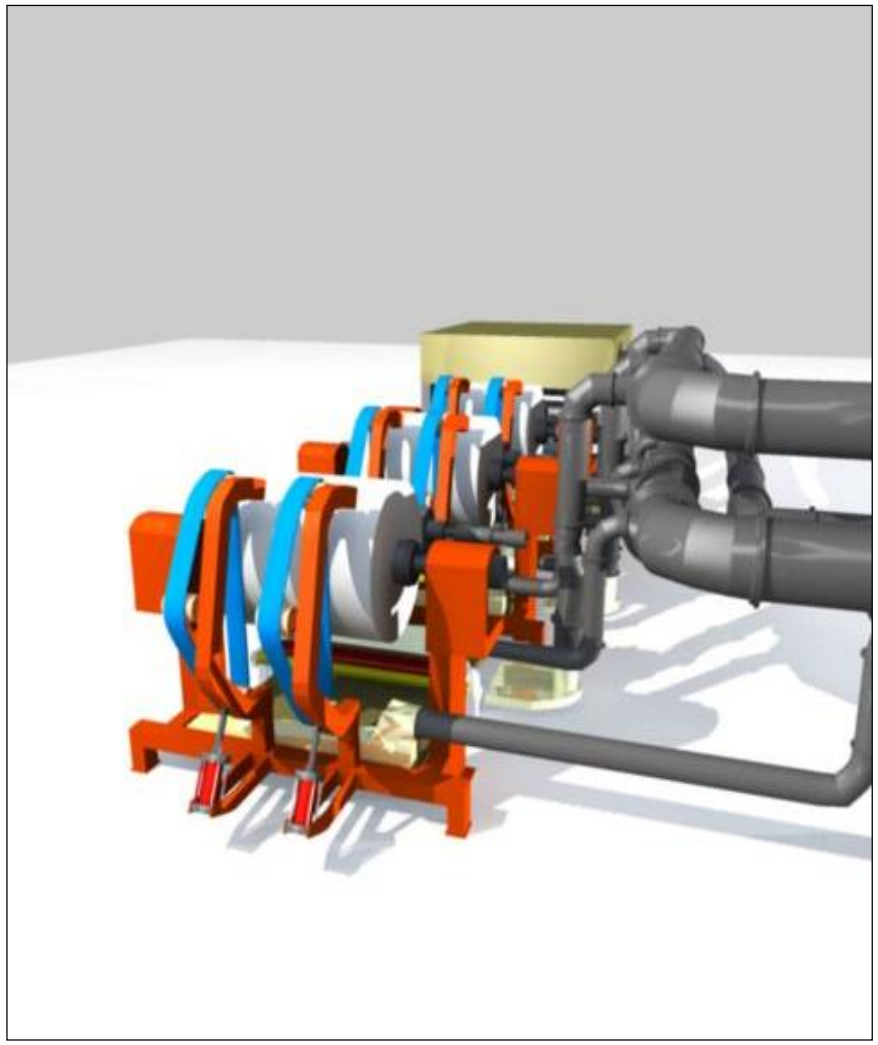
Test protocol assumes that:

- The dust level measure is taken in different stations at 1,5m from the converting line and 1,5 from floor level

- Operators in different stations around the converting line's area are endowed with special dosimeters

- At shift end the collected dust is weighted and averaged by time and stations to obtain the value

03 - BENEFITS SUMMARY



Andritz Novimpianti with his latest dust technology can provide to Tissue converting Customers:

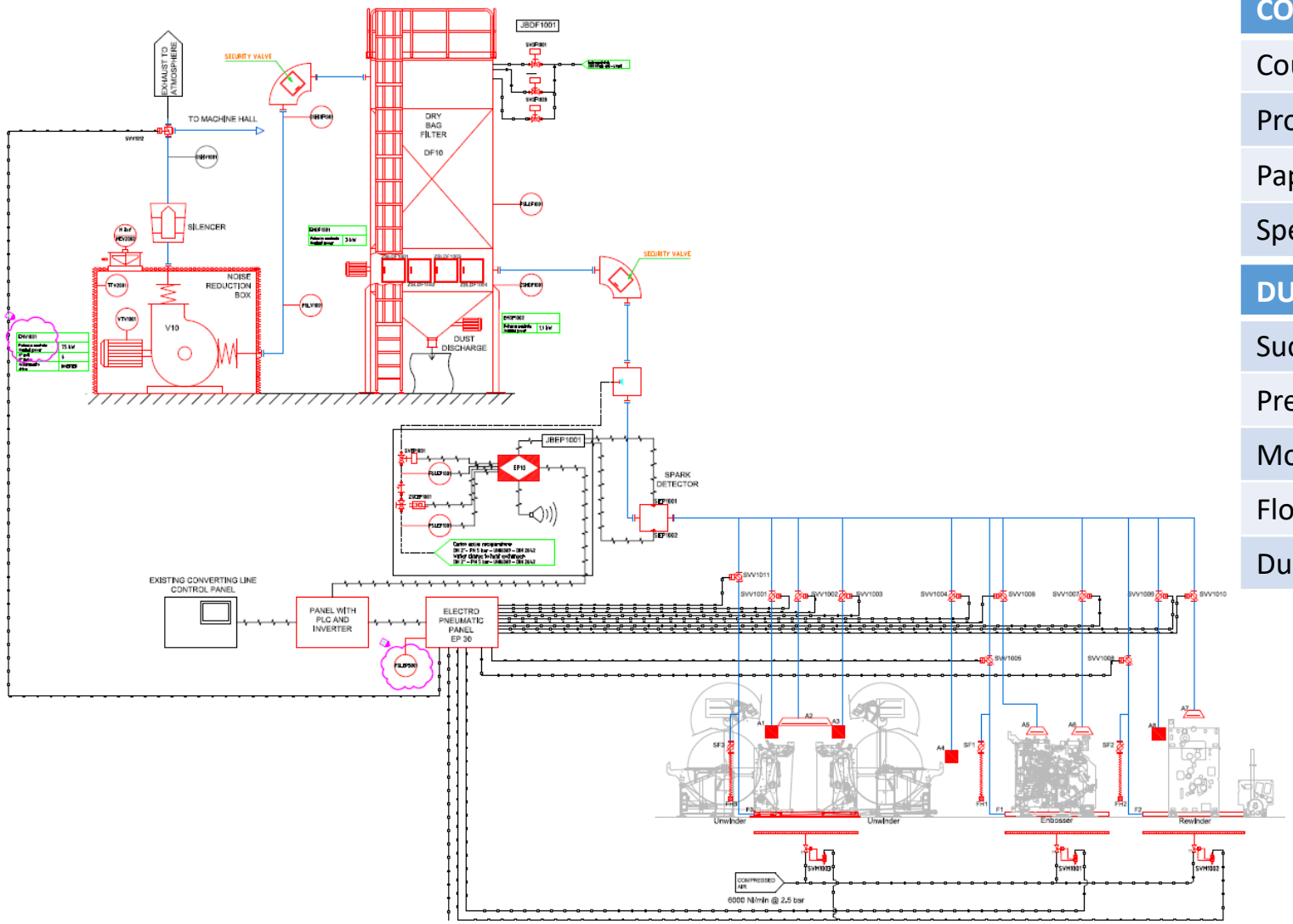
- Efficient boxes to remove the dust

- Low energy consumption

- High enviromental standards for final product and for the operators

04 - CASE HISTORY ON CONVERTING LINE

K-C SANTIAGO (CHILE)



CONVERTING LINE	
Country	Chile
Products	Toilet rolls
Paper width	2800 mm
Speed	600 m/min

DUST SUCTION SYSTEM	
Suction flow	45’000 m^3/h
Pressure	4000 Pa
Motor	75 kW
Floor cleaning	Yes
Dust Separation	With dry filter

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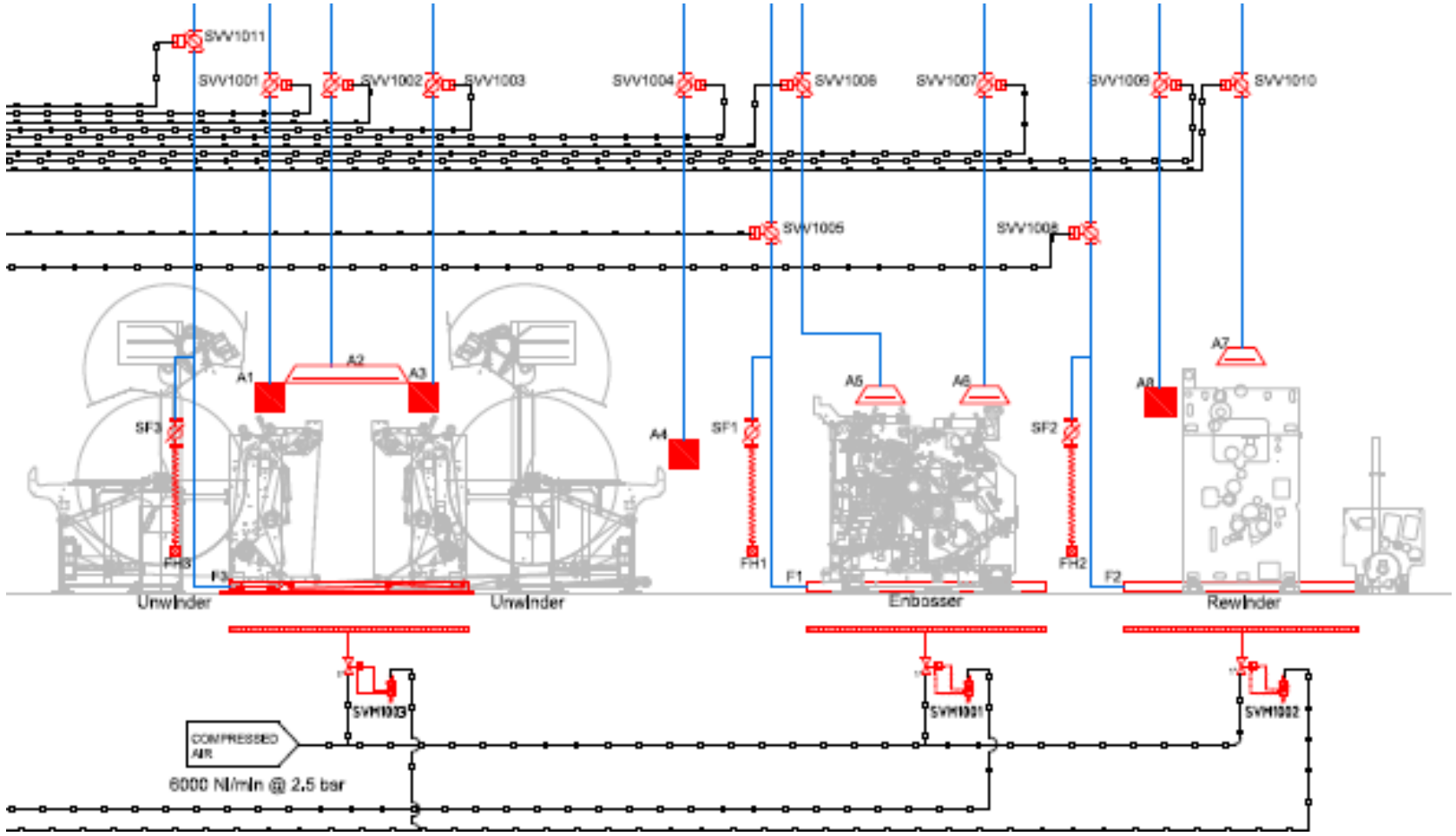

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04 - CASE HISTORY ON CONVERTING LINE

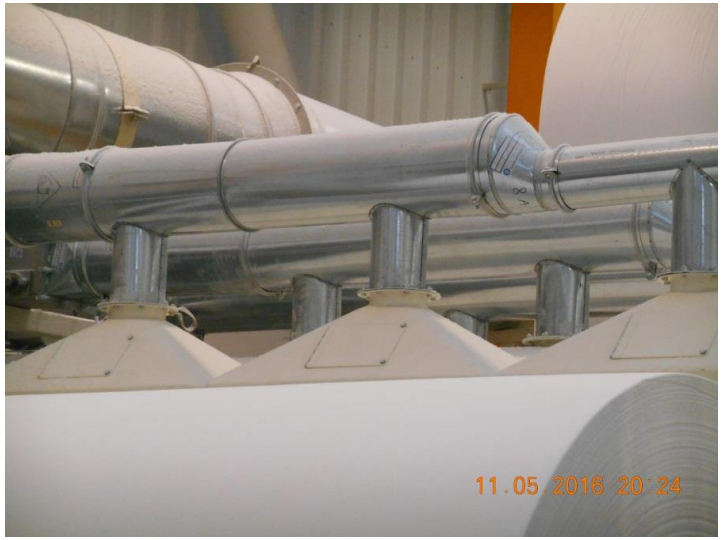
K-C SANTIAGO (CHILE)

The dust removal system is composed by:

- Dust suction hoods

- Dust suction boxes

- Floor cleaning boxes with compressed air blowing bars and suction from opposite side



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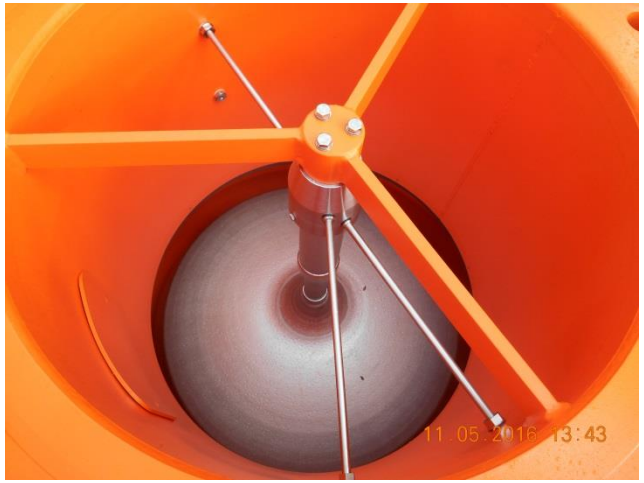

RESULTS

- Dust residual concentration in the area of the line < 5,0 mg/m^3
- Building cleaning time reduced of 65%

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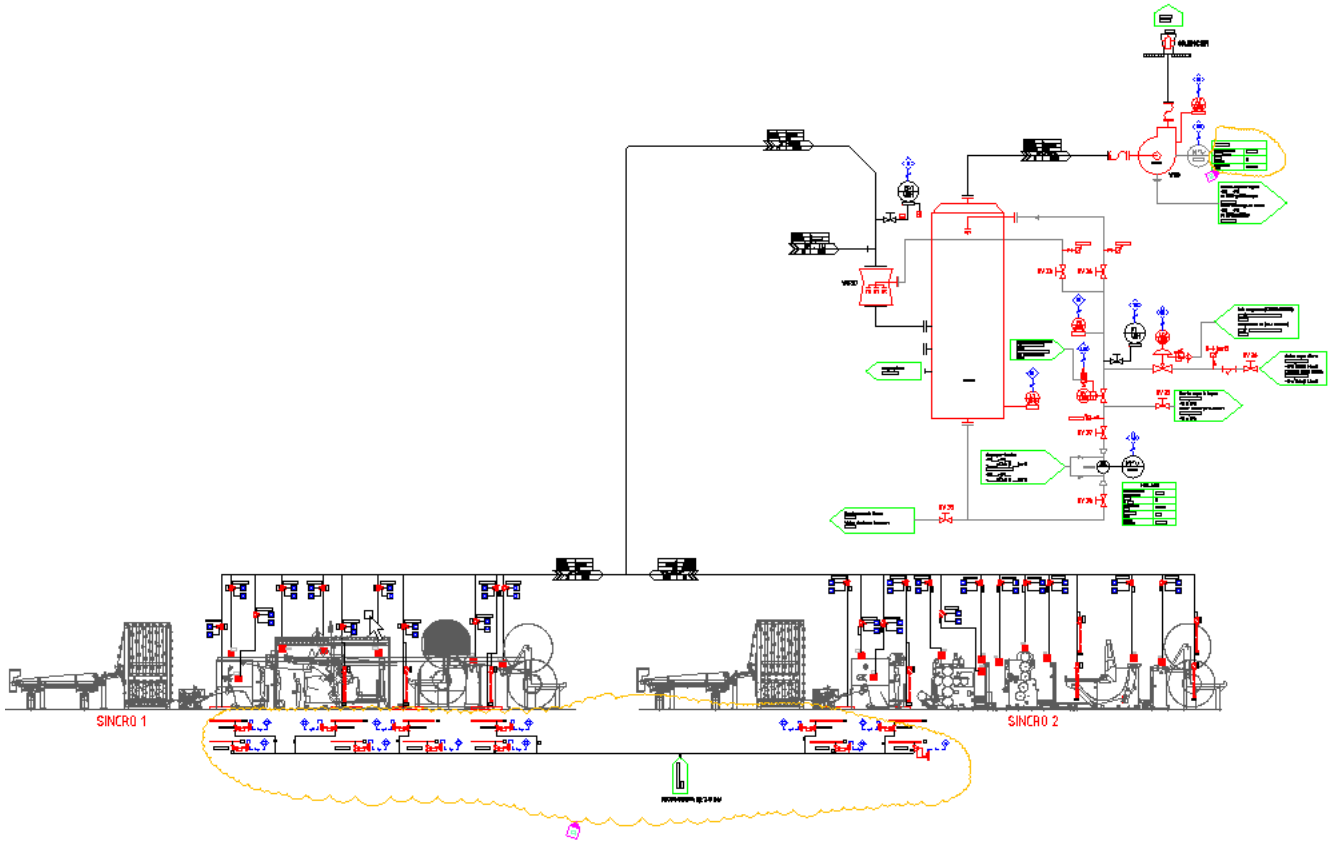
04 - CASE HISTORY ON CONVERTING LINE

K-C Bernal (Argentina)



Converting line data	
Product	Toilet roll
Basis weight	14,0 gsm
Sheet width	2,8 m
Op. speed	600 m/1’

New dust removal system	
Start Up	2015
Suction flow	90.000 m^3/h (n°2 lines)
Suction pressure	4000 Pa
Dust separation type	Wet scrubber

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04 - CASE HISTORY ON CONVERTING LINE

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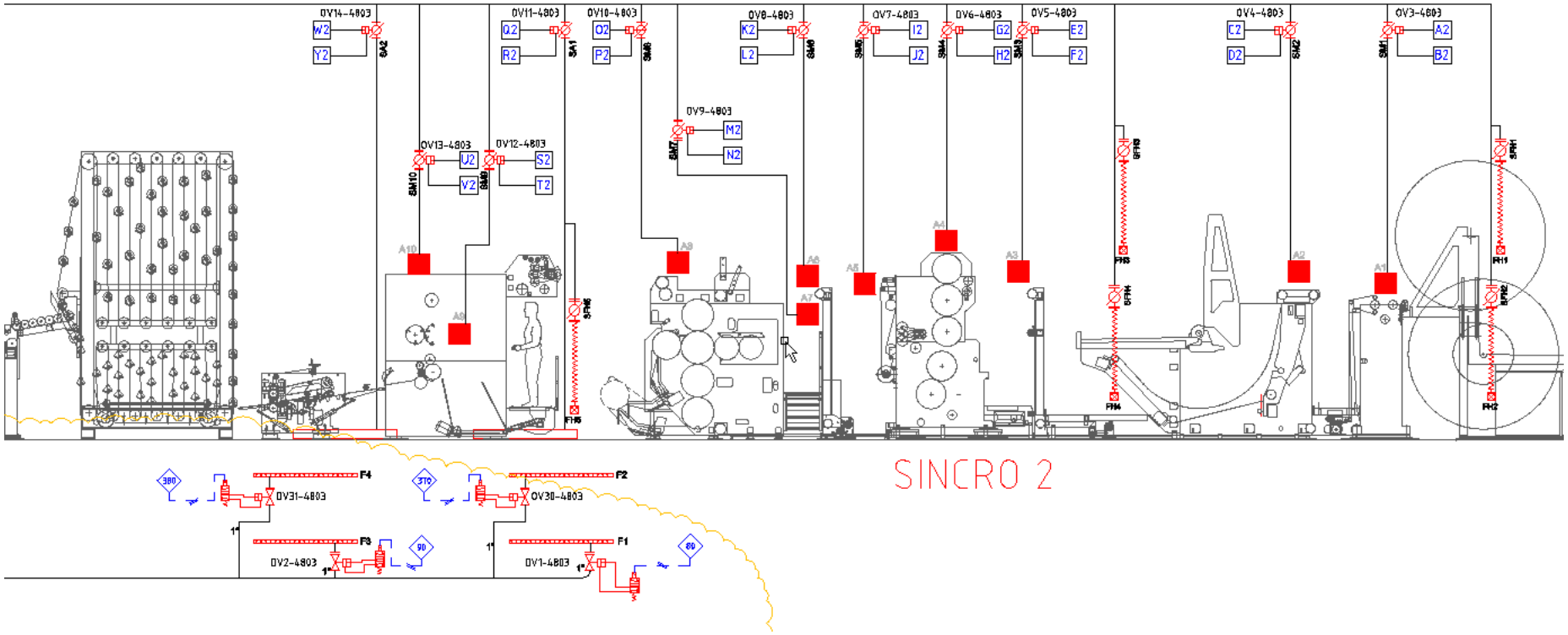

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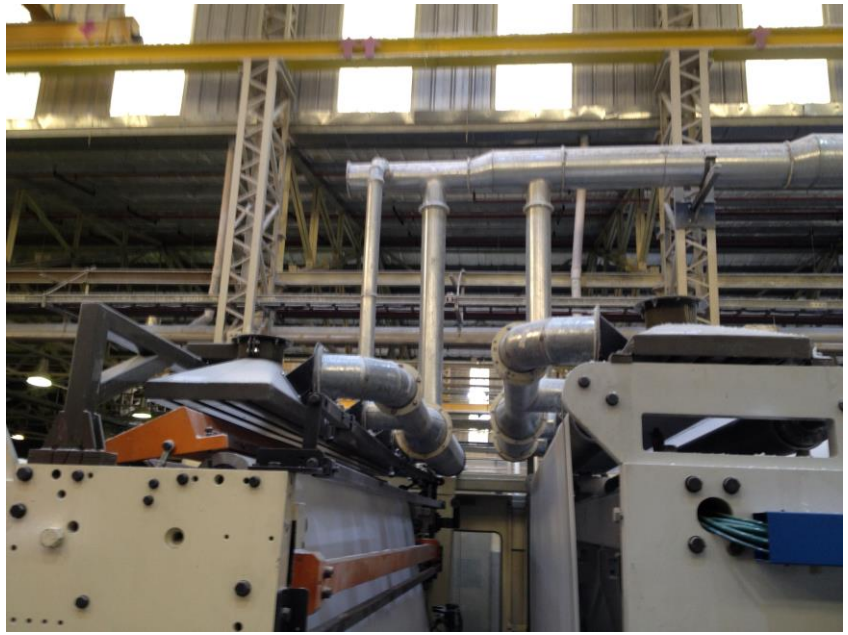

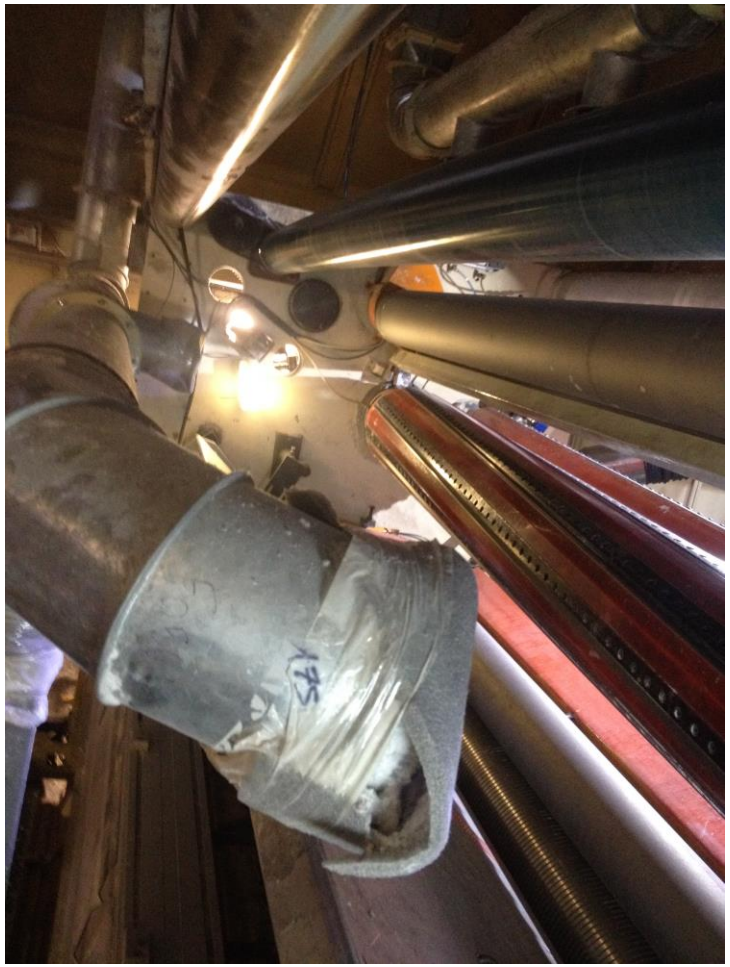

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K-C Bernal (Argentina)

RESULTS

- Dust residual concentration in the area of the line < 5,0 mg/m^3

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05 – REFERENCES AND LAST ORDERS

YEAR	PAPER MILL	Width [m]	Speed [m/min]
2015	Kimberly Clark (Chile)	2,8	600
2016	Kimberly Clark Bernal (Argentina)	2,8	500
2016	Kimberly Clark Bernal (Argentina)	2,8	500
2017	ABC Tissue Products (Australia)	3,5	500
2017	Queensland Tissue Prod (Australia)	2,8	600
2017	Queensland Tissue Prod (Australia)	2,8	600
2018	Kimberly Clark (Colombia)	2,8	600
2018	Kimberly Clark (Colombia)	2,8	600
2018	Kimberly Clark (Colombia)	2,8	600
2018	Kimberly Clark (Perù)	2,8	600
2018	Kimberly Clark (Perù)	2,8	600
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