Valmet IQ
The Smartest Way

A comprehensive portfolio that moves your performance forward

Valmet

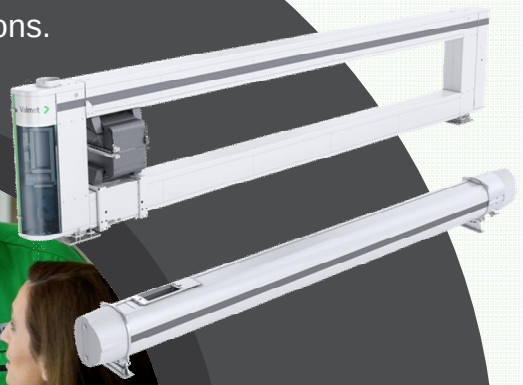
Valmet IQ

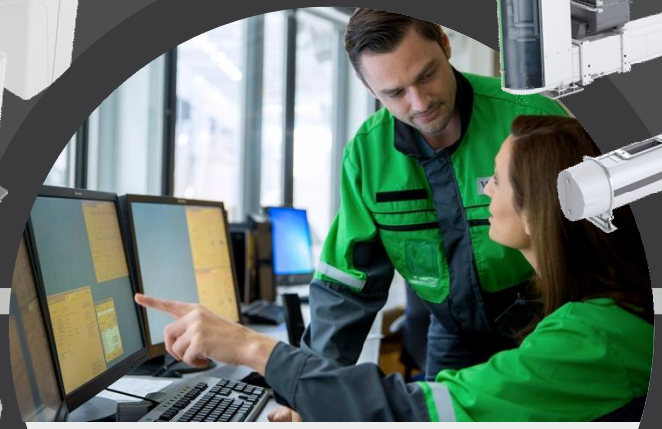
Total quality management system by the experts

Valmet IQ Service

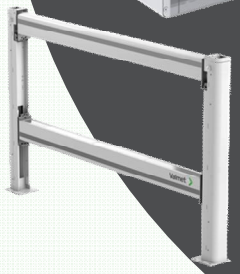
Your local service team with P&P skills secure best performance at all times.

Valmet IQ Measurements and Scanners for accurate sheet quality measurements in demanding machine conditions.

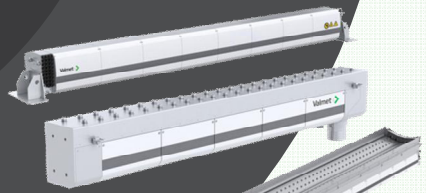


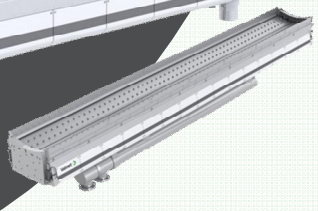


Valmet IQ Applications with a joint user interface give a clear view into process and product quality at all times.



Valmet IQ Process and Quality Vision helps detect quality defects and identify their root causes.



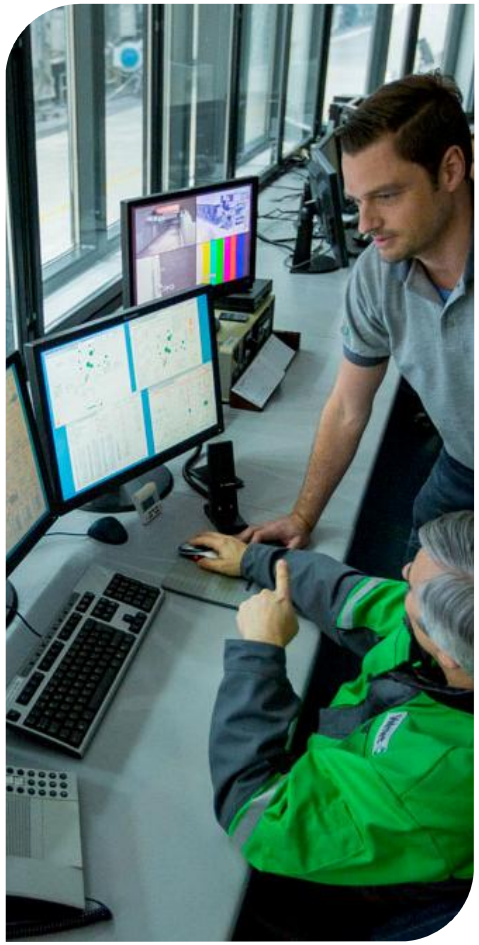


Valmet IQ Profilers provide effective profile management at all stages of the process.

Valmet IQ – The Smartest Way

Performance made simple with Valmet IQ regardless of your machine

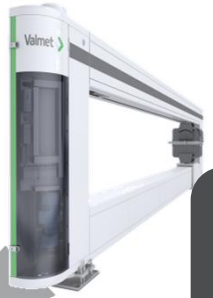
- Built with process and machinery knowhow
  - From R&D to lifecycle management
- Experience from thousands of deliveries over longer than half a century
- Many spearheads for your specific grade
  - Focus to customized concepts for Tissue, Paper, Cartonboard, Containerboard, Pulp Drying
- Forward and backward compatibility
- Cost effective lifecycle management
- Connectivity with any system allows replacements even piece by piece



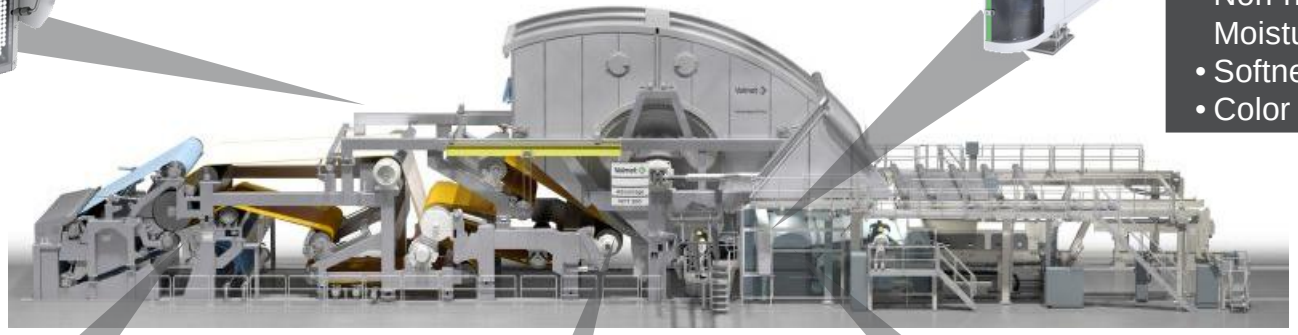
Valmet IQ Tissue concept

Quality control and monitoring offering for tissue machine

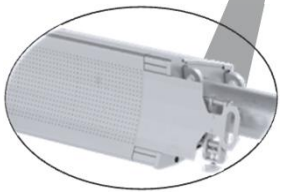
IQ Web Monitoring System
• 6 Cameras



IQ Scanner
• Non-nuclear BW and Moisture
• Softness
• Color



IQ Dilution & Slice Profilers
• Basis Weight



IQ Steam Profiler
• Moisture profile
• Press dryness

IQ Web Inspection System
• End product quality Inspection
• Monitor Performance

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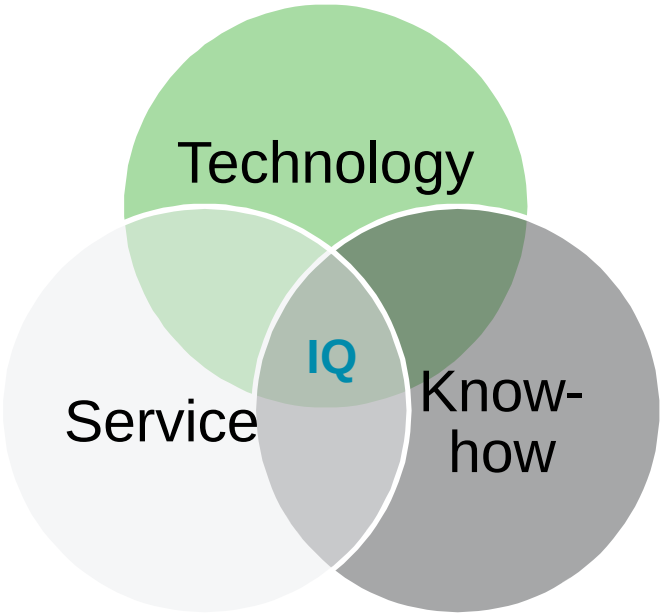
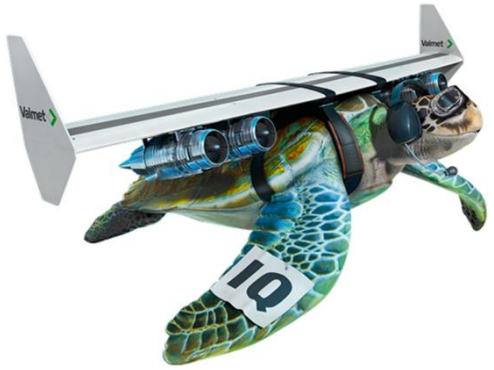
Spearheads for Tissue

Proven solutions based on process knowhow

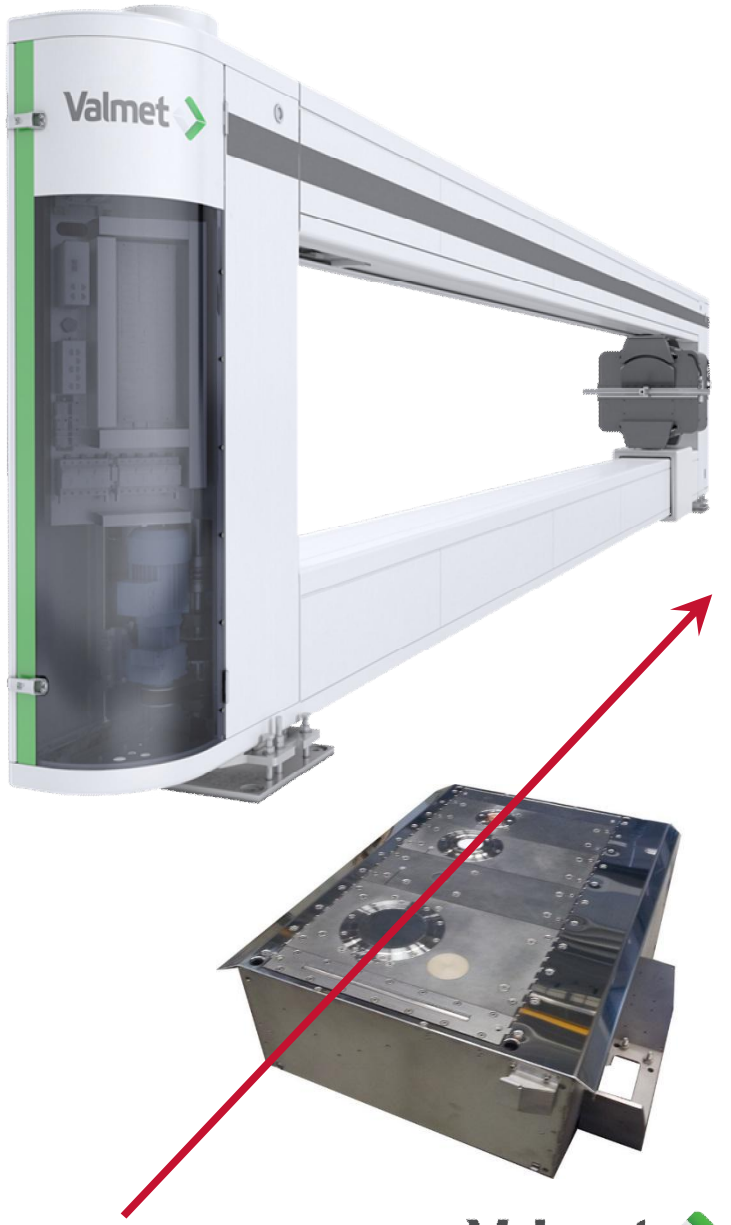
- New IQ scanner with more enclosed shroud and platform structure, web stabilization
- New on-line IQ Softness measurement
- Improved non-nuclear IQ Fiber for basis weight and moisture measurements
- Tissue color measurement
- New IQ Steam Profiler to maximize dryness and moisture CD profiling
- High resolution WMS & WIS system for runnability & defect detection





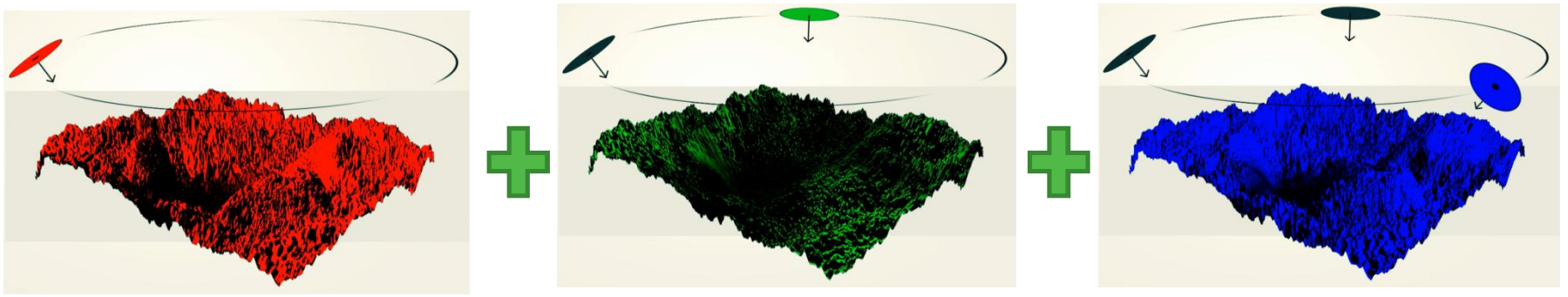
Valmet IQ Scanner

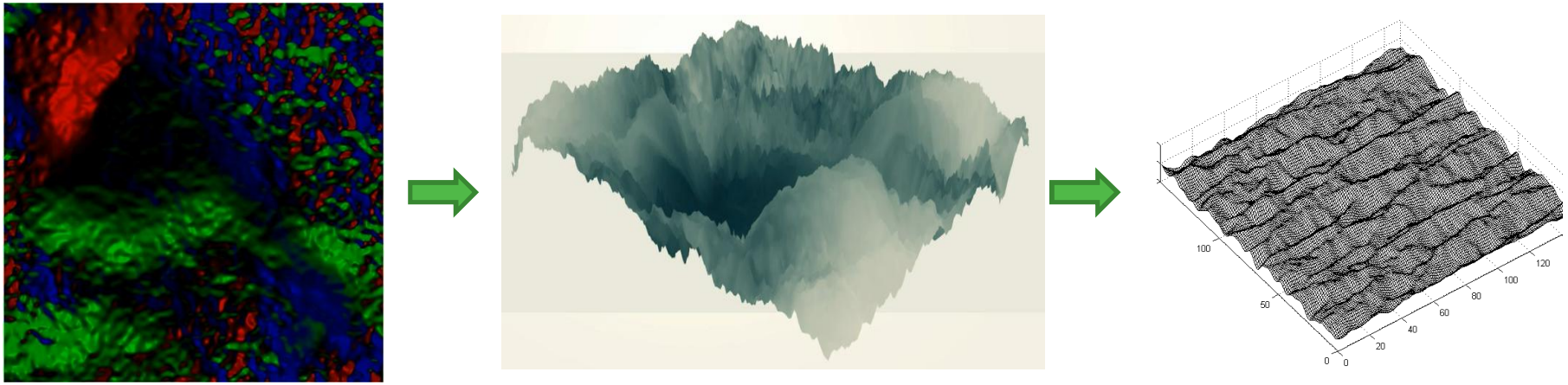
- Modern outlook combined with proven technology
- Reliable, robust construction for trouble-free operation
- Designed for harsh environments
- Easy access layout and minimized maintenance needs
- Minimum 30º pass-line angle capability for all platforms
- Standard sensor platform
  - Sensors aligned in MD
  - Up to 8 standard-size sensor slots
  - Web support rolls



IQ Softness measurement principle

RGB Illumination - Photometric stereo





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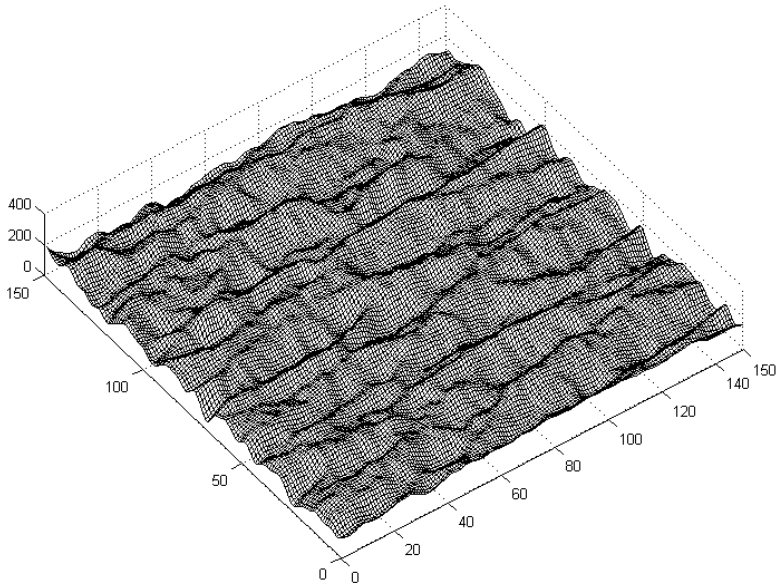
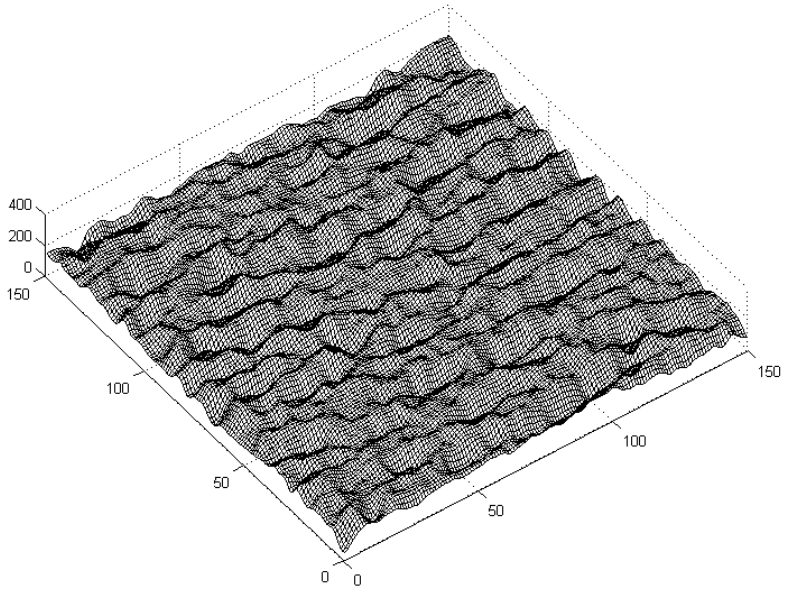
Tissue samples topography pictures

Short and long crepe wavelenght

Low creping and low softness



High creping and high softness



Crepe wavelenght, crepe shape and crepe height can easily be defined from topography pictures

Process factors that impact Tissue softness

• Furnish selection (HW/SW)	4
• Coating Chemicals	4
• Creping	4
• Layering	3
• Moisture uniformity	3
• Pressing (Felt, Dryness, Nip)	3
• Doctoring	2
• Basis Weight	2
• Forming	2
• Fiber Treatment (Refining)	1
• Chemicals; e.g. Resins	1
• Reeling	1

Related tissue properties

Tensile Strength

Tensile Energy Absorption (TEA)

Elastic Modulus

Roughness

Unevenness

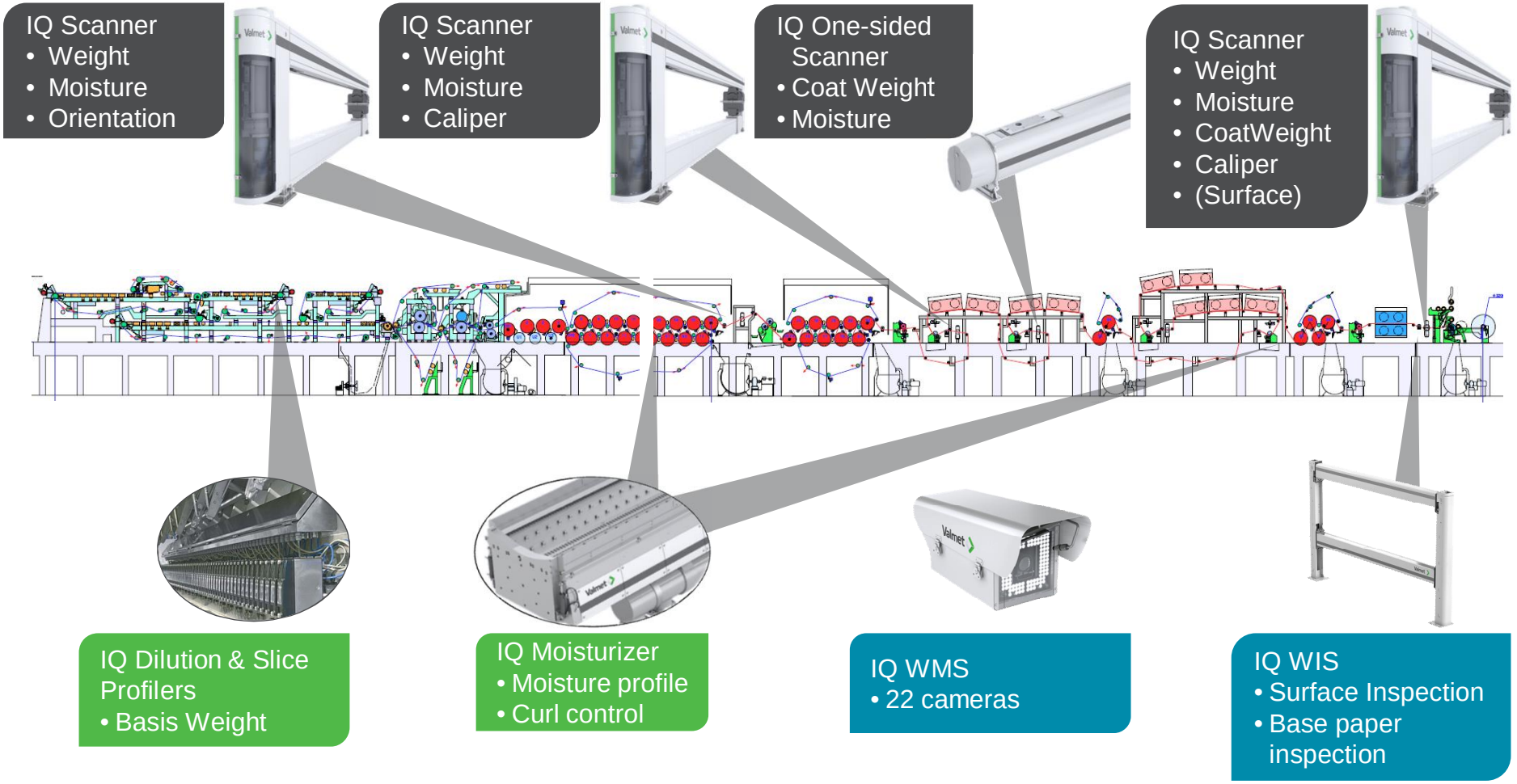
Relative scale 1-4

4 = High impact

1 = Low impact

QMS Concept for Cartonboard

Online measurements, profilers, WIS and WMS



Spearheads for Cartonboard

Proven solutions based on process knowhow

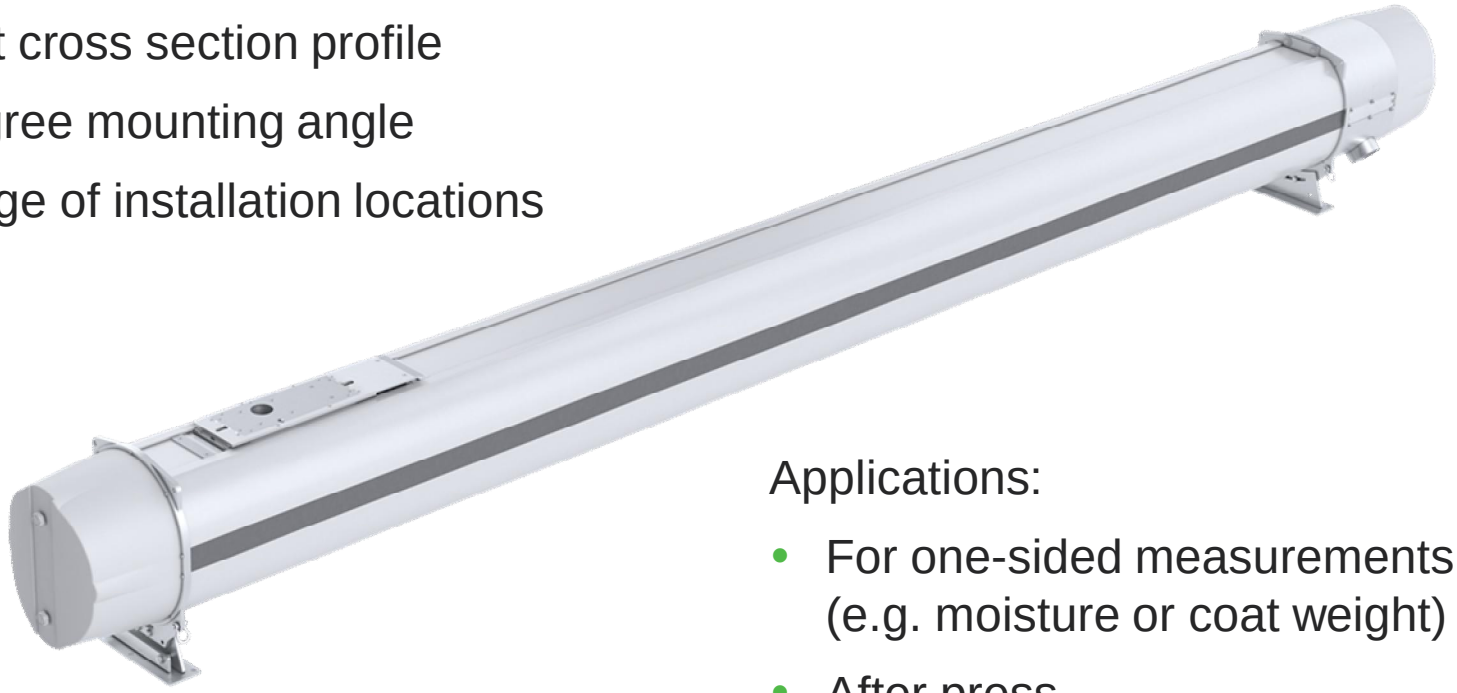
- Adaptive and situation based scanning with On-line analysis tools
- New compact one sided scanner
- New orientation control concept
- Curl control concept
- Patented and unique direct coat weight sensor for CaCO3, Clay or Latex based coatings
- New IQ Ash Measurement
- IQ Coat profiler for CD coat weight control
- New IQ Surface measurement for surface smoothness measurement and printability prediction
- True multivariable MD & CD controls, coordination of several layers, and multi layer coating
- Truly automated Grade Change for Board

Coated Board
Folding Boxboard
Liquid Packaging Board
Ivory Board

Valmet IQ One-Sided Scanner

- Smart integrated beam structure
- Compact cross section profile
- 360º degree mounting angle

→ wide range of installation locations

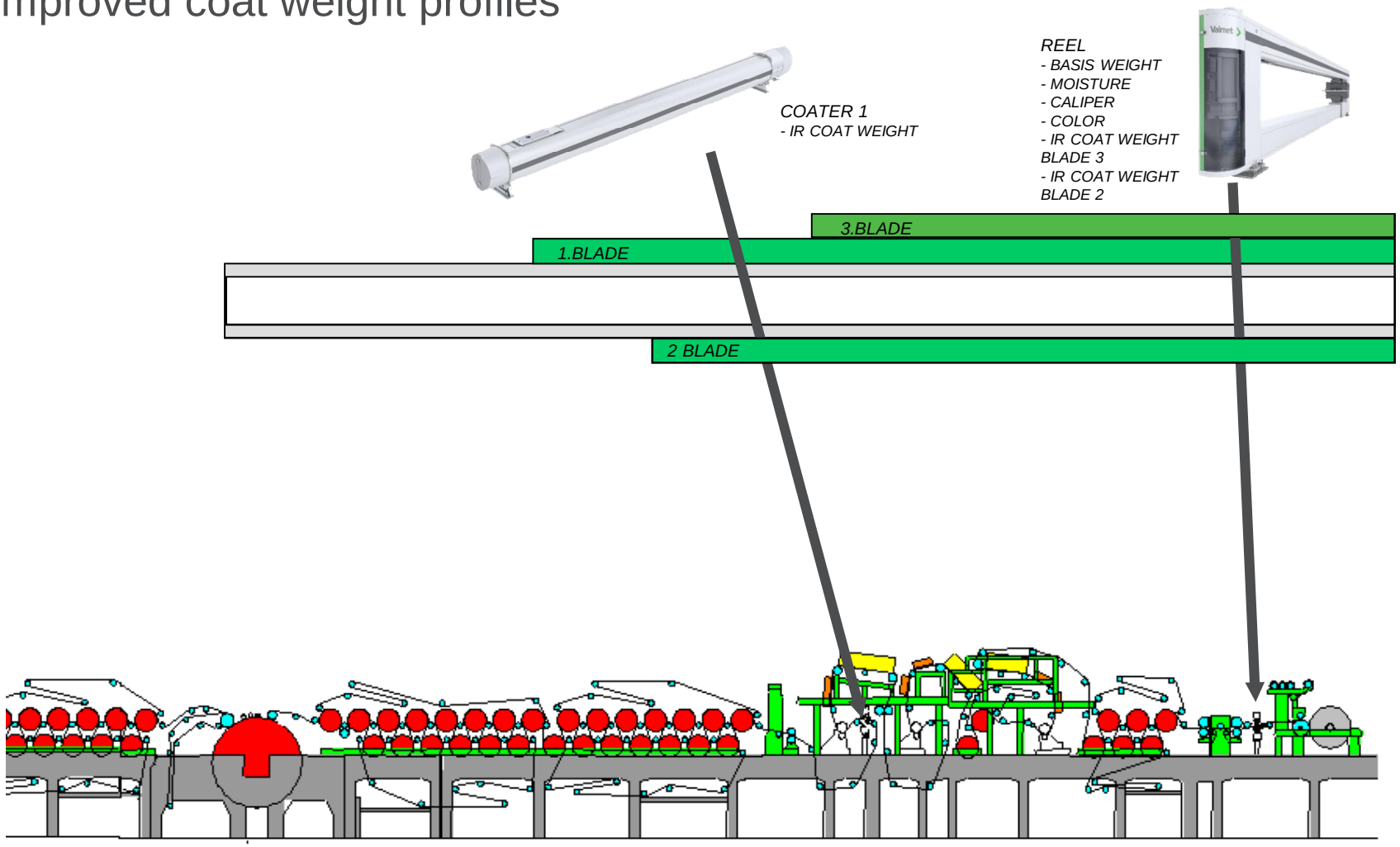


Applications:

- For one-sided measurements (e.g. moisture or coat weight)
- After press
- Before size press
- Coating application
- Converting applications

Direct coat weight measurement concept

Improved coat weight profiles



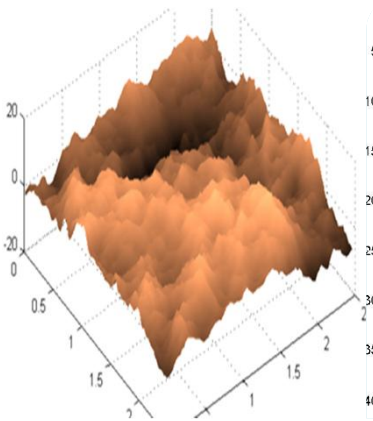
Board surface measurements

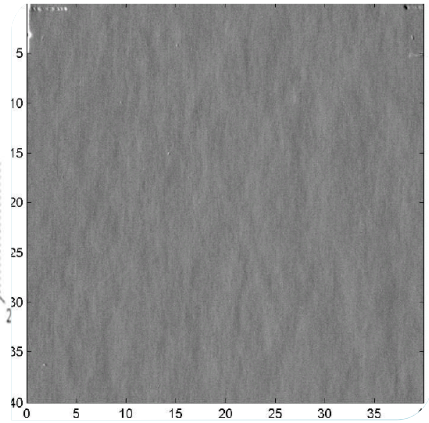
IQ Surface measurement

- Camera based surface topography measurement
  - Measurement area 1 x 1 cm with 0,2 micrometer resolution in Z-direction
- Topography images offer a new point of view and dimension to the real surface quality
  - Smoothness & Roughness parameters; PPS, Bendtsen, also when PPS < 1
  - New parameters for Printability prediction; Ra, Rq , microdeviation, Spectra / Power spectra, Peak to Peak, Valleys and Peaks (correlates well with OptiTopo)
- For sheet surface properties optimization
  - Paper/Board surface quality optimization
  - Coating color, Process optimization e.g. Blade change
  - Real information about surface quality

´”Online board surface measurement which correlates with visual appearance”

- BM1 Production Manager

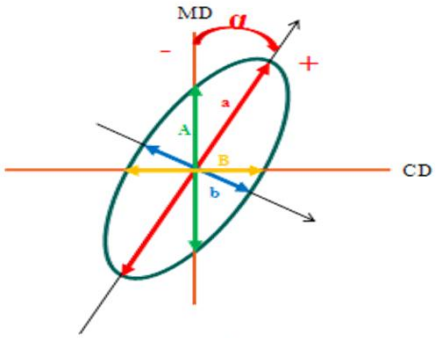


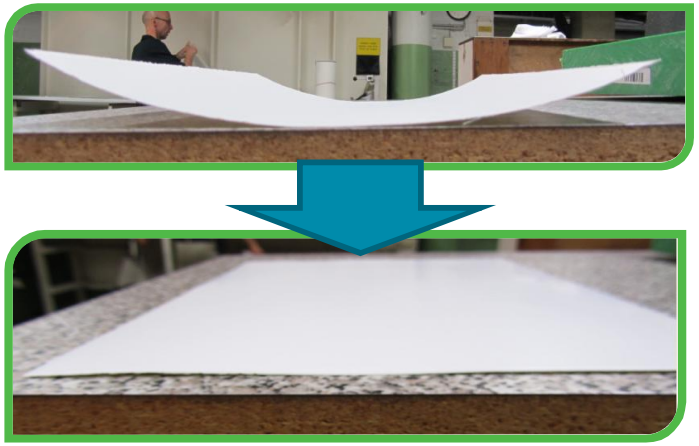


Board surface measurements

IQ Fiber Orientation measurement

- IQ Fiber Orientation is camera based fiber orientation angle measurement
  - Measurement area 1 x 1 cm with 20 micrometer spatial resolution
- On-line measurement provides fast feedback about fiber orientation
  - Fiber orientation angle, anisotrophy, MD-CD ratio
- IQ Fiber Orientation Measurement for online curl elimination and active control
  - Quality-critical measurement helps you on-line to eliminate diagonal curl problems in converting and printing
  - Optimized fiber orientation control by slice profile, edge flows and j/w-ratio
  - Better runnability and strength properties through orientation control

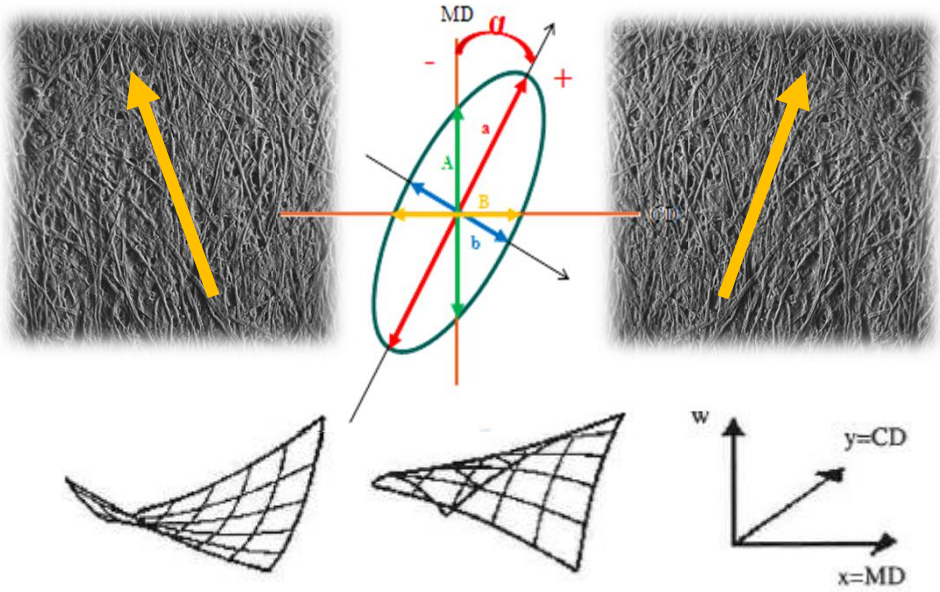




Multilayer board machine

Twist curl

- Twist curl appears when fiber orientation angles in the sheet surface layers differ from each other and from the machine direction.
- If the fiber orientation angle differences between layers can be eliminated, the remaining twist curl will be faint.
- In additionally, if the mean orientation angle of the top and back layers is zero, twist curl will disappear completely !

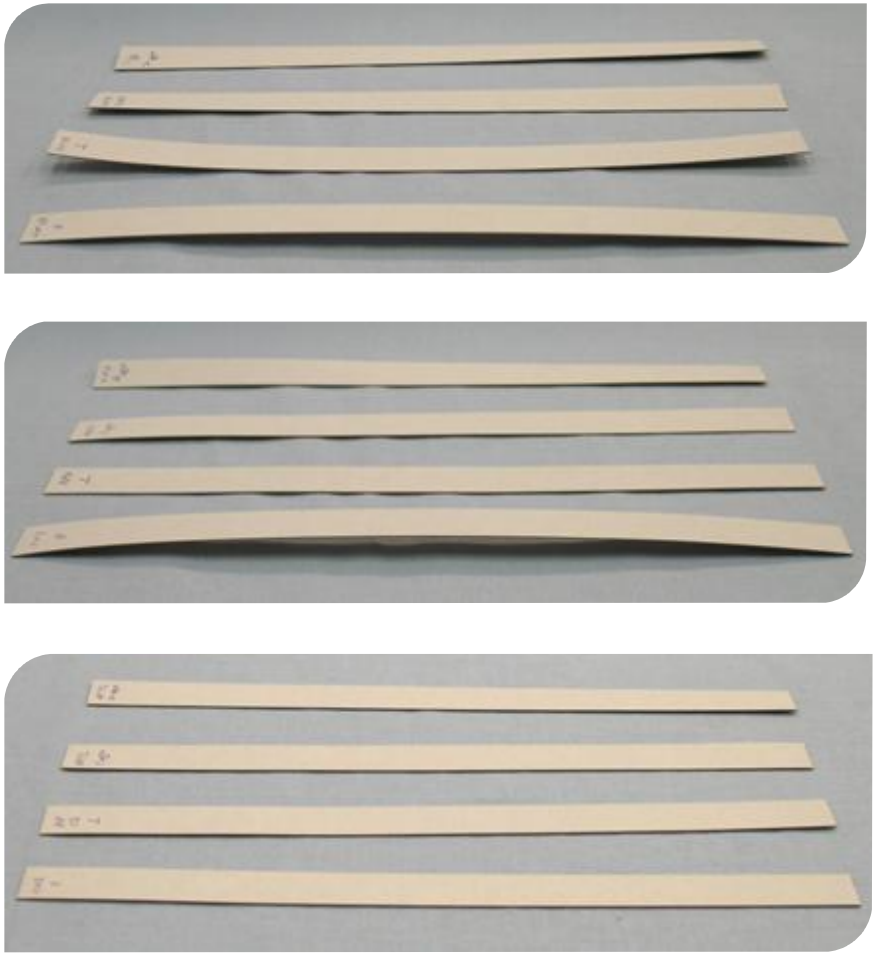


FBB Board with fiber orientation curl control

Moisturizer for curl control

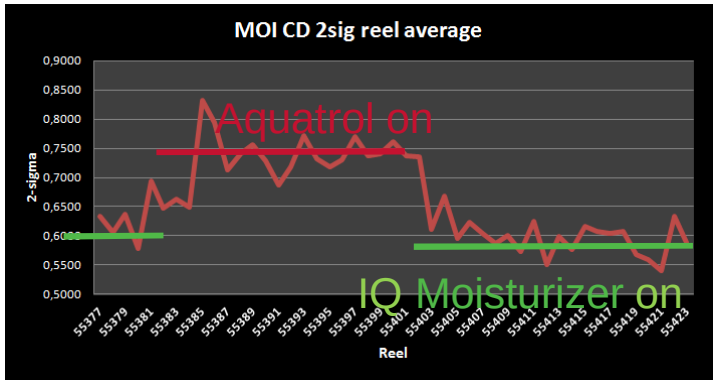
Summary of results

- Easy to use and maintain
- Fast control to curl compared to control by dryer cylinders
  - Faster grade changes; with moisturizer below 1 minute, with cylinders 1-2 hours
- 3% more drying capacity
  - Dryer cylinder not anymore for curl control
- Back side sizing amount has decrease from 2.9 gsm to 1.5 gsm
  - Sizing is only needed to avoid dusting



Stora Enso Skoghall BM8
- Results compared to old QCS System

- **In specification 1.5 hours after startup**
- **MD/CD Quality improvements**
  - CD Weight profile improvement 47%
  - CD Caliper profile improvement 38%
  - MD Moisture variation improvement 26%
  - MD Caliper variation improvement 27%
- **Moisture profile improvement**
  - 25% moisture profile improvement using Valmet IQ Moisturizer compared to existing moisturizer



Valmet IQ Web Inspection System

Coated Board beam locations

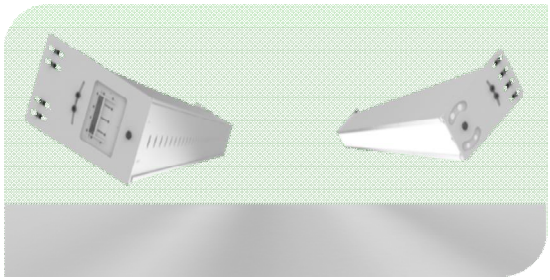
Base Paper Inspection

- Transmission measurement
  - Before coating (Optional)
    - Typical resolution 0,6 mm
  - Before reel
    - Typical resolution 0,4 mm or 0,5 mm

- Holes, edge cracks and wrinkles
- Dirt and slime spots
- Oil and water spots

Coating Inspection

- Low angle measurement
  - Minimum print side
  - Typical resolution 0,1 mm or 0,2 mm



- Blade streaks and scratches
- Backing roll marks
- Missing coatings and voids

Surface Inspection

- High angle measurement
  - Minimum print side
  - Typical resolution 0,2 mm, 0,3 mm or 0,4 mm

- Surface Dirt

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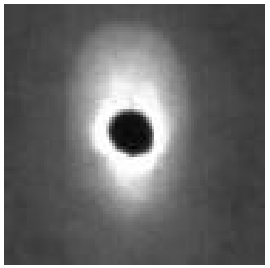
Valmet IQ Web Inspection System

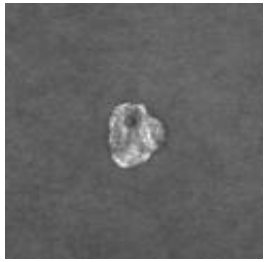
Example defects from LPB machine

Base Paper Inspection

- Transmission measurement



Pulp dirt

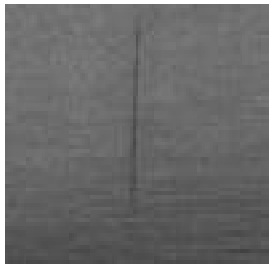


Slime

Slime

Coating Inspection

- Low angle measurement



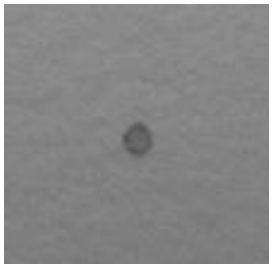
Streak

Missing coat

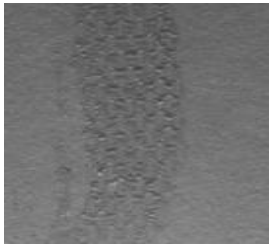
Missing coat

Surface Inspection

- High angle measurement



Dirt spot



Coating splash

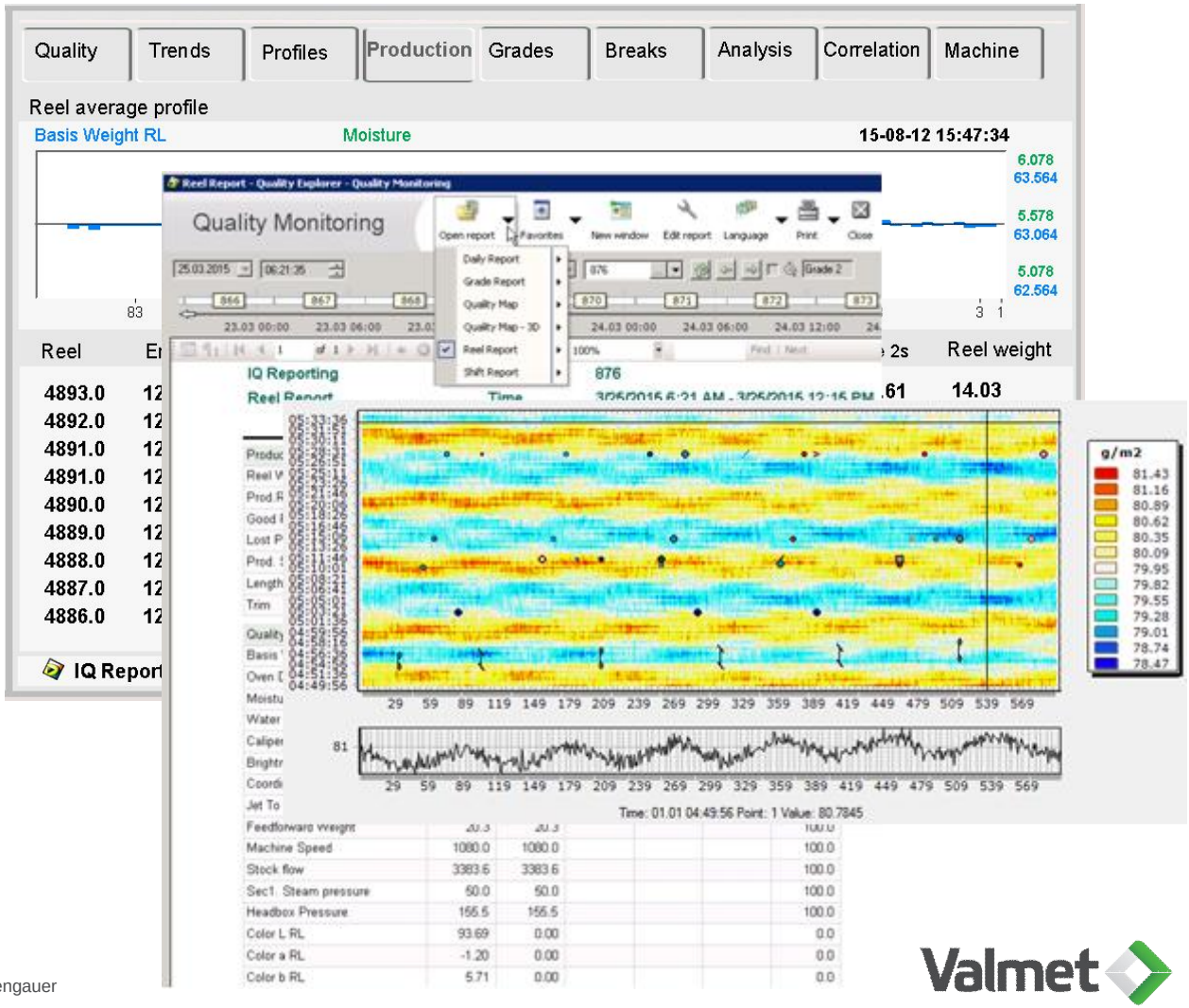
Indent

Recorded results always available

Comprehensive visibility to the past through integrated Reporting

Integrated reporting

- Key production figures on the main page
- See the real final quality! Ability to merge IQ web inspection results with measured profiles

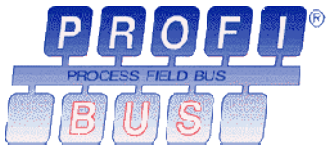


Interfaces to other systems

Full range of interfaces to make connection easy

- Full connectivity to older Valmet systems like Damatic, Damatic XD, Damatic XDi Systems and Paper IQ
- Wide variety of external interface protocols
  - Serial line interfaces
  - Ethernet interfaces
  - Fieldbus interfaces
  - E.g. ODX, iLon etc.
- OPC Data Access interface
  - Server and Client
- Wired connection with Valmet I/O’s
- Hardware platforms
  - ACN
  - PC

XML



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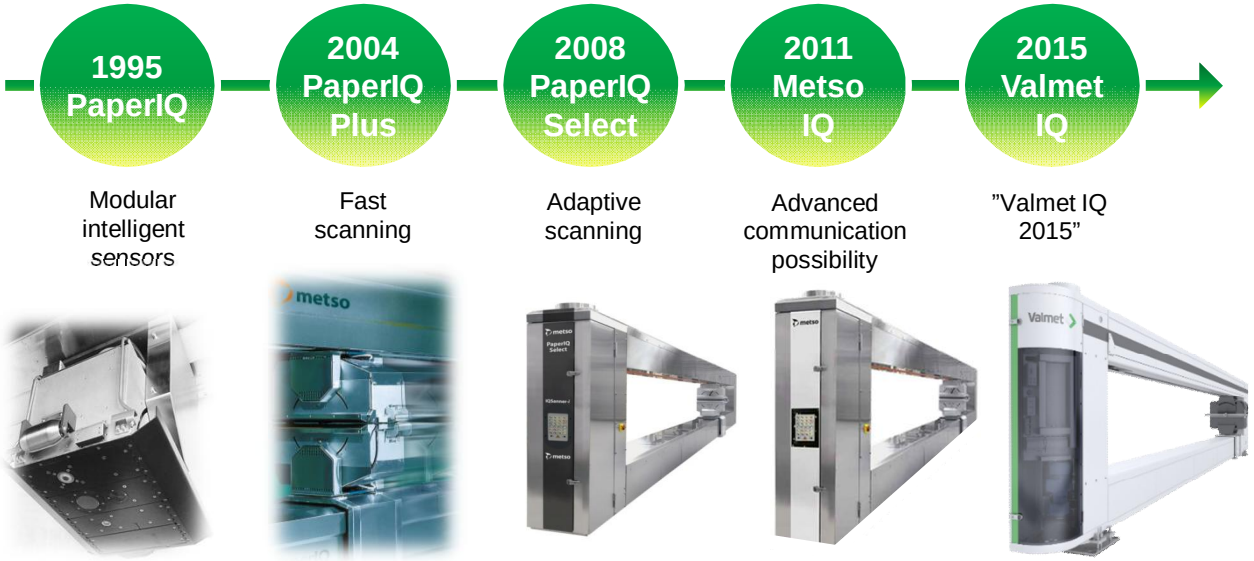
Maintain the best lifetime performance



- Each generation can be upgraded to benefit from latest technology
- Lifetime expansion is possible
- Ensures spare part availability
- Local service personnel skills easier to maintain


Valmet
FORWARD