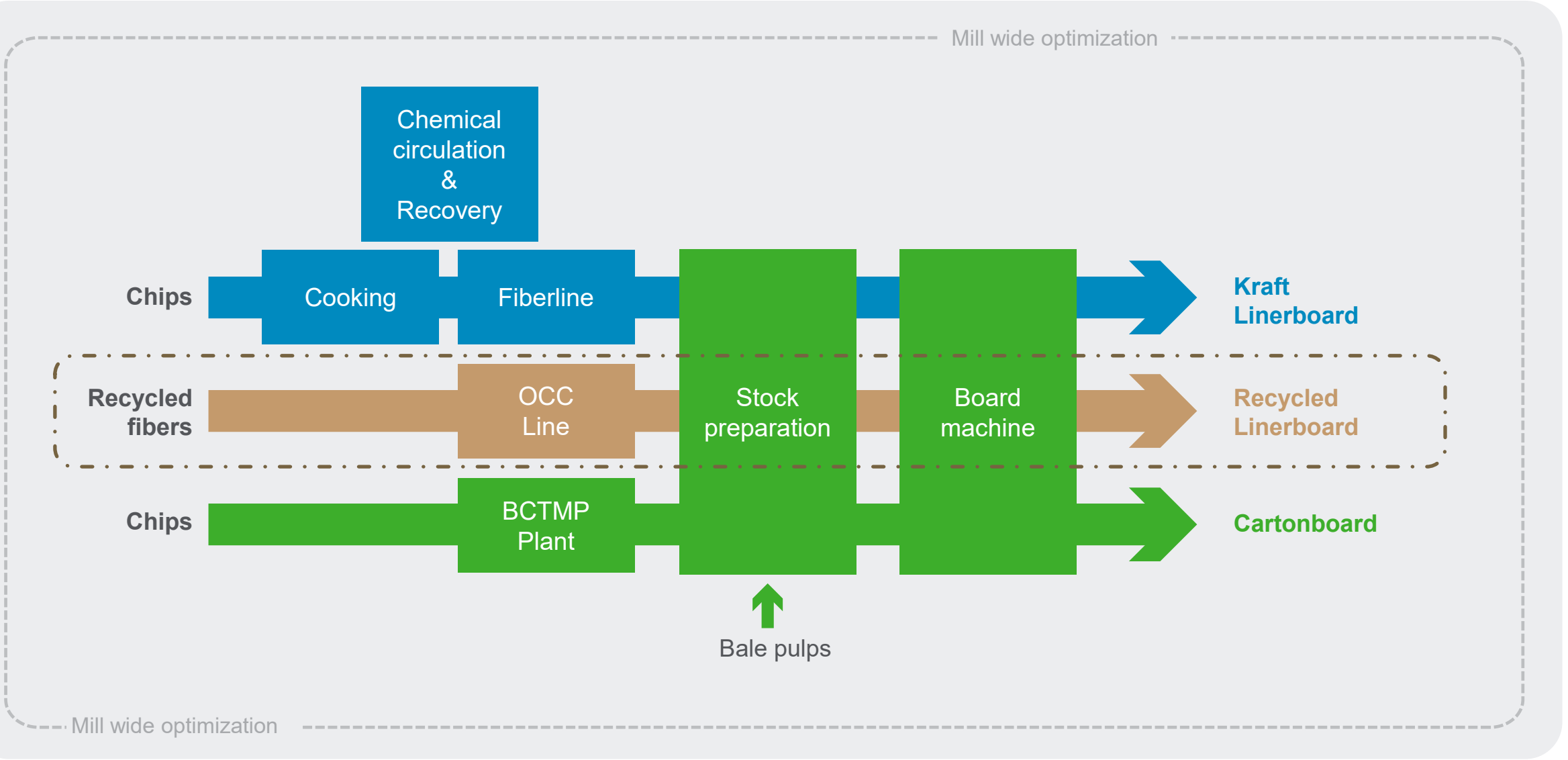
From OCC to board and beyond

Tuomas Pesonen

Paper Technology Manager, Asia Pacific

Valmet

Valmet's holistic approach from OCC to board



Challenge: Thorough understanding of raw material quality

Today

- Only nominal grade is known
- Raw material variation causes variation in production

Valmet

Board machine

Production rate
65 t/h

Basis weight
125 g/m²

Grade
SuperLiner125

Break
00:30:24 ago

Machine speed
1428 m/min

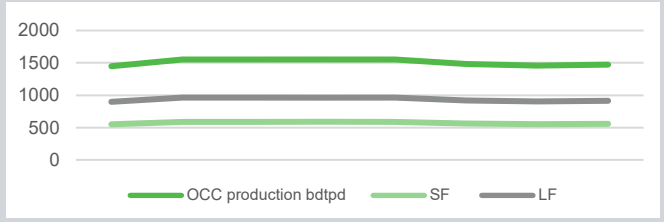
Quality target
On-spec

Moisture
7,1 %

Turnup
00:34:35

Breaks per day
0,5

OCC production 1558 tpd
Short fiber 38%
Long fiber 62%



Raw material recipe

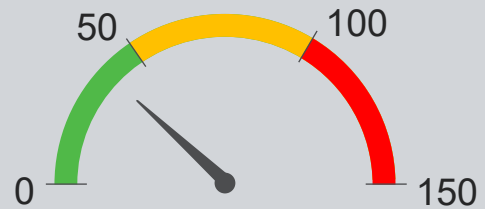
- Mixed waste
- OCC
- Clippings

Fiber Quality

Fiber length	
Fibrillation	
CSF	
Ash	
Dirt content	

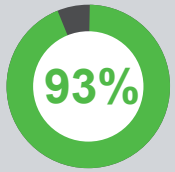
Quality target
On-spec

OCC line energy consumption

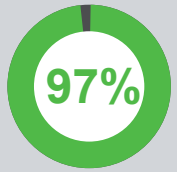


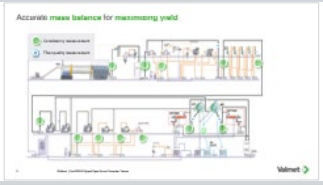
45 kWh / t

Yield



Uptime last 7 days





Incoming raw material – Mixed waste

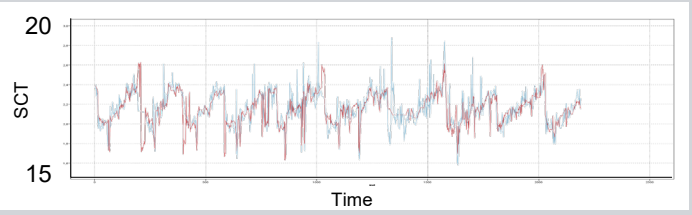
Moisture	10%
Plastics	5%
Ash content	17%
Lignin	8%

Quality target
On-spec

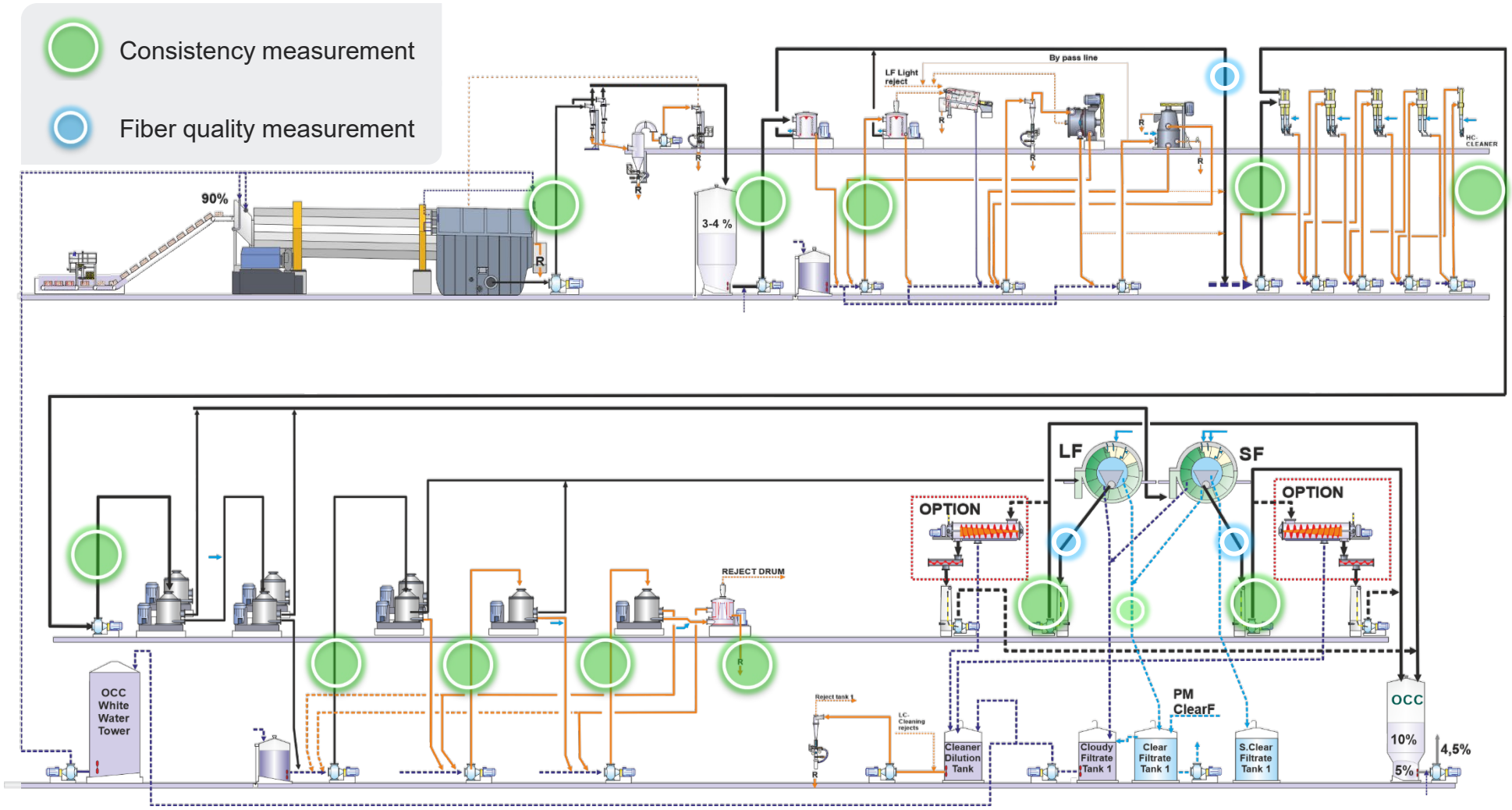
Board Quality

SCT Burst

Quality target
On-spec



Accurate **mass balance** for **maximizing yield**



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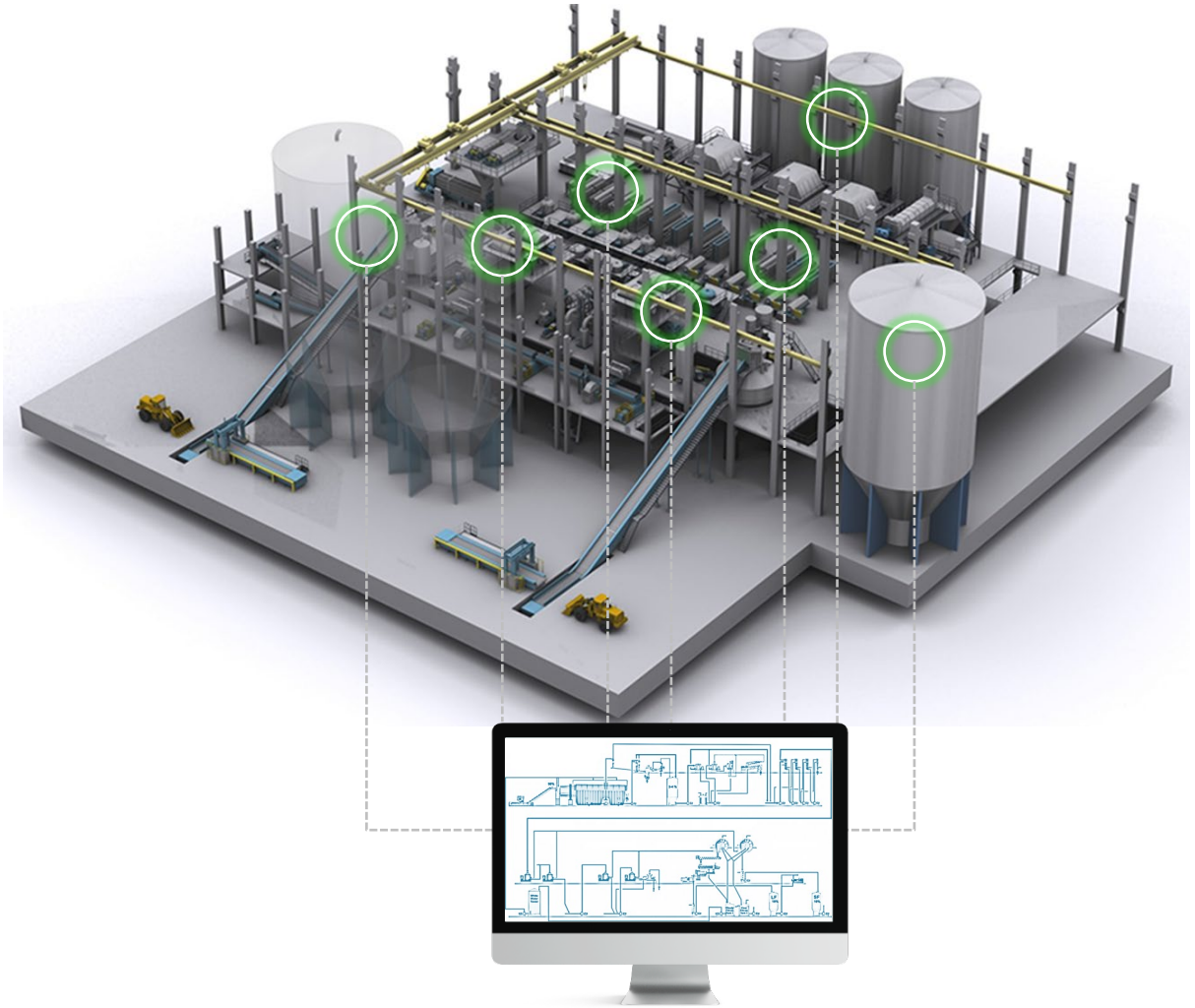
OCC plant mass balance calculation

Valmet Mill Wide Optimization



Board machine

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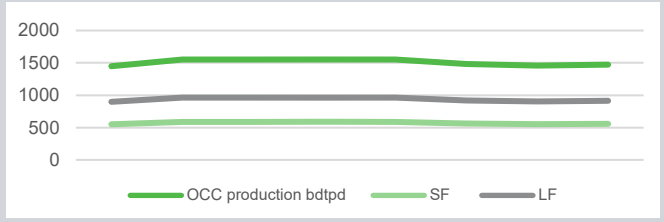

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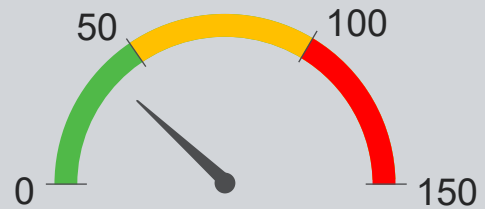
Fibrillation	
CSF	
Ash	
Dirt content	

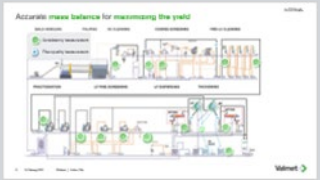
Quality target
On-spec

OCC line energy consumption



45 kWh / t

Yield



93%

97%

Uptime last 7 days

Incoming raw material – Mixed waste

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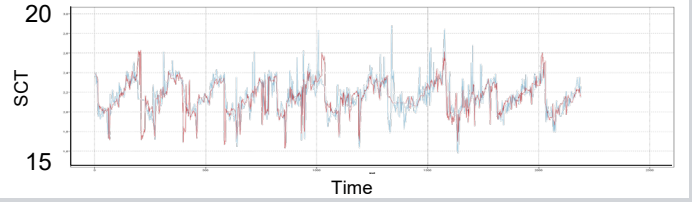
Lignin	8%

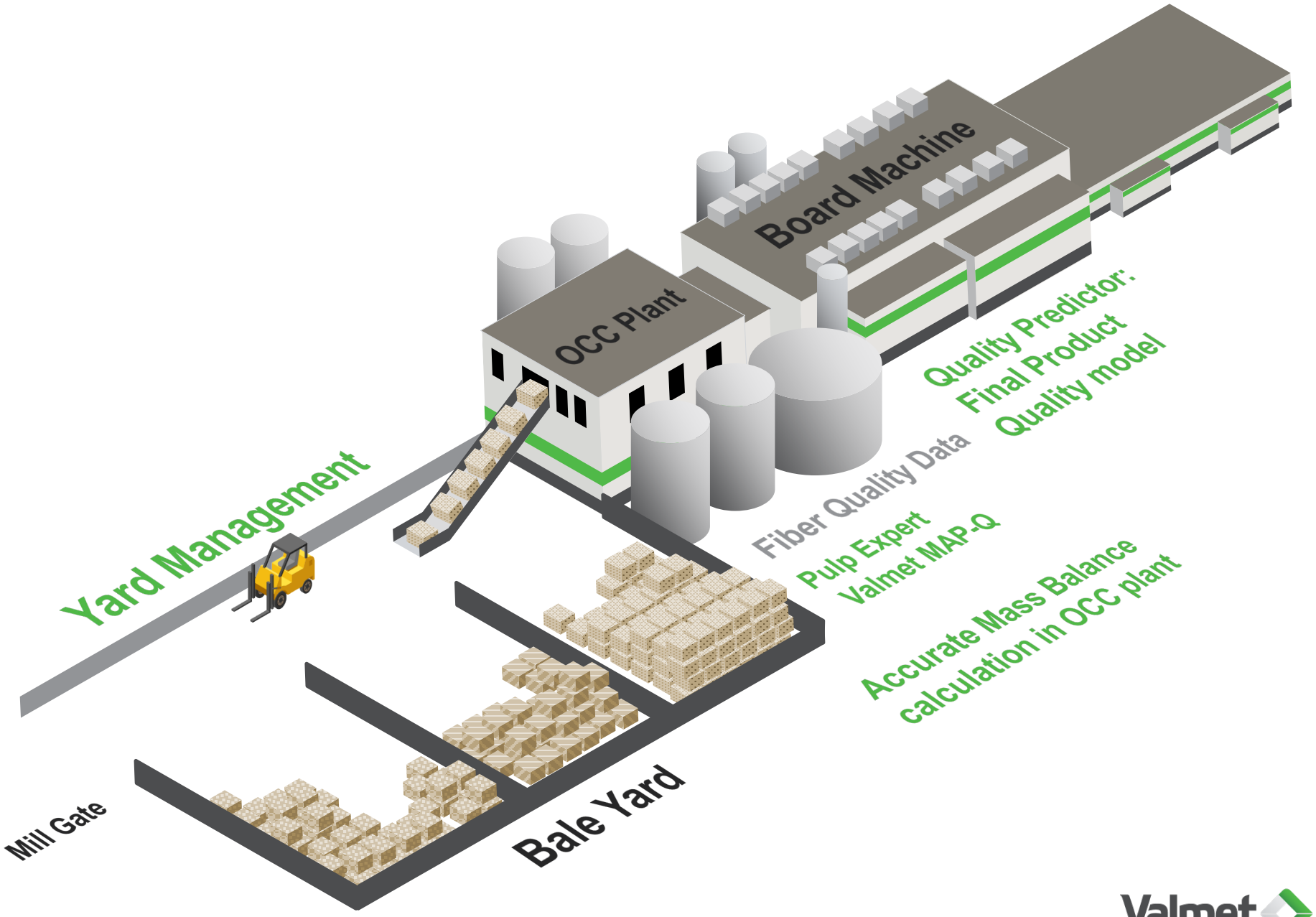
Quality target
On-spec

Board Quality

SCT Burst

Quality target
On-spec

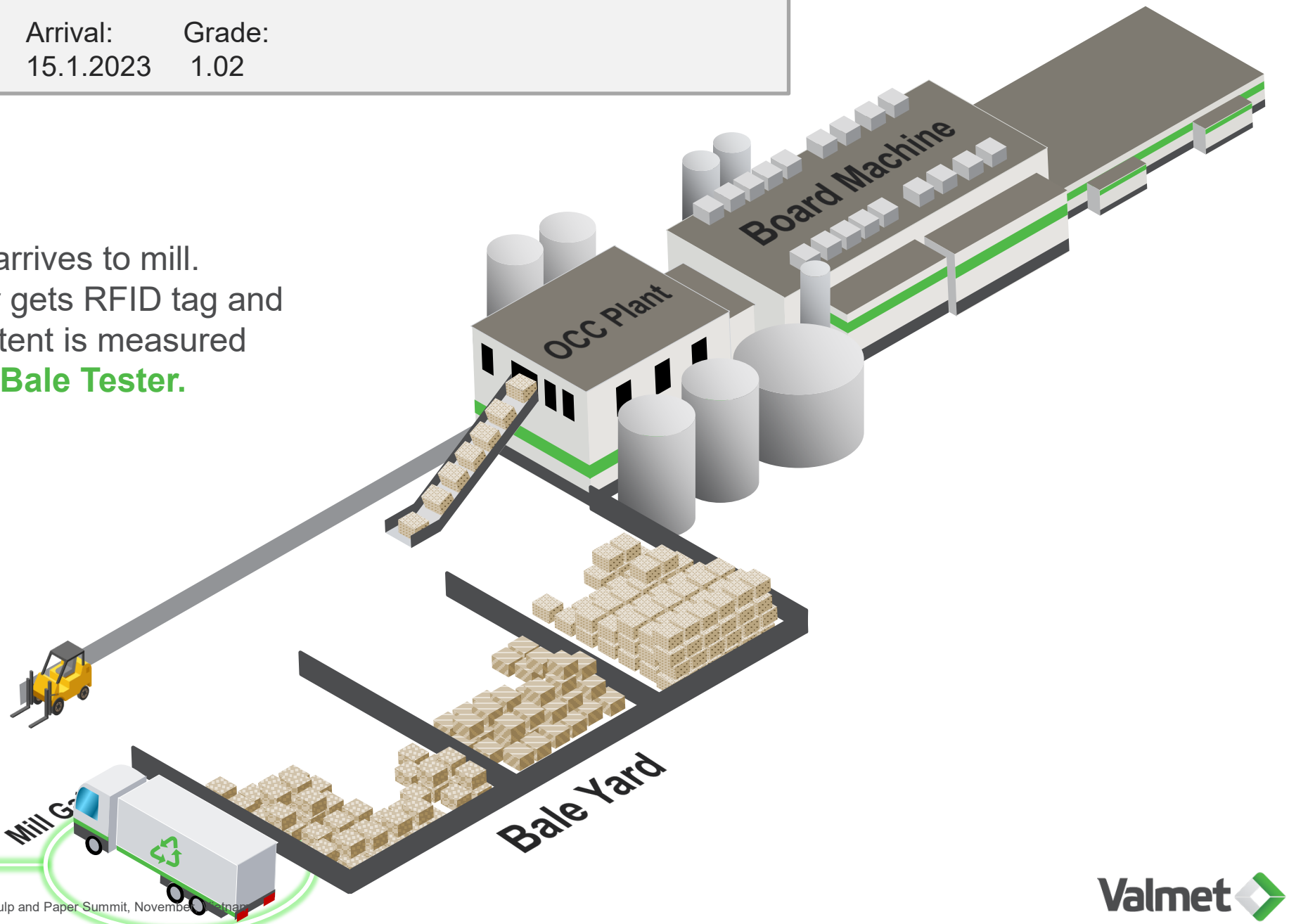



Board Machine
OCC Plant
Quality Predictor:
Final Product
Quality model
Fiber Quality Data
Pulp Expert
Valmet MAP-Q
Accurate Mass Balance
calculation in OCC plant
Yard Management
Mill Gate
Bale Yard

Bale records:

Load number:	Supplier:	Arrival:	Grade:
658922341	Roma RCP	15.1.2023	1.02

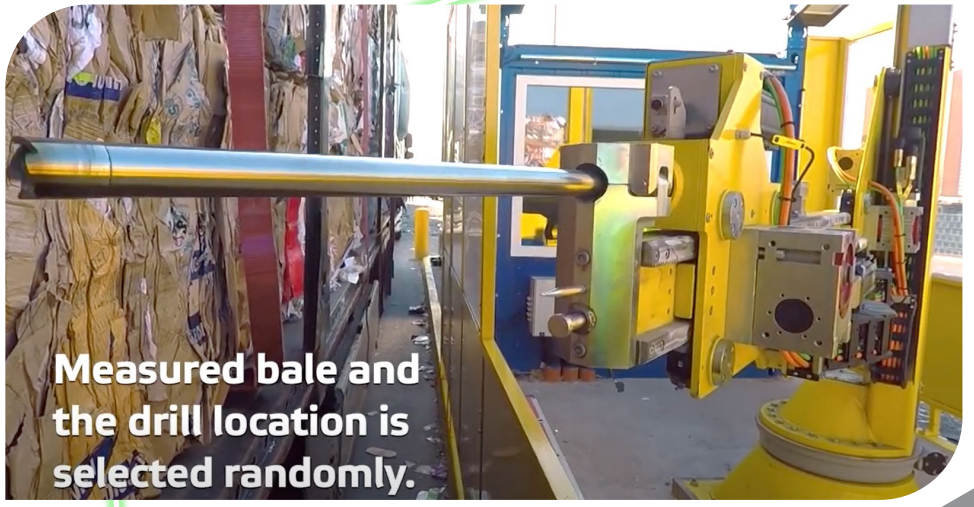
Load arrives to mill.
Truck driver gets RFID tag and truck content is measured with **Bale Tester.**



658922341

Bale records:

Load number:	Supplier:	Arrival:	Grade:	Ash:	Moisture:	Plastic:	Lignin:
658922341	Roma RCP	15.1.2023	1.02	11%	6.5%	4%	13%



Valmet

Bale records:

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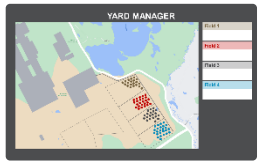
658922341	Roma RCP	15.1.2023	1.02	11%	6.5%	4%	13%

Unloading jobs are created in
Yard Management system and show in **Vehicle app**



Bale records:

Load number:	Supplier:	Arrival:	Grade:	Ash:	Moisture:	Plastic:	Lignin:
658922341	Roma RCP	15.1.2023	1.02	11%	6.5%	4%	13%

Fork-lift driver gets
the right unloading job in
Vehicle app

Bale records:

Load number:	Supplier:	Arrival:	Grade:	Ash:	Moisture:	Plastic:	Lignin:
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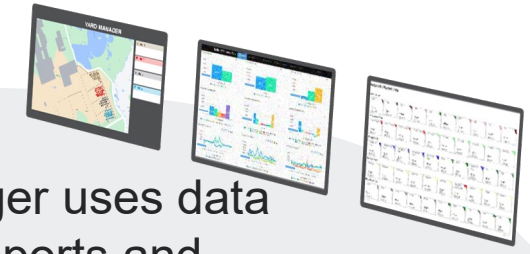


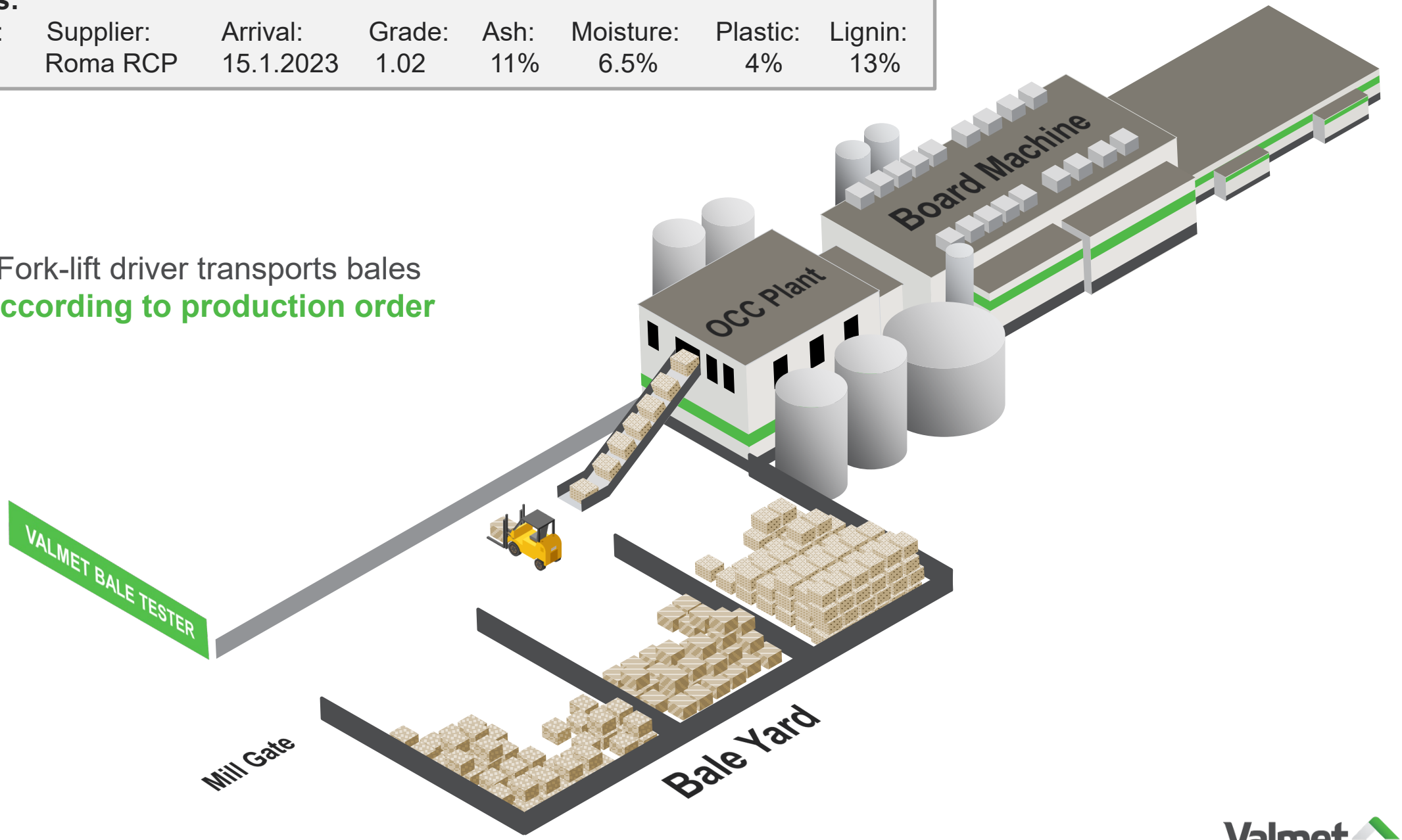
Production manager uses data from Portal, reports and dashboards for planning

Production order for fork-lift driver through **Yard Management system**

Bale records:

Load number:	Supplier:	Arrival:	Grade:	Ash:	Moisture:	Plastic:	Lignin:
658922341	Roma RCP	15.1.2023	1.02	11%	6.5%	4%	13%

Fork-lift driver transports bales
according to production order



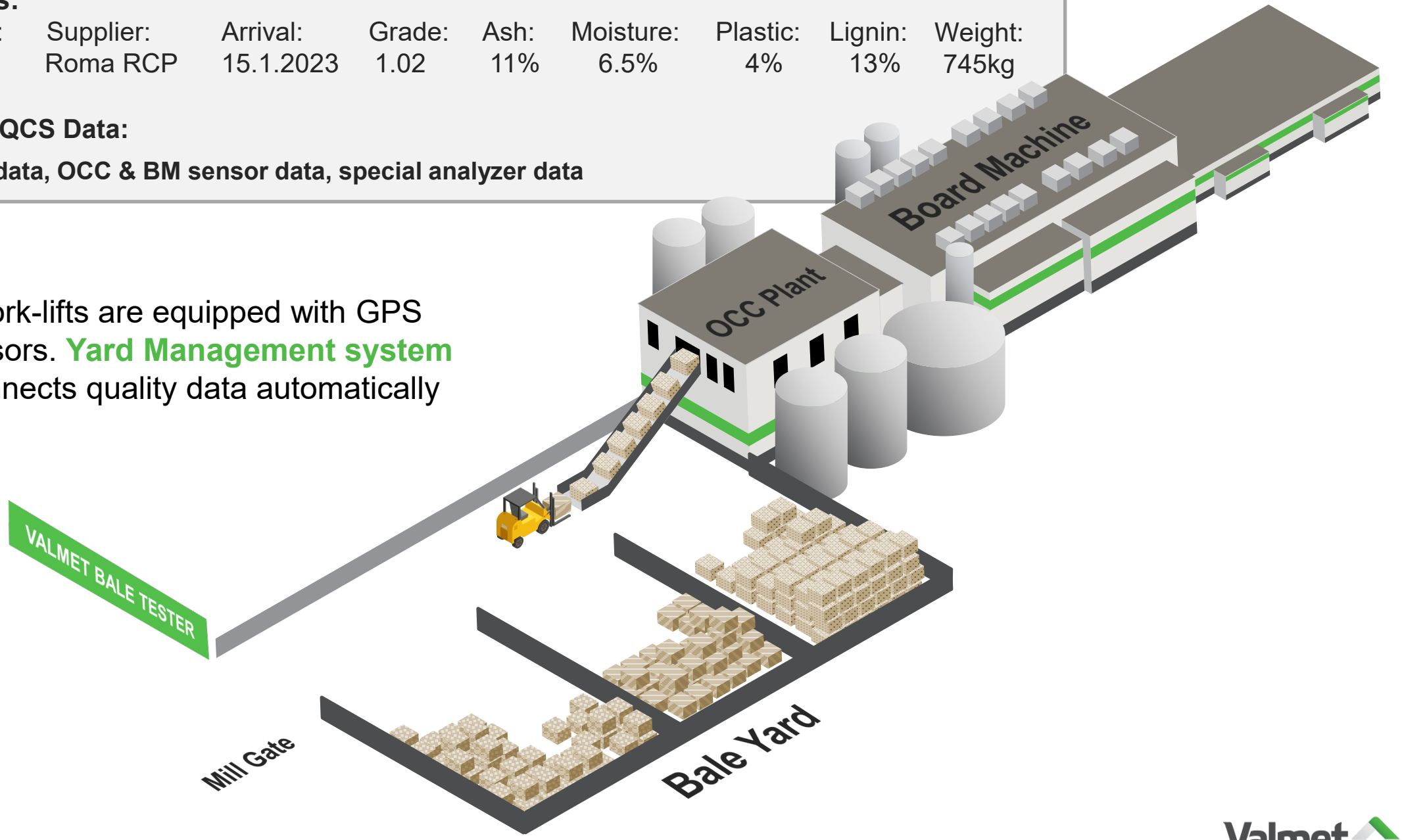
Bale records:

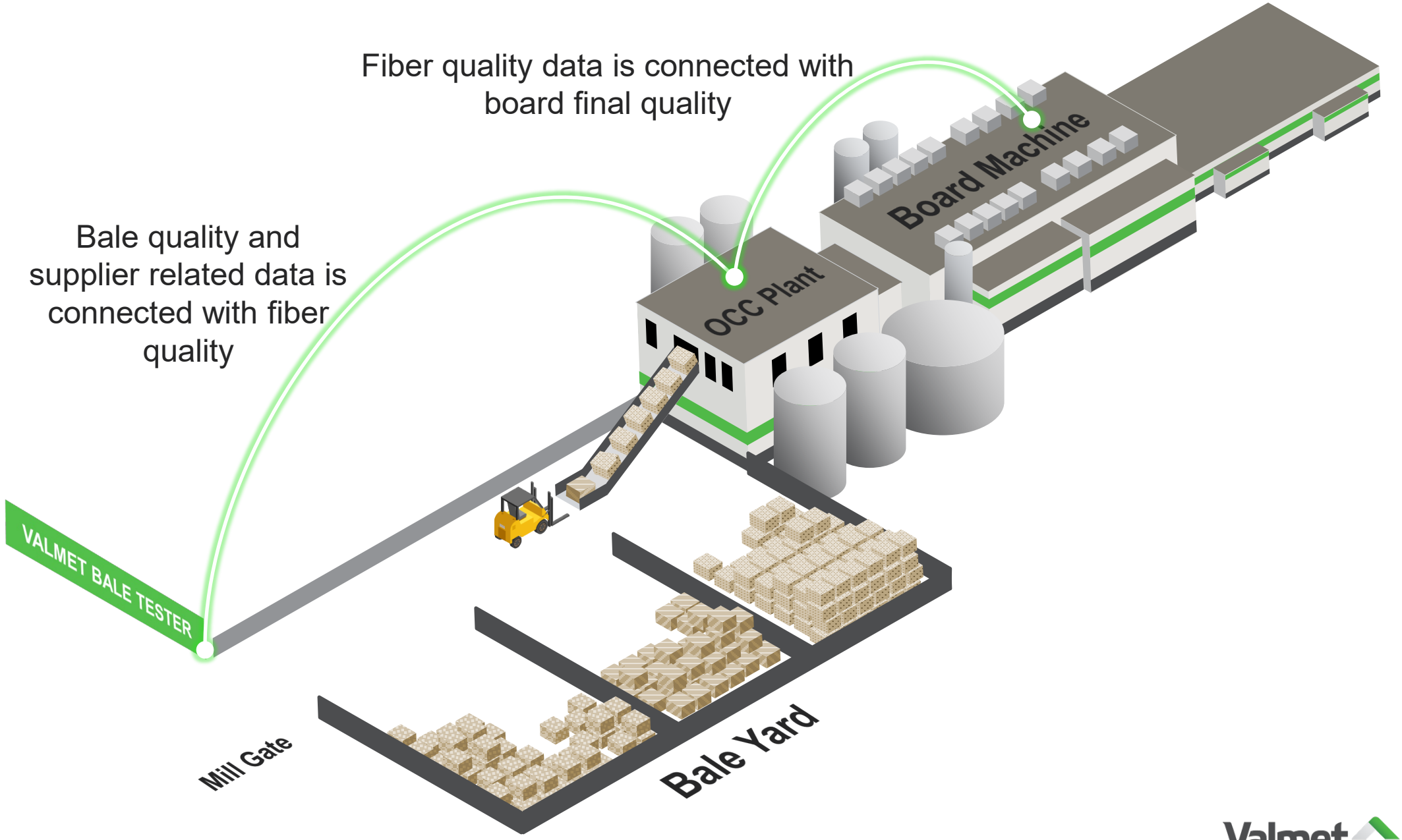
Load number:	Supplier:	Arrival:	Grade:	Ash:	Moisture:	Plastic:	Lignin:	Weight:
658922341	Roma RCP	15.1.2023	1.02	11%	6.5%	4%	13%	745kg

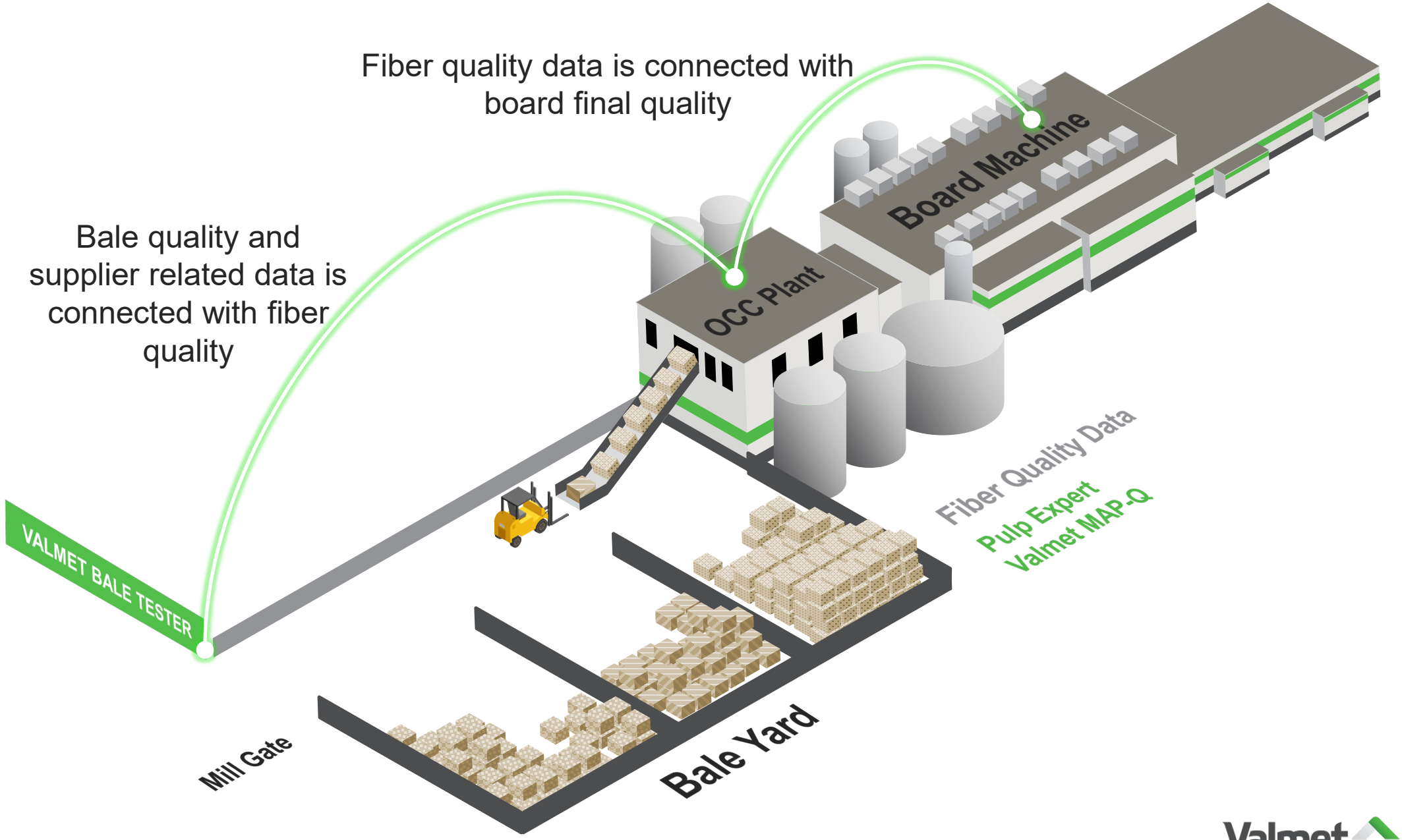
DCS / MCS / QCS Data:

Fiber quality data, OCC & BM sensor data, special analyzer data

Fork-lifts are equipped with GPS sensors. **Yard Management system** connects quality data automatically




Fiber quality data is connected with board final quality
Bale quality and supplier related data is connected with fiber quality
Board Machine
OCC Plant
VALMET BALE TESTER
Mill Gate
Bale Yard



Valmet

Board machine

Production rate
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Basis weight
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Grade
SuperLiner125

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Machine speed
1428 m/min

Quality target
On-spec

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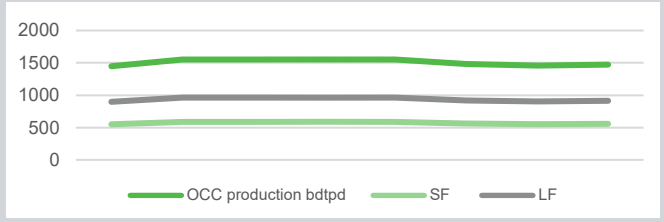


Raw material recipe

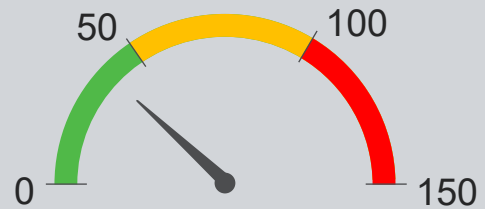
- Mixed waste
- OCC
- Clippings

Fiber Quality

Fiber length	●
Fibrillation	●
CSF	●
Ash	●
Dirt content	●

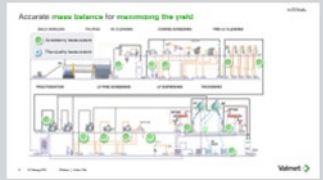
Quality target
On-spec

OCC line energy consumption

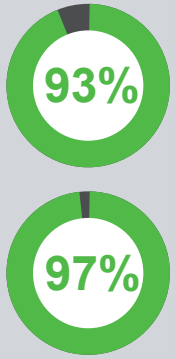


45 kWh / t

Yield



Uptime last 7 days



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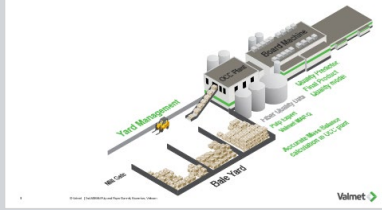
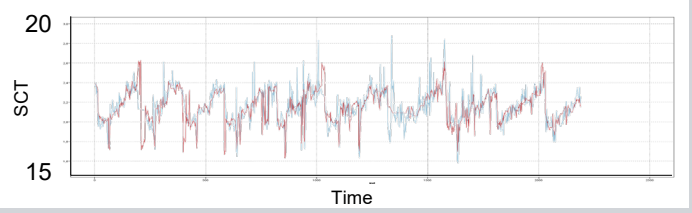


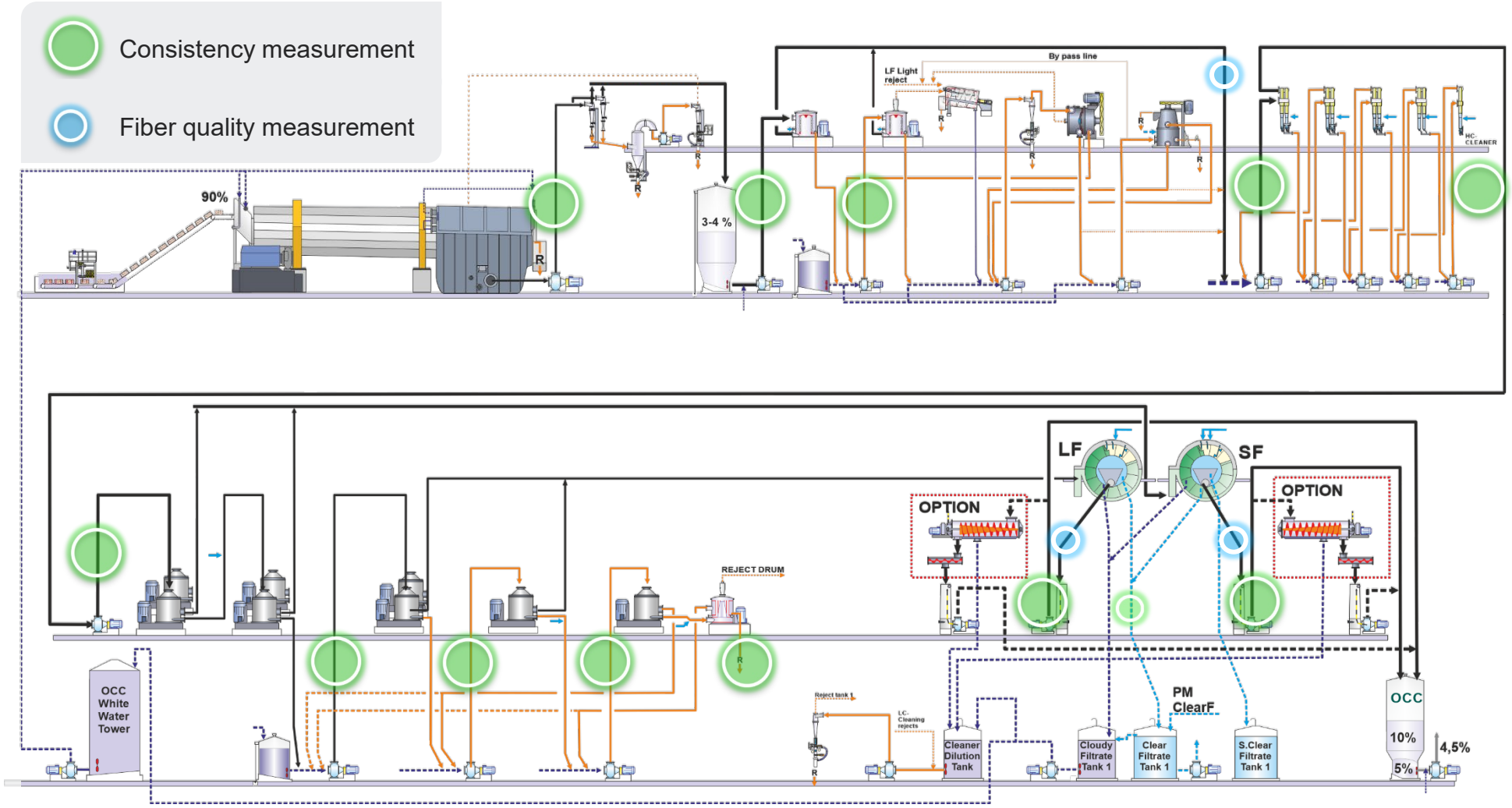
Board Quality

SCT Burst

Quality target
On-spec



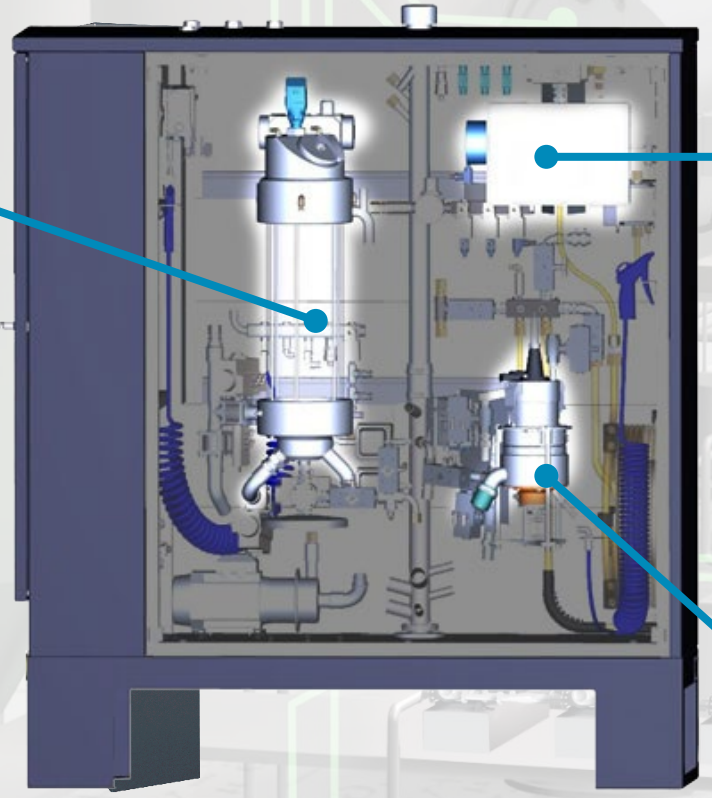
Valmet Fiber quality analyzers installed in OCC plant and stock preparation



Valmet Fiber Furnish Analyzer (MAP Q)

Precise and accurate fiber quality measurements

Sample handling module
- Cs adjustment
- Sample distribution to other modules



Fiber Imaging module
- Fiber and shive properties
- Dirt count properties

Drainage module
- Freeness measurement
- Schopper-Riegler measurement

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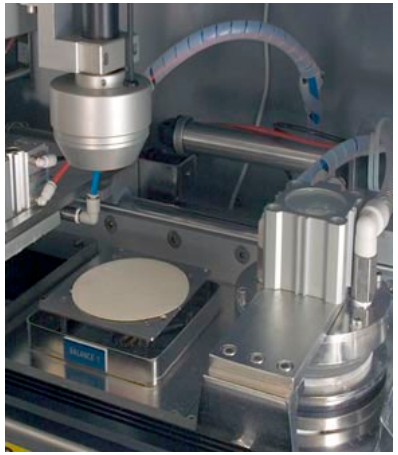
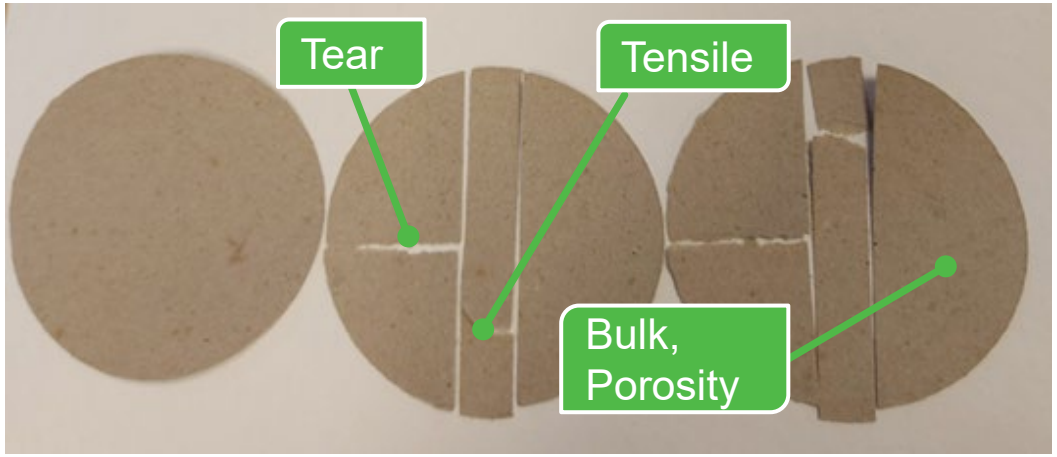
Valmet Pulp Expert

Measures mechanical properties of actual physical sheet





More than 200 installations globally

Valmet

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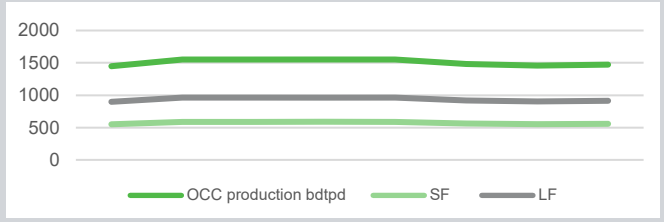

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Ash	
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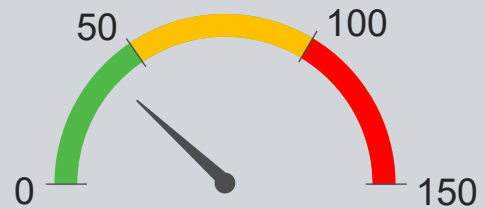
Quality target
On-spec

OCC line energy consumption



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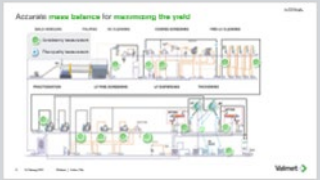

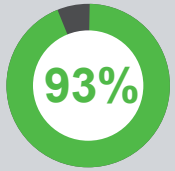

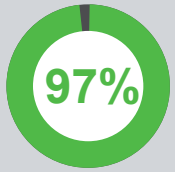

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Board Quality

SCT Burst

Quality target
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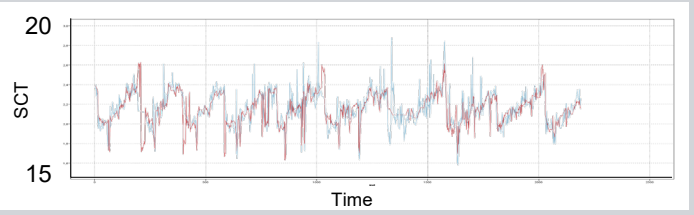


Soft sensors for predicting board quality in real time

Quality soft sensors

- Burst Strength
- SCT Strength

Laboratory quality (for reference)

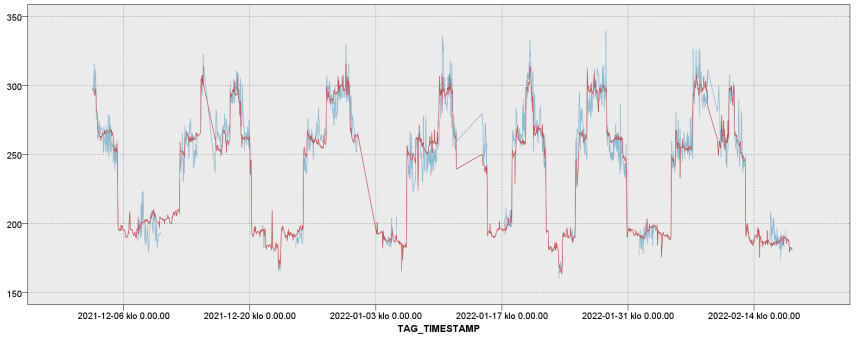
Online quality

Process measurements

Fiber properties

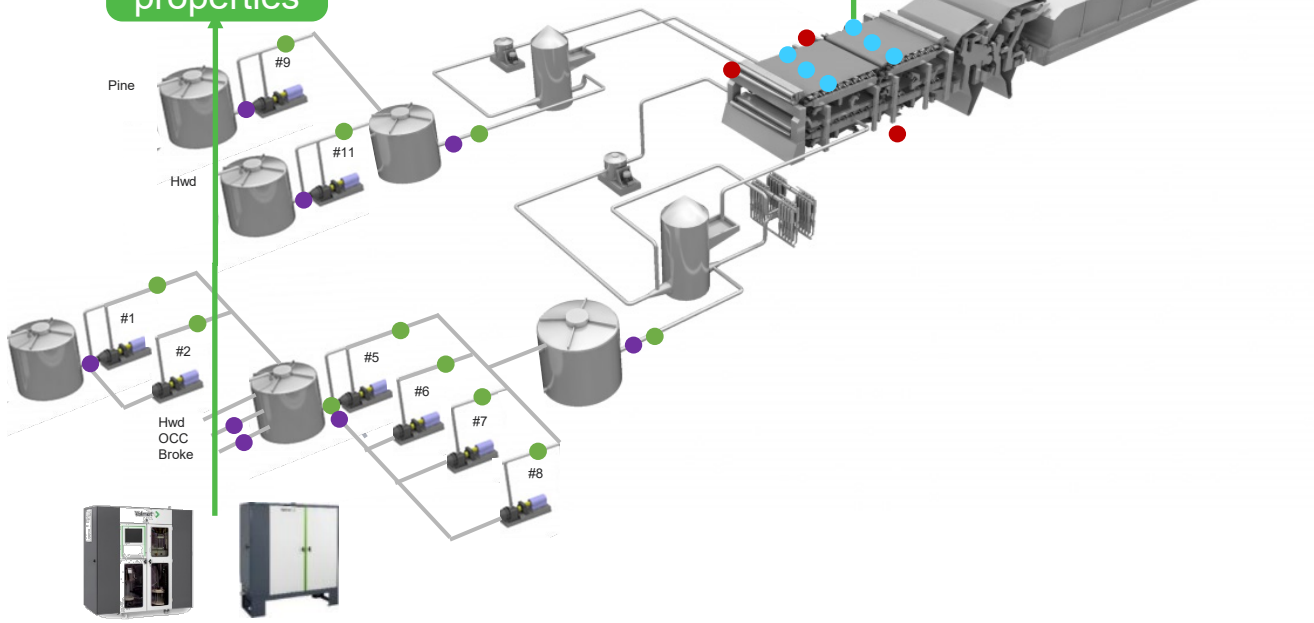
Scanners

PaperLab



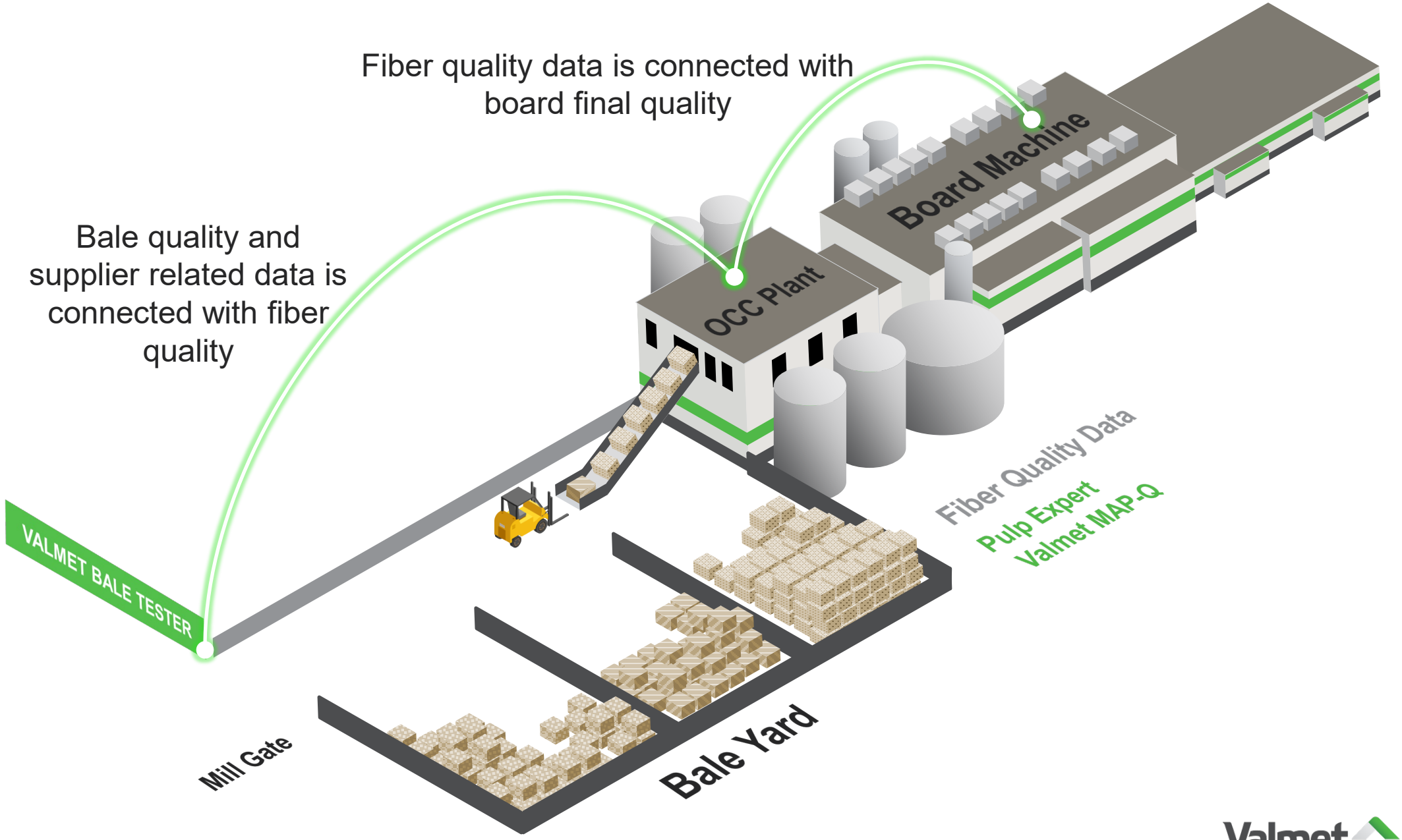
Laboratory measured Burst (kPa)

Predicted measured Burst (kPa)



Valmet Fiber Measurements

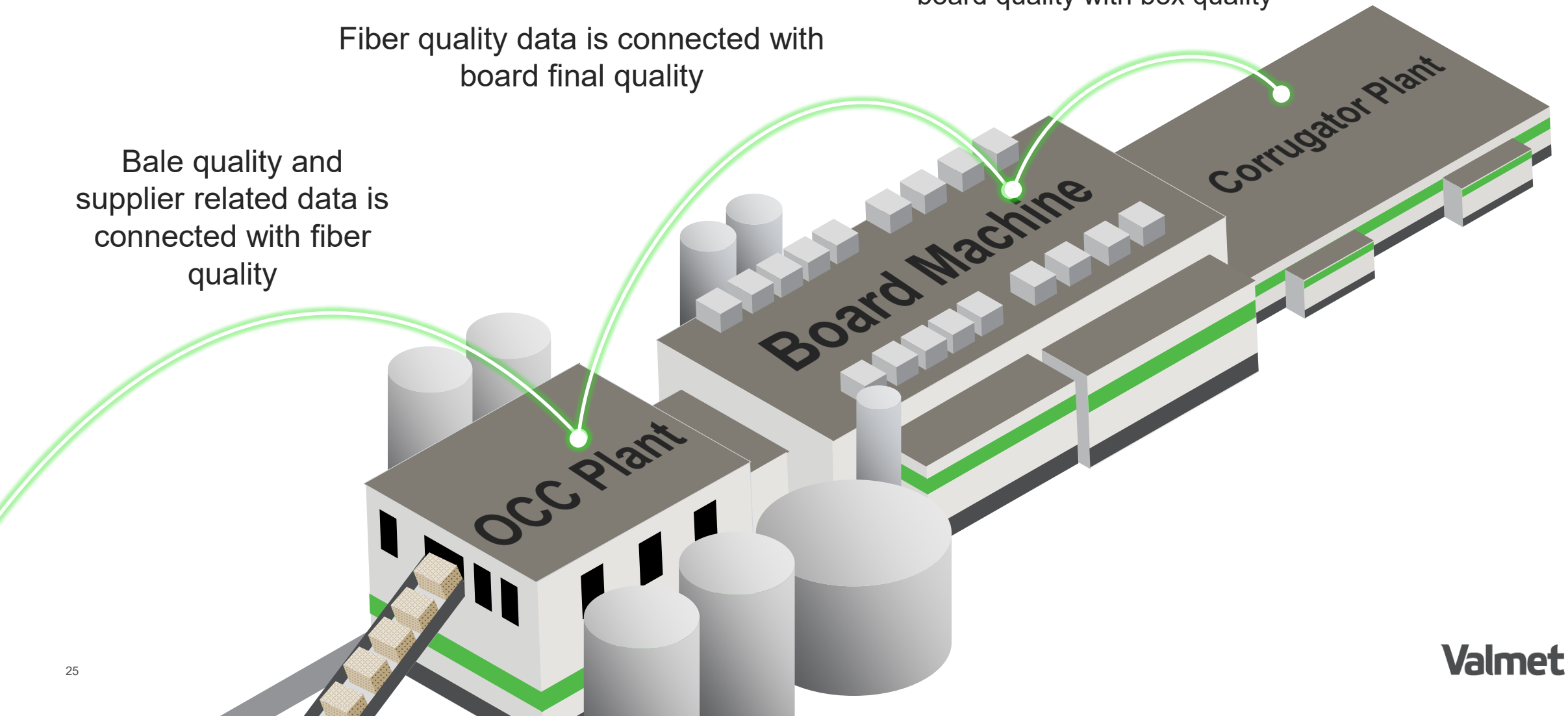
Valmet



Data integration with Corrugator plant to connect board quality with box quality

Fiber quality data is connected with board final quality

Bale quality and supplier related data is connected with fiber quality



Valmet

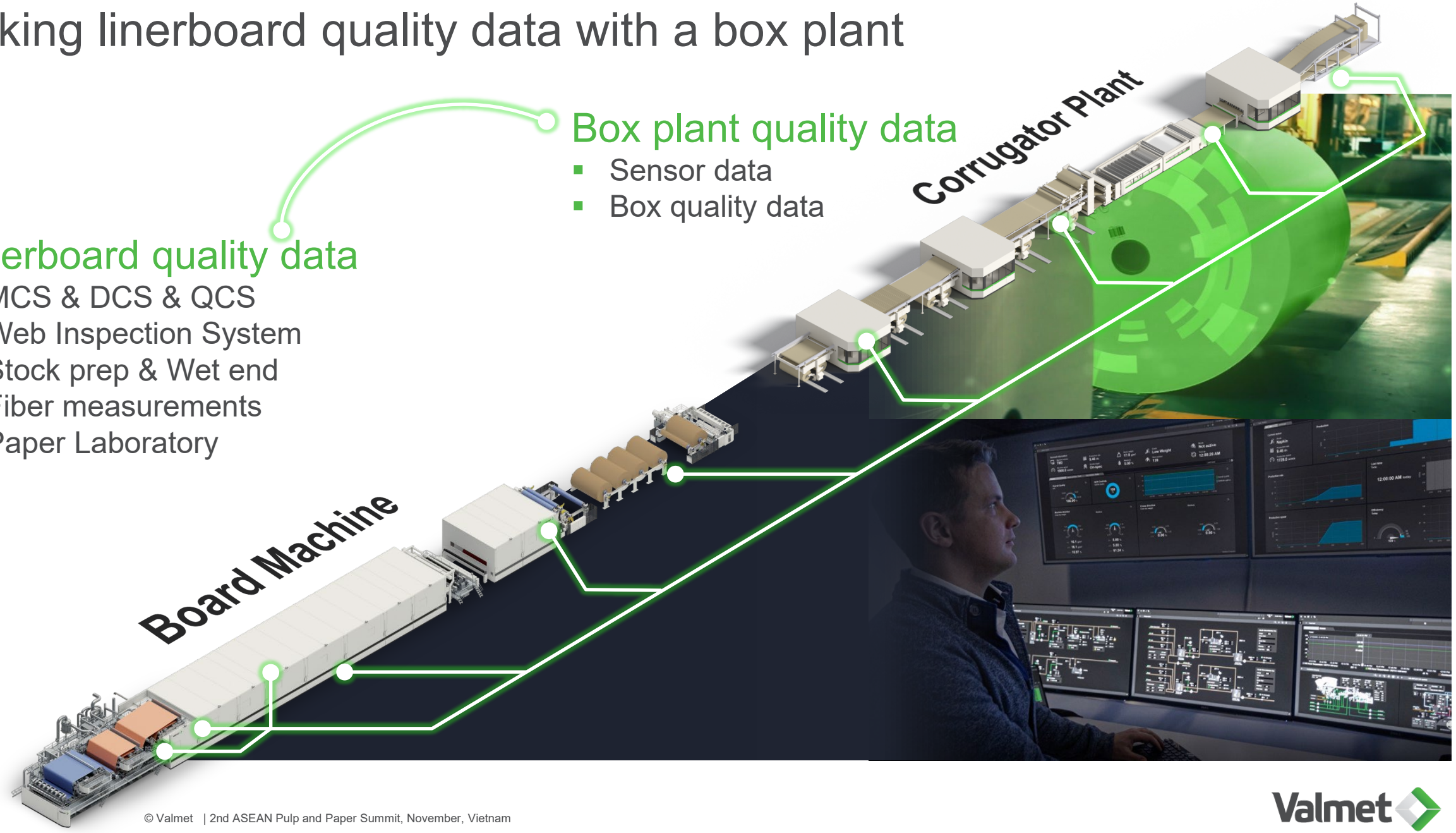
Linking linerboard quality data with a box plant

Box plant quality data

- Sensor data
- Box quality data

Linerboard quality data

- MCS & DCS & QCS
- Web Inspection System
- Stock prep & Wet end
- Fiber measurements
- Paper Laboratory



Valmet


Valmet
FORWARD