

Valmet Microwave Consistency Measurement

The new generation in industrial measurement





The 4th generation Valmet MCA microwave consistency measurement

Now in its 4th generation, the Valmet Microwave Consistency Measurement – Valmet MCA (patent pending) continues being the industry leader in microwave consistency measurements for pulp and paper. With more than 5000 delivered units, the Valmet MCA has gained a deserved reputation for accuracy and reliability, and has now been completely redesigned to take advantage of the latest technology.

New technology

Using high performing Direct Sweep Detection (DSD), a new method developed to analyze low power microwave signal, Valmet MCA offers greatly improved consistency measurement sensitivity and accuracy. Together with newly designed microwave antennas and digital electronics, insensitive to component aging or temperature effects, the unique measurement offers much higher resolu-

tion and repeatability than competing old fashioned analog designs. It offers the best process control performance for accurate chemical dosing (kg/ton), recipe and grade mix management, refiner feed optimization and basis weight control. Valmet MCA measures total consistency of the pulp process stream independent of fiber length, freeness, wood species or blend and is not affected by flow rate, brightness or color.

New sensors

Redesigned flow through sensors totally interchangeable with earlier installations are joined by the Twin Blade sensor, a completely redesigned insertion type probe sensor. Intended for pipelines of 200 mm diameter or greater, the Twin Blade eliminates stringing with unscreened pulp and other problems suffered by many insertion type probes.



All new design

Digital electronics

- Higher resolution than competing analog designs
- Unaffected by component aging or temperature effects

Direct Sweep Detection measurement

- Improved measurement sensitivity and accuracy
- Wider applicability in challenging processes

Twin blade sensor

- No stringing with unscreened pulp
- High conductivity applications in chemical pulping

Flow through sensor

- Direct replacement for earlier MCA generations
- The industry leader in consistency measurement

New user experience

Commissioning and operation have also been enhanced with the Valmet Bridge user interface, a new touch screen control platform designed for use widely with Valmet sensors.

- 7 inch touch screen
- Instant trending capabilities
- Easy diagnostics download
- Multi-point calibration possibility
- Remote access
- Industrial Internet ready

With comprehensive diagnostics, WiFi and Industrial Internet ready capabilities, the Bridge user interface provides an easy to learn and intuitive access to transmitter operation and remote services from Valmet.

Low lifetime costs

Valmet MCA is easy to install and requires no regular maintenance to keep commissioning and running costs to a minimum. The single point calibration takes only a few minutes to get the maximum benefit of the excellent accuracy and repeatability. Additional integrated measurements, such as temperature, pressure and vibration, support operating diagnostics to verify performance.

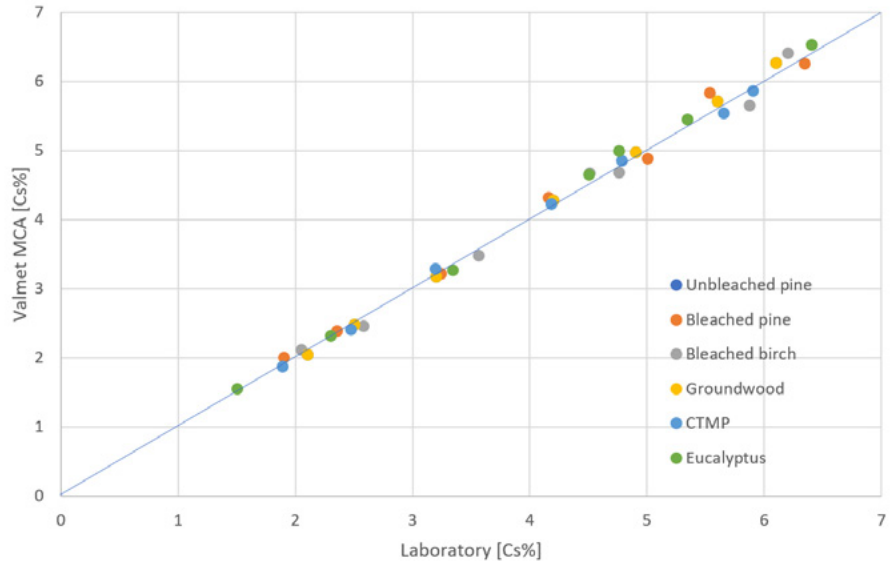
- Lower installation costs
- Maintenance free
- Single point calibration
- Improved user experience
- Wide range of applications
- Microwave technology is 100% safe

Widened application areas

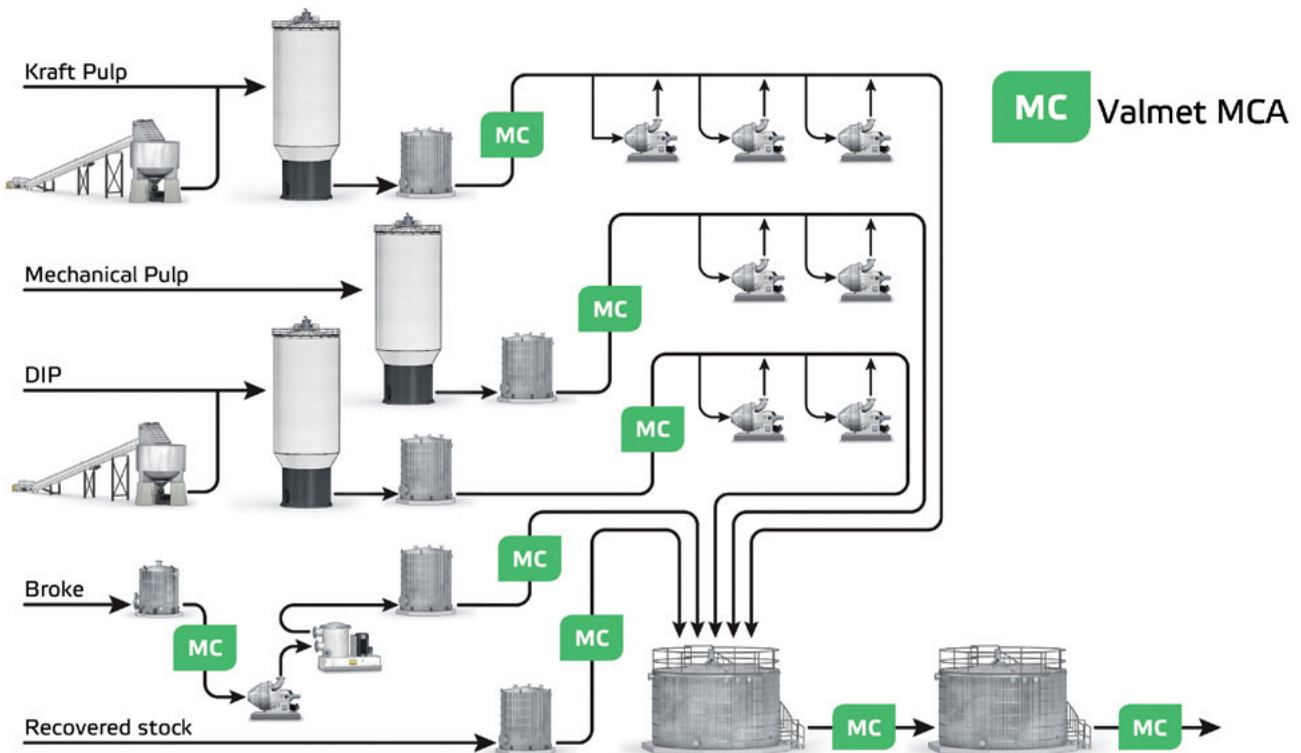
Valmet MCA is the ideal solution for consistency control where other solutions simply do not work well. The new Twin Blade sensor with higher conductivity limitation and new chemical compensation allows Valmet MCA to be installed in high conductivity applications in pulp mills.

Unaffected by different fiber mixes, pulp grades or varying filler content; Valmet MCA provides the highest accuracy consistency measurement from chemical pulp bleaching, mechanical pulping and recycling lines all the way to the machine chest. This means that Valmet MCA offers accurate, stable, and reliable measurement for control purposes in demanding processes.

- More efficient production control
- Improved quality
- Economic savings
- Fewer process upsets
- Less off grade product



The most critical applications in a paper mill



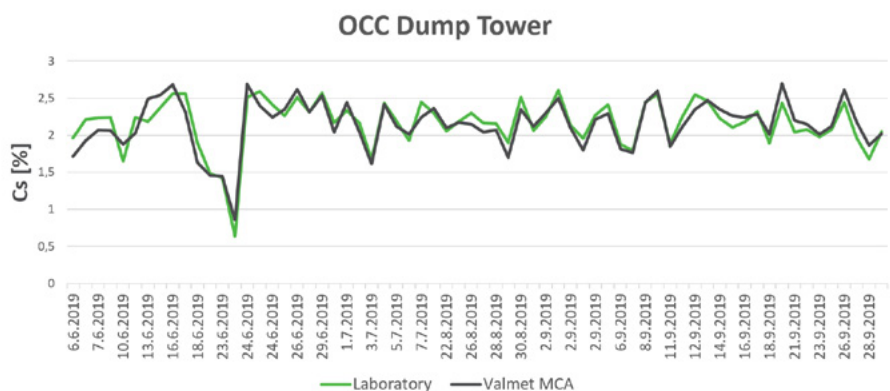
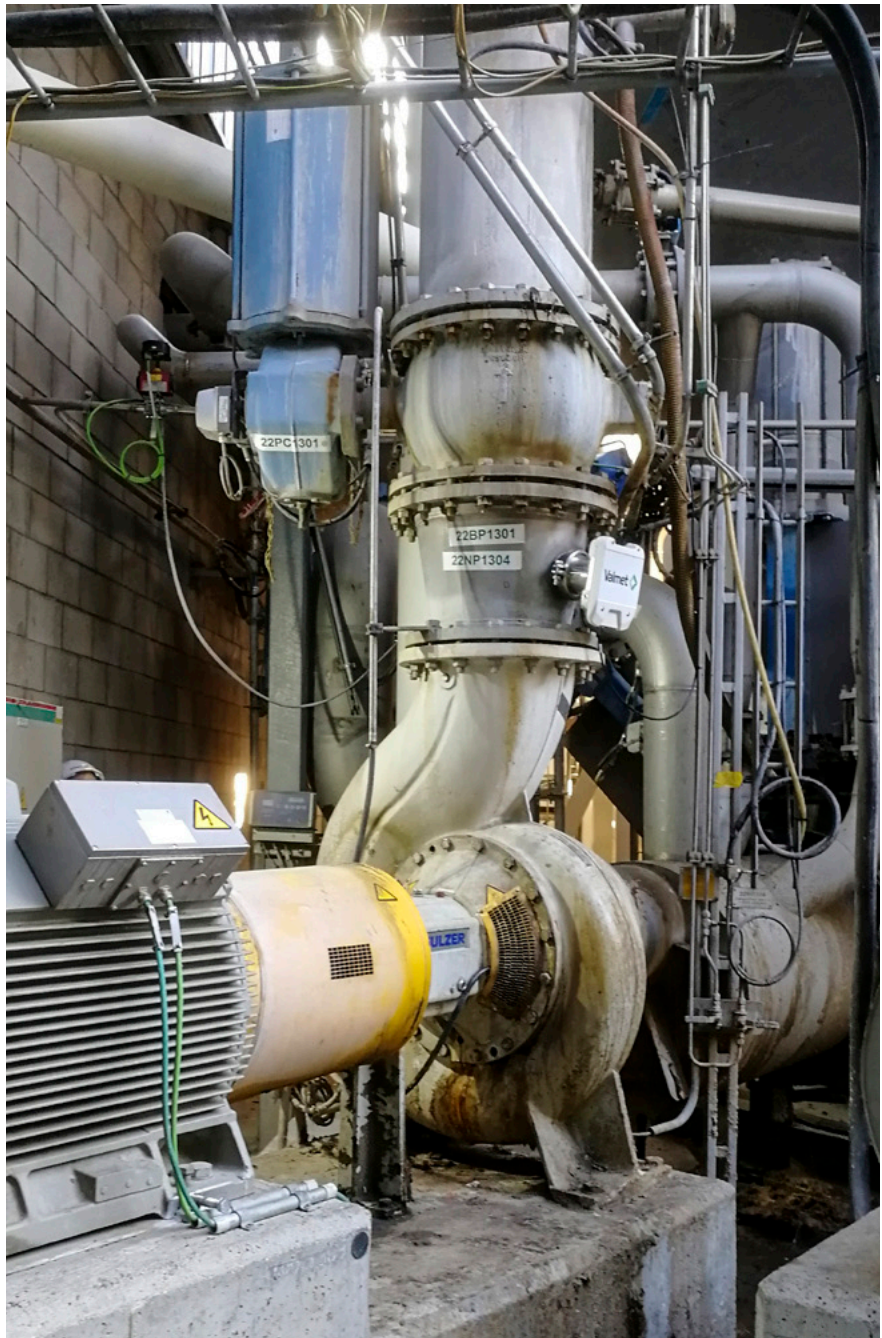
The 4th generation of Valmet MCA with the new Twin Blade sensor succeeding in challenging applications

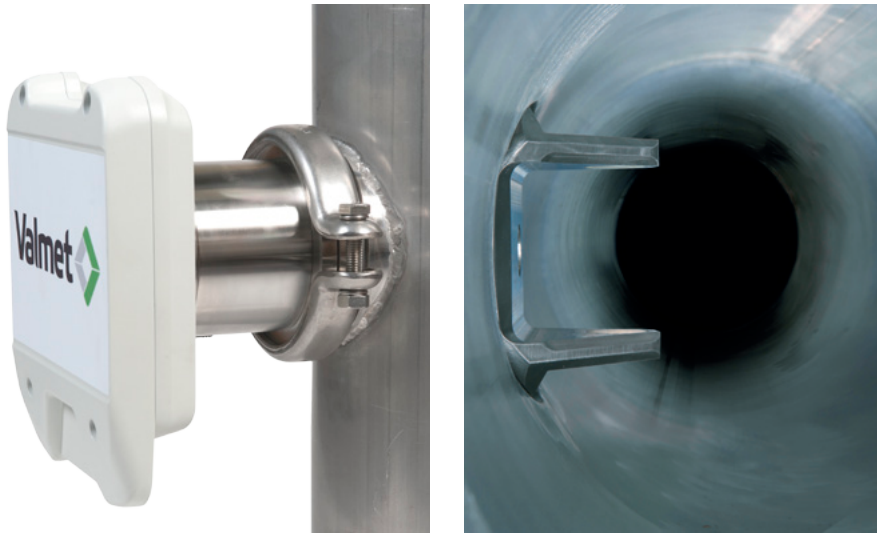
The OCC Dump Tower application is early on the OCC process line where all kinds of impurities are present, and the raw material varies a lot. This is one of the most challenging applications in the pulp and paper processes.

The end customer had been using a mechanical consistency meter and an optical consistency meter for consistency control in this application without success. Due to the variation of the raw material and all the existing impurities, the optical meter could not be calibrated and used successfully in this application.

When it came to the mechanical rotating type of consistency meter used for consistency control, very often impurities in the process were sticking around the meter's propeller and sensing element. That meant that this consistency meter was not able to measure and maintenance and clean up were constantly necessary on a weekly basis. Consequently, the end customer had additional work in maintaining these meters.

With the 4th generation of Valmet MCA and the new Twin Blade sensor, it is possible to efficiently manage these kind of process applications with large pipes and unscreened pulp. Based on the follow-up results with Valmet MCA and its Twin Blade sensor, the measurement was working very well with one-point calibration in this very challenging application. The results show very clearly Valmet MCA's performance, having high laboratory correlation ($R^2 > 0.9$) and without the need for maintenance, re-calibration, and clean-up.





Valmet MCA Twin Blade

The new Twin Blade sensor is installed through a process coupling to the process pipe. The sensor has two fin shaped blades with flush-mounted antennas, and the measurement takes place between the blades. This sensor model is suited for high conductivity measurement locations and for larger pipe size installations. A process temperature and pressure measurement are integrated in the sensor.



Valmet MCA Flow Through

The body of the Flow Through sensor is a pipe that replaces an identical length of process pipe. Flush-mounted antennas are installed on opposite sides of the sensor body, so that the measurement takes place through the pipe. Sensor electronics casings are installed on the sensor body by means of a base bar, and temperature and pressure sensors are installed inside the base bar. Antenna cables are located behind separate protective cover.



New User Interface; Valmet Bridge – The new and easy-to-use terminal platform

Sensors are operated with the Valmet Bridge operating terminal. The terminal is a user interface for all Valmet inline sensors and contains a 7” capacitive touch screen with trending capabilities. Valmet Bridge interface offers an improved user experience, offering easy calibration, instant trending capabilities, intelligent diagnostics, and remote access.

Technical specifications

Valmet MCA sensor

Measurement

Measuring range	0–16 % Cs; if over 16 % Cs consult Valmet Automation
Repeatability	± 0.01 % Cs
Sensitivity	0.001 % Cs
Filtering	1–99 s
Microwave power	0.25–316 mW (-6...+25dBm)

Pressure measurement

Measuring range	0–25 bar
Accuracy	± 0.1 bar

Process conditions

pH range	2.5–11.5
Temperature	0 ≤ T < 100 °C
Process pressure	
- Minimum	> 1.5 bar recommended, no free air; consult Valmet Automation if lower
- Maximum, TB-model	PN25
- Maximum, FT-model	DIN PN16 / ANSI Class 150 / JIS 10k
Vibration	max. 20 m/s ² , 10–2000 Hz
Process flow	min 0.01 m/s

Operating environment

Temperature	-20...+70 °C (-4...+158 °F), protect from direct heat sources
Housing class	IP66 (NEMA 4X)

Materials, TB sensor

Wetted parts	AISI 316L (Option: 254 SMO), Ceramic
Sealing rings	EPDM, FKM, PTFE
Process coupling	AISI 316L (Option: 254 SMO)
Mounting clamps	AISI 304
Mounting bolts	8.8 ZNE and AISI316

Materials, FT sensor

Wetted parts	AISI 316, AISI 316L, Ceramic
Sealing rings	EPDM, FKM

Sensor weights

MCA-TB	7.3 kg (16.1 lbs)
MCA-FT 50 / 2"	8.4 kg (18.5 lbs)
MCA-FT 80 / 3"	9.8 kg (21.6 lbs)
MCA-FT 100 / 4"	9.9 kg (21.8 lbs)
MCA-FT 150 / 6"	13.2 kg (29.1 lbs)
MCA-FT 200 / 8"	16.5 kg (36.4 lbs)
MCA-FT 250 / 10"	24.2 kg (53.4 lbs)
MCA-FT 300 / 12"	28.2 kg (62.2 lbs)

Operating terminal Bridge

Connections

Cable to sensor	length 10 m (33 ft), extension cable 10 m (33 ft) available, max. length 30 m (98 ft)
Operating voltage	90–260 VAC / 10 W

Connections to mill systems

- analog outputs	2 current outputs, 4–20 mA
- HART®	12–36 VDC
- binary inputs	4 x 12–28 VDC / 10 mA, isolated
- relay outputs	2 relay outputs, max. 250 VAC, 220 VDC / 2 A

Connection options

USB	USB-HOST, USB-DEVICE
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Ethernet

Operating environment

Temperature	-5 – 50 °C (+23 – 122 °F)
Housing class	IP66 (NEMA 4X)

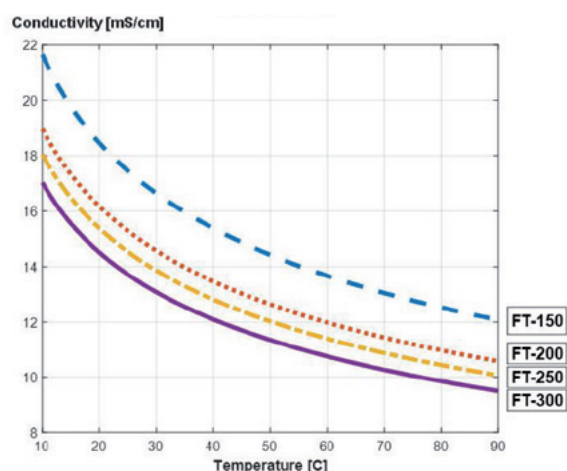
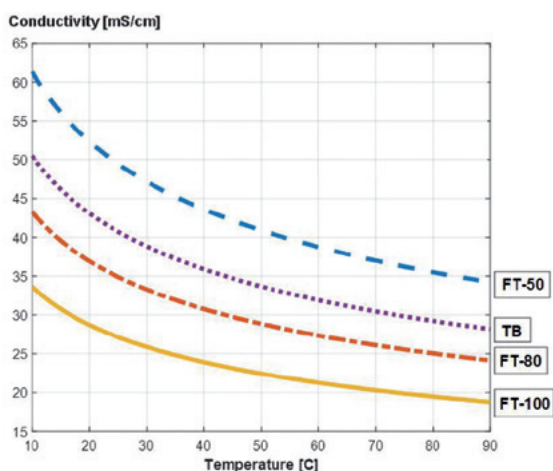
Materials

Housing	Aluminum casting
Display cover	Polycarbonate

Dimensions & weight

w x h x d	258 x 303 x 172 mm (10.2" x 11.9" x 6.8")
Weight	6.4 kg (14.1 lbs)

Maximum conductivity limits for the different sensor models





Valmet's professionals around the world work close to our customers and are committed to moving our customers' performance forward – every day.



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