

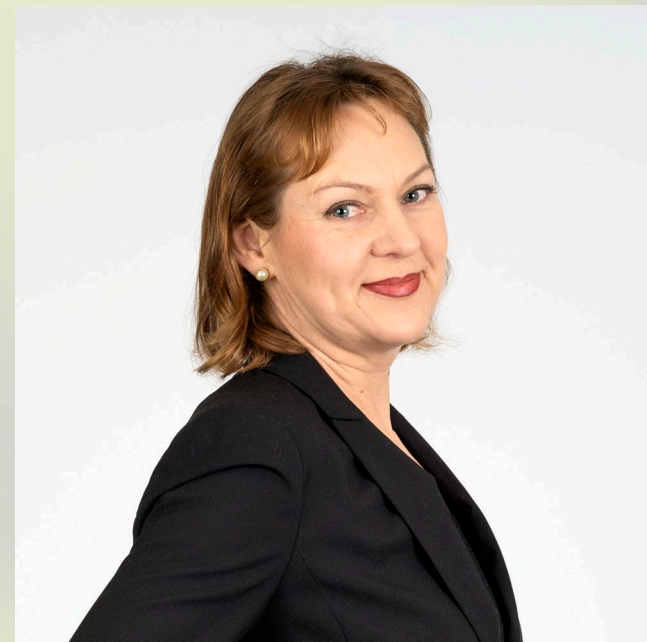
# Valmet Technologies Oy, Mervi Kuoppamäki

Development Manager, Line R&D

Olen ollut Valmetin palveluksessa kahteen otteeseen reilun parinkymmenen vuoden ajan ensin tuotepäällikön, tuotekehityksen sekä myynnin teknisen tuen tehtävissä ja nyt muovienkäyttöä korvaavien kuitutuotteiden kehityksessä. Työtehtäväkenttä herätti kiinnostukseni ja tiesin että yrityksen työkuultuuri on itselleni sopiva ja kollegat erittäin kyvykkäitä.

Ydinosuamista:

Teknisten ja kaupallisten asioiden nivominen yhteen, niiden ymmärrys ja tarkastelu, sosiaaliset taidot saada osaajat työskentelemään tiiminä.



Linkki HiPer videoon

Unique method for manufacturing thermoplastic biocomposites – Watch new video from the HiPer-project – HIGH PERFORMANCE CELLULOSE-BASED COMPOSITES ([hiperproject.com](http://hiperproject.com))

# Valmet EMEA general presentation & composites

13.10.2023 Mervi Kuoppamäki

# Agenda

- Valmet today
- Composites in papermaking concept
  - Roll covers
  - Doctors and doctor holders
  - Headbox sheets & wedges
  - Suction box covers
- Composite fiber project to combine wooden fibers and plastic to light strong structures

# Unique offering combining process technology, services and automation

## Board and paper technologies

- Board, paper and tissue production lines
- Rebuilds
- Machine sections

## Services

- Spare and process parts
- Workshop and roll services
- Fabrics
- Maintenance development and outsourcing
- Field services
- Process upgrades
- Industrial Internet solutions

## Pulp technologies

- Complete pulp mills
- Pulp mill processes
  - Wood handling, Cooking and fiber line, Pulp drying and baling, Chemical recovery

## Energy technologies

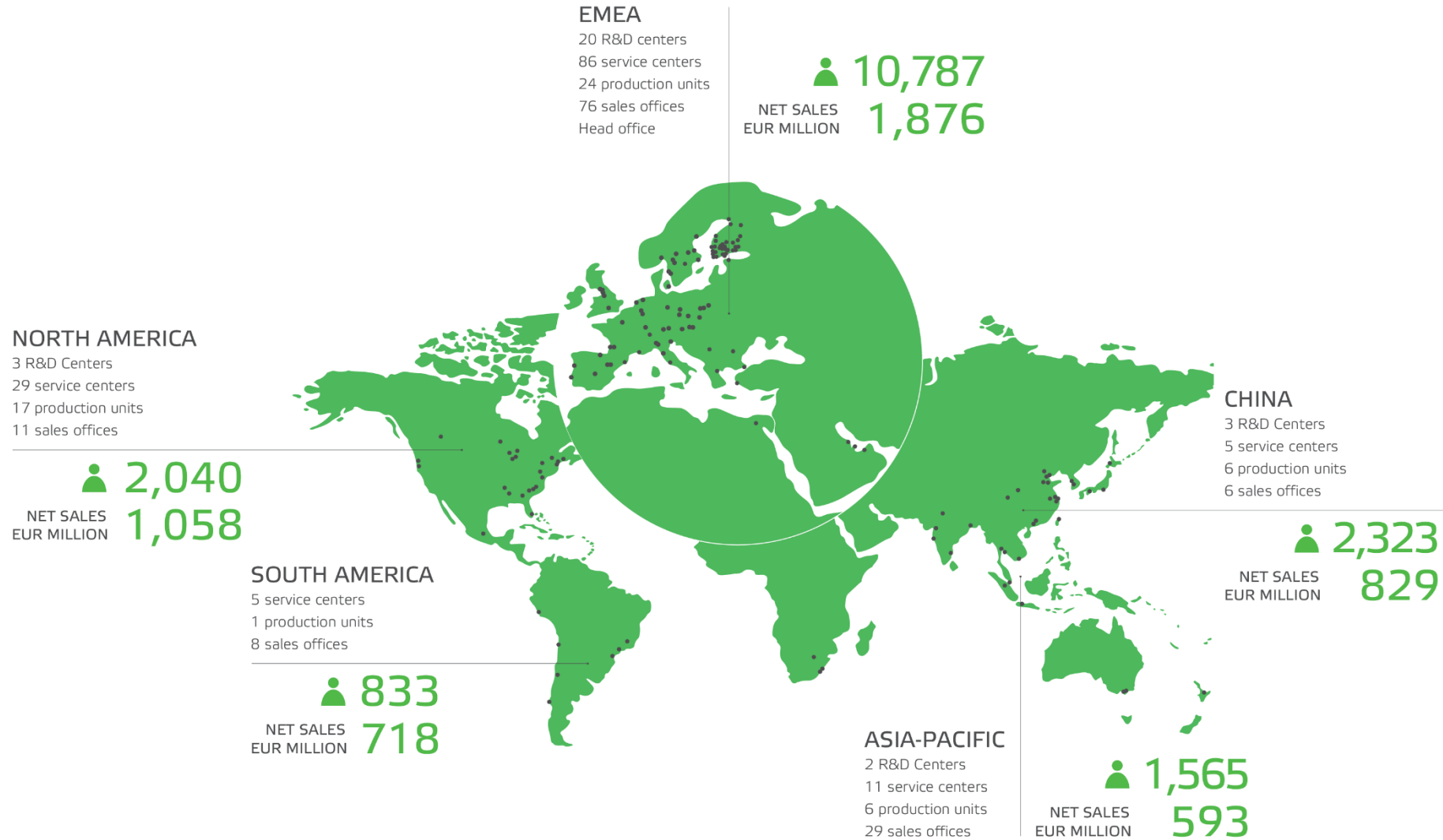
- Heat and power generation
- Air emission control
- Biofuels production


## Flow Control and Automation Systems

- Valves
- Valve automation
- Valve controls
- Distributed Control Systems (DCS)
- Quality Management Systems (QMS)
- Analyzers and measurements
- Industrial applications
- Services and Industrial Internet solutions



# Global presence creating a good platform for growth



 **>130**  
service centers

 **>50**  
Production units

 **28**  
R&D centers

# A strong financial profile and balanced business portfolio

## 2022 key figures of Valmet

**Orders received**  
EUR 5,194 million

**Net sales**  
EUR 5,074 million

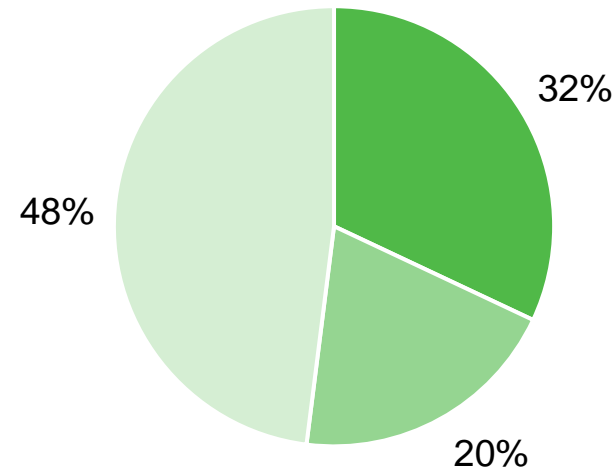
**Comparable EBITA**  
EUR 533 million

**Comparable EBITA margin**  
10.5%

**Order backlog**  
EUR 4,403 million

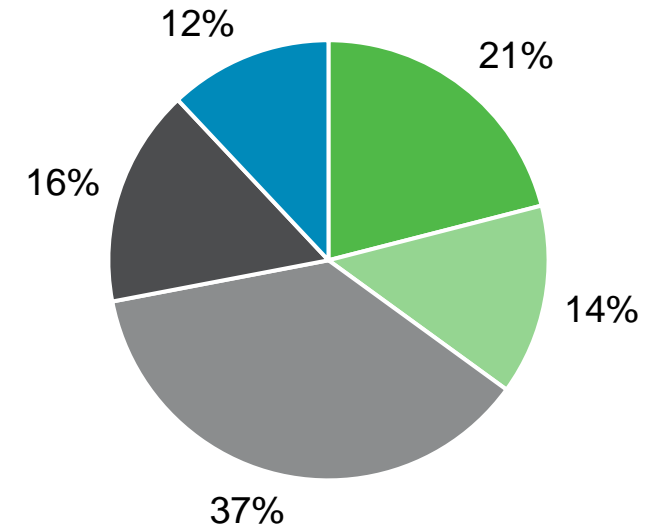
**Employees**  
17,548

Net sales by segment



- Services
- Automation
- Process Technologies

Net sales by area



- North America
- South America
- EMEA
- China
- Asia-Pacific

# Valmet's Way Forward

## Mission

Converting renewable resources into sustainable results

## Strategy

Valmet develops and supplies competitive and reliable process technologies, services and automation to the pulp, paper and energy industries.

Our automation business covers a wide base of global process industries.

We are committed to moving our customers' performance forward with our unique offering and way to serve.

## Continuous improvement and renewal

### Must-Wins

- Customer excellence
- Leader in technology and innovation
- Excellence in processes
- Winning team

### Business accelerators

## Vision

To become the global champion in serving our customers and in moving the industries forward

## Our Values



### Customers

We move our customers' performance forward



### Renewal

We promote new ideas to create the future



### Excellence

We improve every day to deliver results



### People

We work together to make a difference

## Megatrends

- Resource efficient and clean world
- Digitalization and new technologies
- Urban, responsible and global consumer



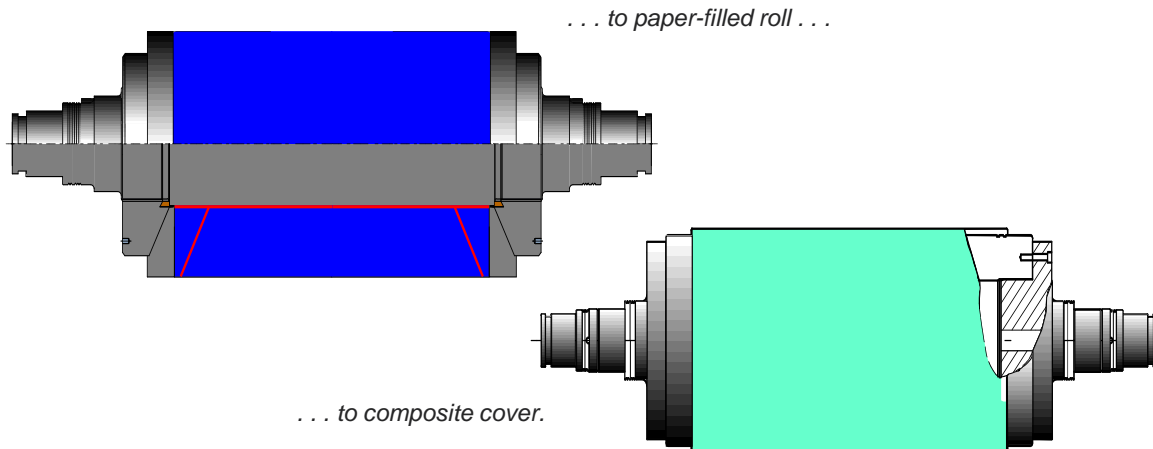
# Composite roll covers



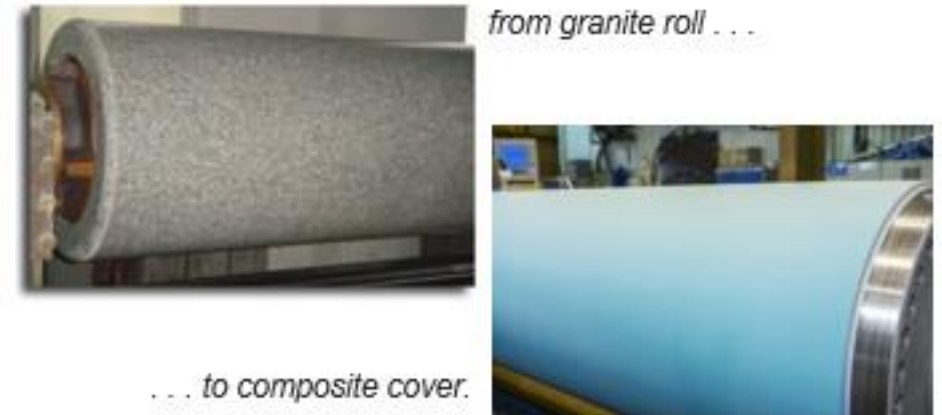
# Composite roll cover history

- The need for a durable elastic cover for supercalendering was driving the development in 80's.
- Use of composite covers in the press quickly followed, e.g. for the center roll position replacing granite rolls.

*supercalender elastic rolls: from tree trunk . . .*



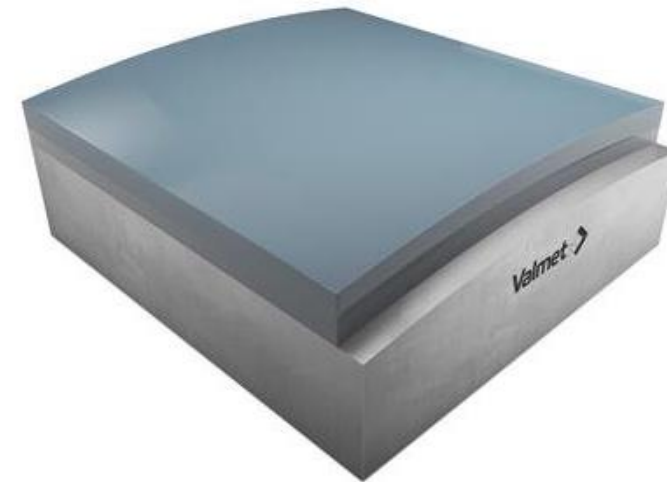
*press center rolls:*



# Composite as a cover material

For high loaded nips or high wear positions in the PM.

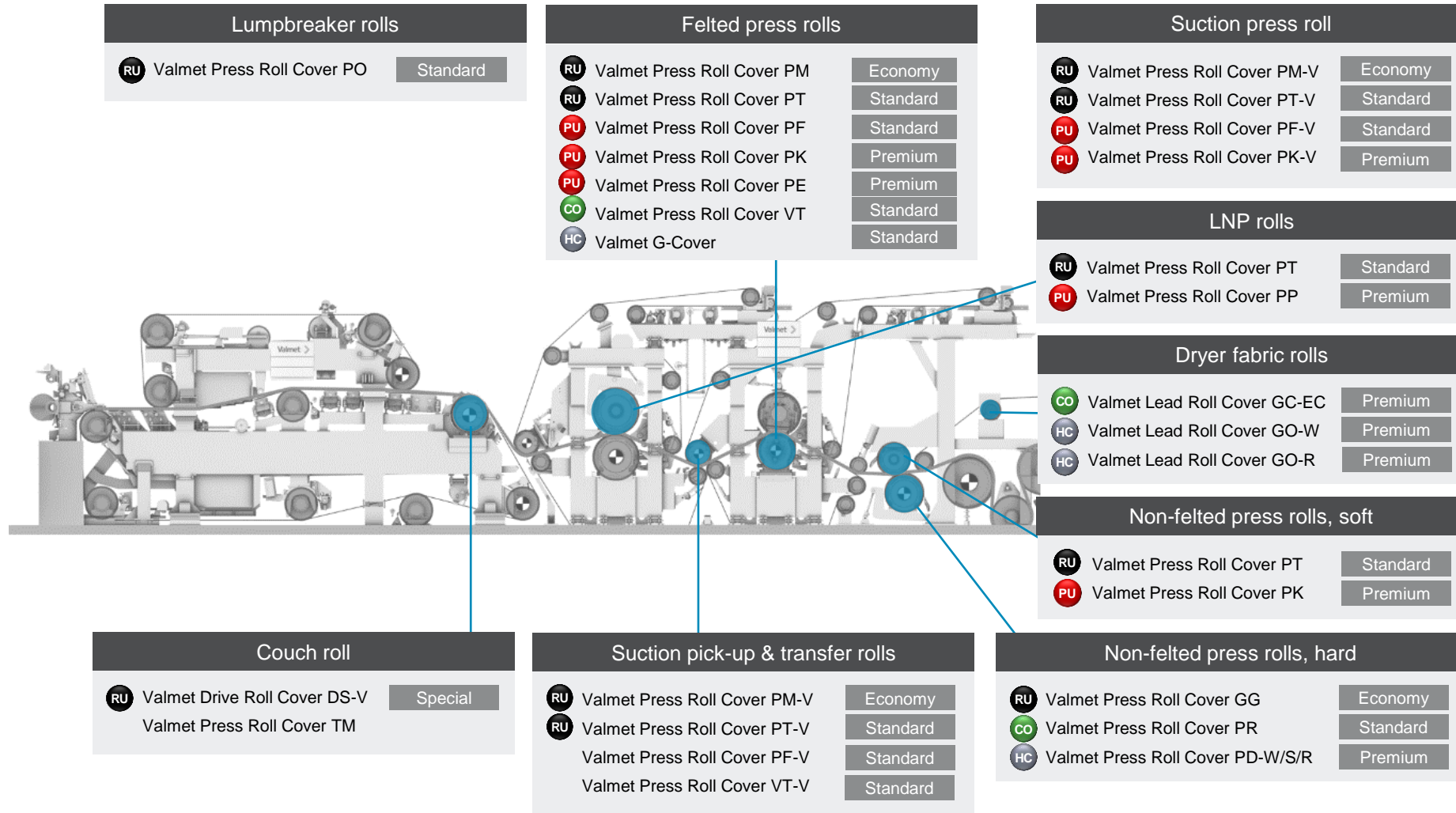
- Small elastic deformation, high stiffness
- Extremely good wear and scratch resistance
- Excellent durability in load and speed
- Good to excellent temperature resistance
- Excellent chemical resistance
- Very limited hardness range
- No age hardening
- Relatively high price



# Roll cover applications

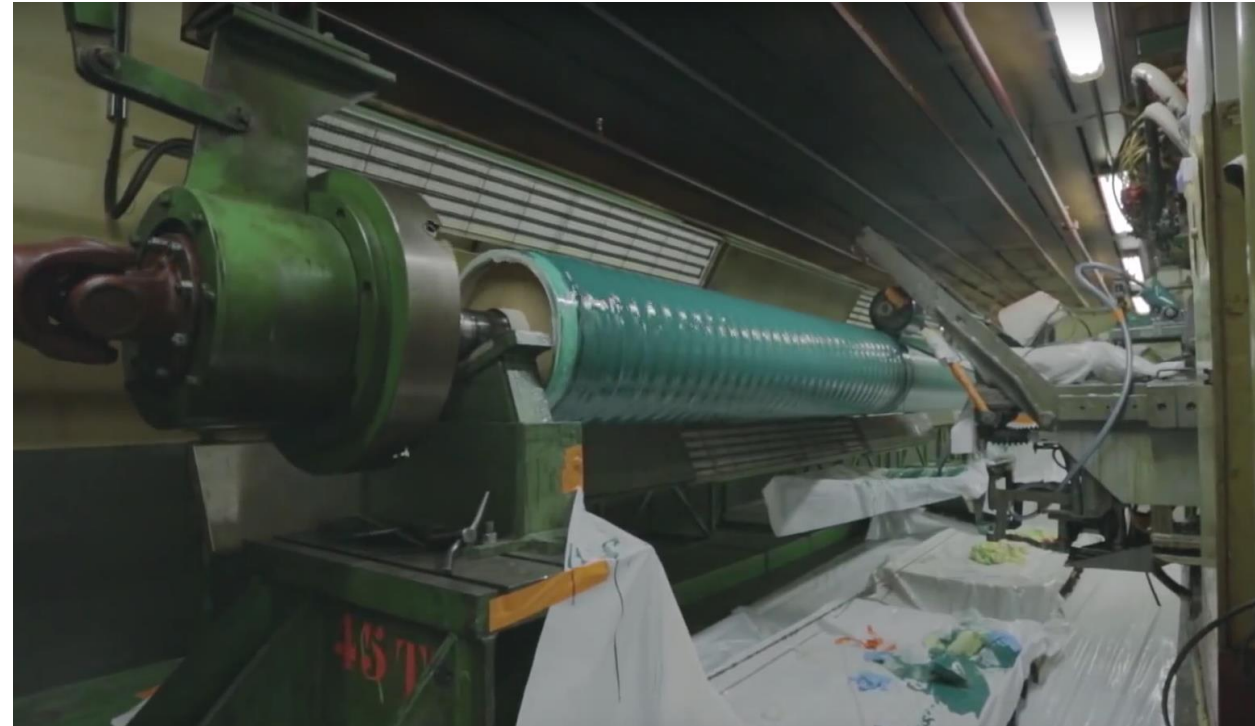
## Board machine wet end process roll covers

- Composite
- Hard coating
- Polyurethane
- Rubber



# Composite roll cover manufacturing

- The composite cover is manufactured by wrapping the fibre-reinforcement, impregnated with liquid polymer, around the roll.
- High temperature curing develops the strength and durability of the polymer and assures the high performance of the composite cover.
- The cover is then finalized and grinding to required shape and surface quality. Grooving and drillings are applied where needed.
- Valmet has presently 12 workshops globally that can manufacture composite covers





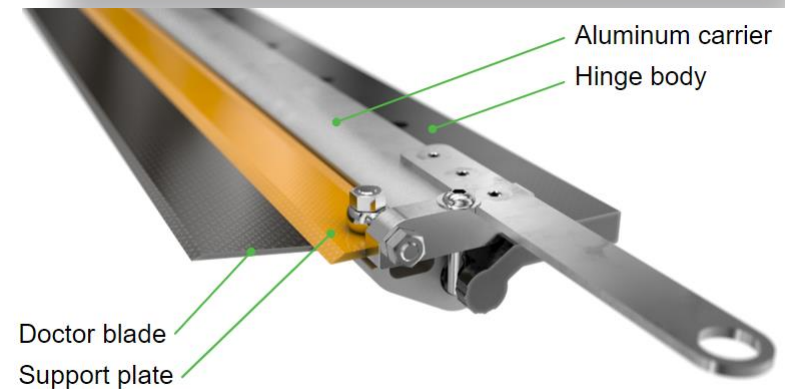
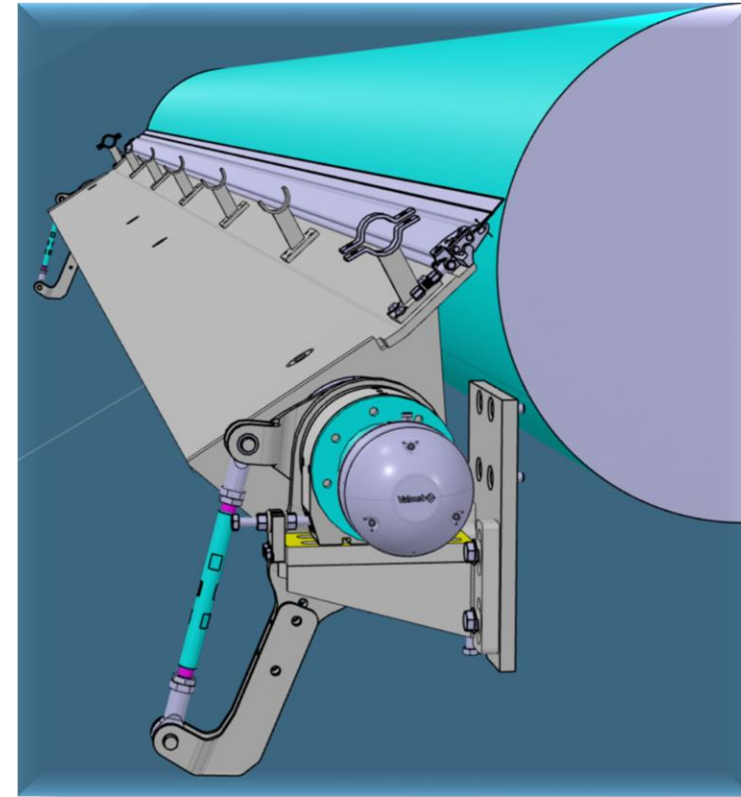
# Composite doctors and doctor holders

# Doctoring

Almost all rolls and cylinders need doctoring.

The main tasks of doctors are:

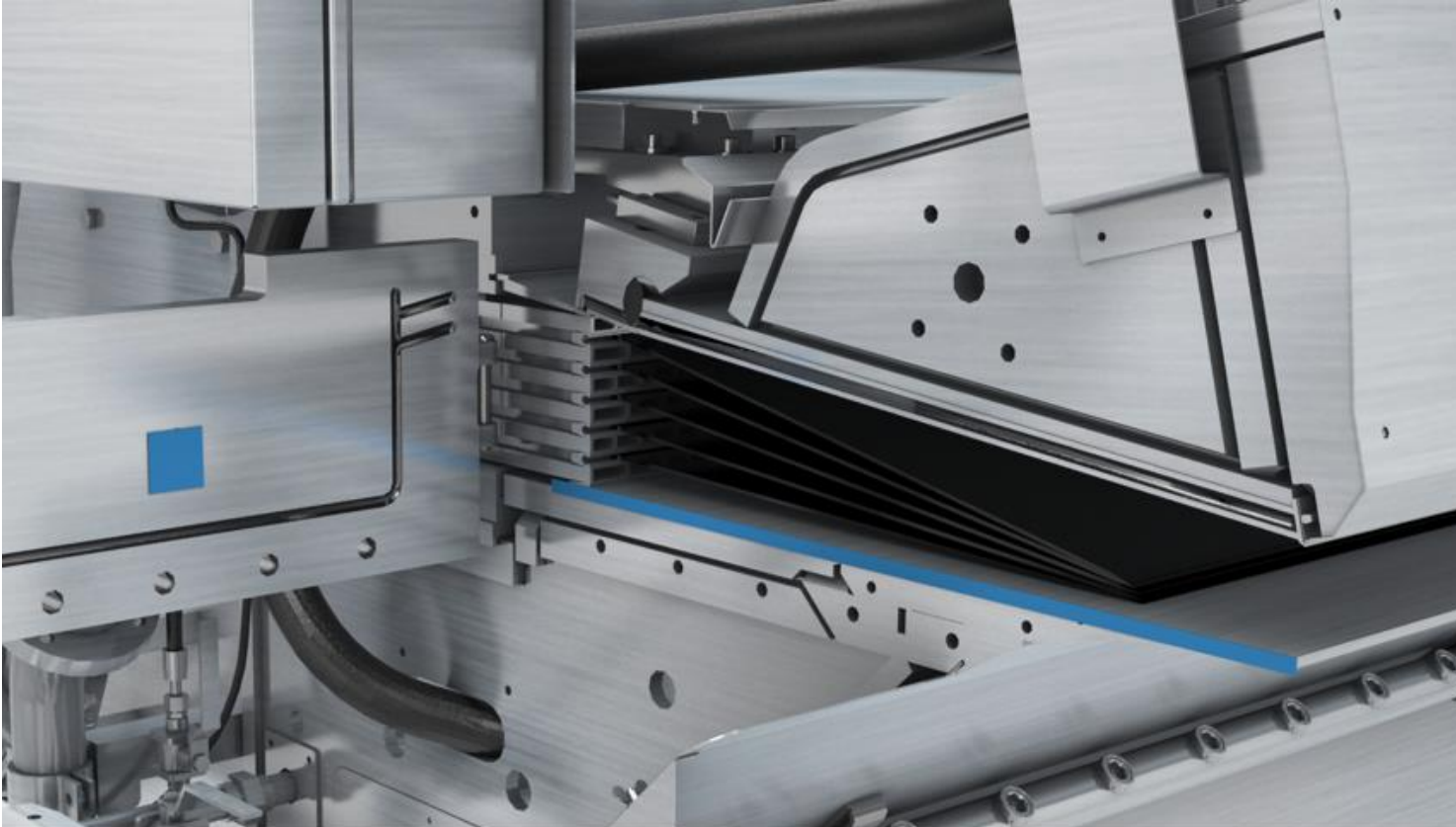
- To keep the roll or belt surface clean
- To evacuate water from roll surface
- To release web from roll surface and guide it to pulpper at knock-off locations
- Doctor materials:
  - Plastic blades
  - Epoxy resin + glass fibers/barbon fibers blades
  - Ceramic coated blades
  - Materials have different behaviour when loaded, lifetime, friction properties and temperature resistance





# Headbox sheets

# Valmet Headbox Sheets



## Purpose of the sheets

- Induce turbulence in the flow
  - Tensile ratio (MD/CD) adjustment
  - Formation optimization
  - Prevention of stripes
  - Separation of layers



# Valmet Headbox Sheets and Wedges

## Valmet application policy

- All new **Valmet** headbox are equipped with Sheets or Wedges.
- Wedges are used:
  - High speed Gap formers: Paper & Board
  - Fourdriniers if machine speed is  $> 1200$  m/min: Paper & Board
  - Layering is done always with Wedges
  - Tissue headboxes



Headbox Sheet



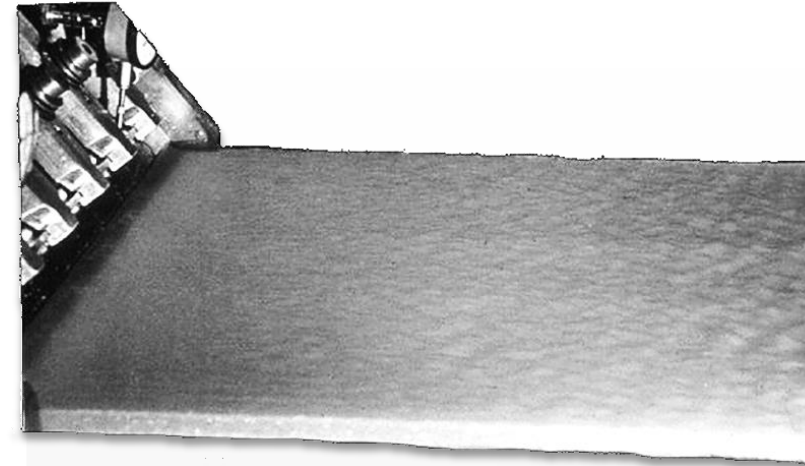
Headbox Wedge



# Flow turbulence control







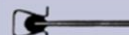





with Valmet's high-quality Headbox Sheets

Valmet headbox  
*No sheets*



Valmet headbox  
*With sheets*

# Valmet Headbox Sheets

Headbox Sheet PC	Headbox Sheet PVC	Headbox Sheet PVC-C	Headbox Sheet CF
<p>Polycarbonate, PC (Lexan)</p> <p>Max T = 135°C Does not withstand alkalis</p> <p><b>Hinge types</b></p> <ul style="list-style-type: none"> <li> OptiFlo, SymFlo</li> <li> Converflo, BelBaie, Twin wire former</li> <li> Converflo</li> <li> Thin channel or Concept III</li> <li> Concept IV BelBaie</li> </ul>	<p>Polyvinyl chloride, PVC</p> <p>Max T = 50°C Good chemical resistance</p> <p><b>Hinge types</b></p> <ul style="list-style-type: none"> <li> OptiFlo, SymFlo</li> </ul>	<p>Improved polyvinyl chloride</p> <p>Max T = 75°C Good chemical resistance</p> <p><b>Hinge types</b></p> <ul style="list-style-type: none"> <li> OptiFlo, SymFlo</li> <li> Converflo, BelBaie, Twin wire former</li> </ul>	<p>Carbon fiber composite</p> <p>Max T = 140°C Excellent chemical resistance</p> <p><b>Hinge types</b></p> <ul style="list-style-type: none"> <li> OptiFlo, SymFlo</li> <li> Converflo, BelBaie, Twin wire former</li> <li> Thin channel or Concept III</li> <li> Concept IV BelBaie</li> </ul>



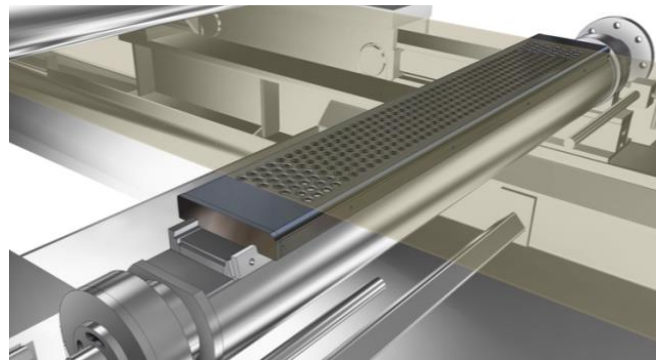
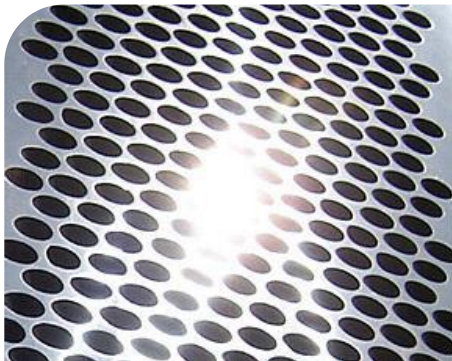


# Suction box covers

# Introduction to SolidCoat Technology

## General

- Consists of covers, foils and blades.
- Stainless steel bodywork
- Seamless and polished hard coating
- Wide range of coating materials for different process environments
- Worn elements can be recoated
- Decreases friction between the cover and the supporting fabric





# Composite materials project (HiPer)



# The Idea

- There is a need for
  - Lighter materials
  - More easily recyclable materials
  - More sustainable materials replacing plastic and high embodied energy materials
- Vision and idea is to bring to market a new innovative, sustainable and lightweight cellulose-based composite material. New lighter composite materials will clearly reduce transportation sector CO2 emissions.
- Thermoplastic composites market is projected to grow from USD 22 billion in 2020 to USD 32 billion by 2025, at a CAGR of 7.5% between 2020 and 2025

## Possible application areas for new sustainable composites



# HiPer Process & Potential Applications





