

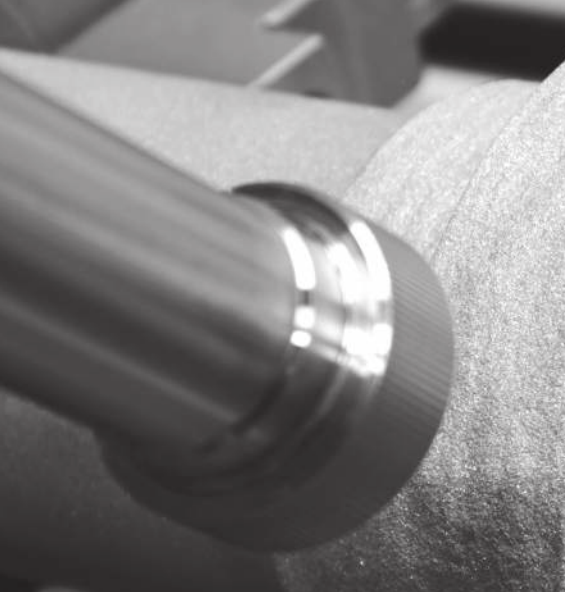
A close-up, black and white photograph of a cold spray meter nozzle. The nozzle is cylindrical with a textured, metallic surface. The background is dark, and there are orange accents at the top and bottom of the image.

coldspray meter

Individual particle
characterization
device for
cold spray
processes

tecnar

Innovate to differentiate.



Coldspray Meter innovative technology

Based on the time-tested Dpv principle, the Coldspray Meter can characterize particles individually and provide complete velocity and size distributions (not only mean values).

Monochromatic light is shone onto the system's measurement volume to illuminate the cold particles that would otherwise be impossible to see. They are then characterized (velocity, size, flux) based on the back-scattered light.

See how fast is fast enough

The Coldspray Meter is the ideal tool for researchers and production managers involved in cold spray processes. It helps to validate fluid dynamic models, optimize spray nozzles, develop and optimize spray parameters, maximize deposit efficiency and monitor the process during production runs.

Its intuitive touch screen user interface makes it easy to integrate into your daily operations. The data is available as CSV files and can be easily accessed via Ethernet or a USB jump drive.

The *Coldspray Meter* is generally used to:

- Monitor/characterize cold spray processes
- Develop spray conditions
- Design and optimize spray nozzles
- Validate models
- Monitor sand/grit blasting processes or even shot peening

Plant supplies

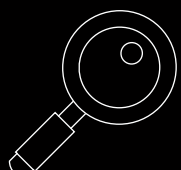
Power requirements

100 /120 – 200 /230 VAC, 50-60 Hz, auto-switch


Plant to supply

20-30 psi of clean, dry compressed air

Get the *Coldspray Meter* advantage:



Single particle
characterization



Simultaneously measures
velocity, size and flux

Technical specifications

Measurement ranges

Particle velocity	5 - 1200 m/s at 0.5% precision 16.4 - 3940 ft./s. at 0.5% precision
Particle diameter	5 - 25 % precision (depending on particle shape)
Center plume position	0.2 mm precision 0.8 in. precision
Particle relative flow	normalized a.u.

Measurement volume information

Coldspray Meter measurement volume	3 mm ³
Sensor head working distance	100 mm (4 in.) from spray torch axis at 90°
XY scanning unit travel range	50 mm x 50 mm 2 in. x 2 in.

Laser characteristics

Laser wavelength	790 nm
Nominal laser power	3.3 W
Maximum power density (at waist)	6.5 W/cm ²
Laser type	CW, class IV
Waist position	100 mm (4 in.) in front of lens

Dimensions

Sensor head

70 mm x 33 mm
2.6 in. x 1.3 in.

XY scanner

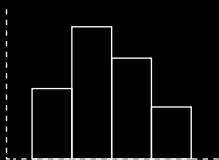
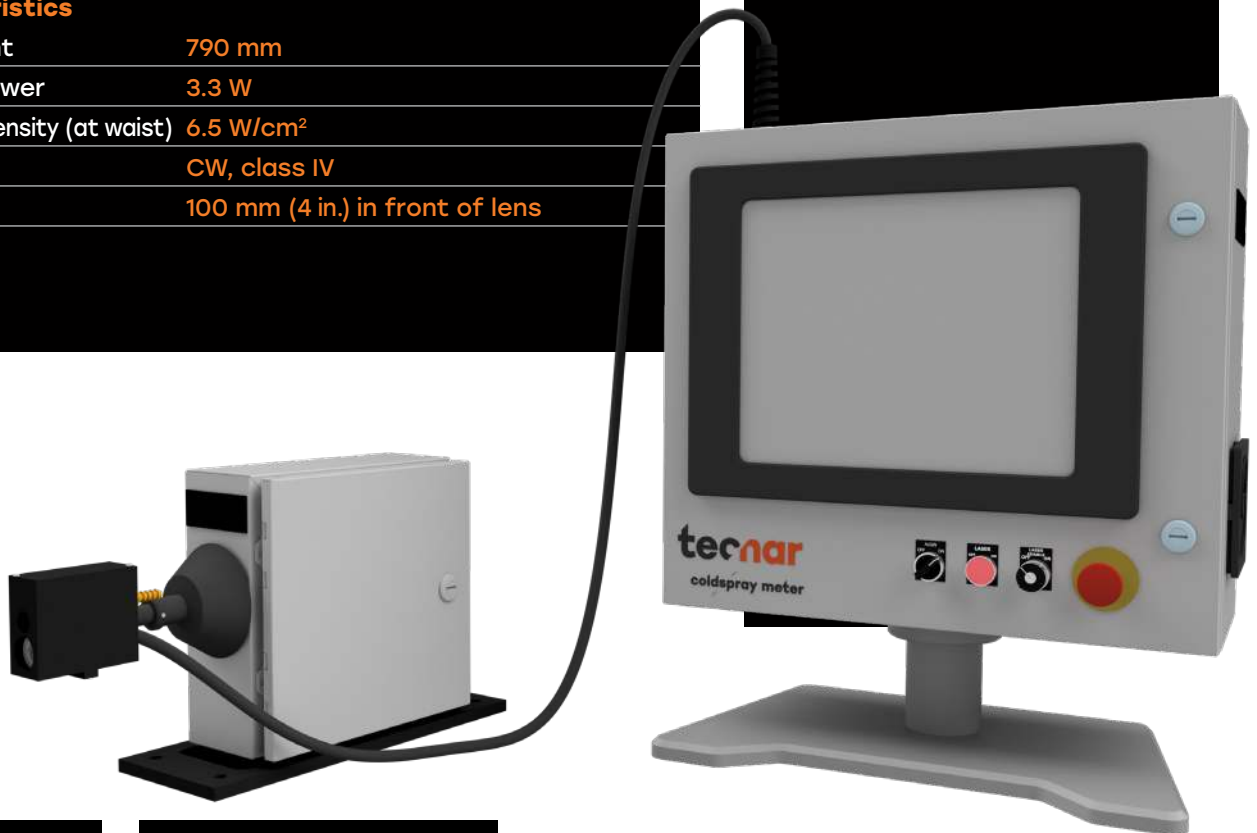
300 mm x 125 mm x 330 mm
11.8 in. x 4.9 in. x 13 in.

Main enclosure

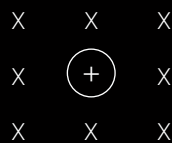
560 mm x 260 mm x 660 mm
22 in. x 10.2 in. x 26 in.

Touch screen

430 mm /17 in.
1024 x 768 minimum resolution



Histograms
with full distributions
(not only mean values)



Computer-controlled
cross-sectional mapping
of spray plume properties

earlier insight changes everything

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Learn more
about the
Coldspray Meter

References

CSIRO
École des Mines
de Paris
FZ-Juelich
Helmut-Schmidt
University
Nanyang Technological
University
National Research
Council
Oerlikon Metco US Inc.
Plasma Giken
University of Ottawa



“Sensors, such as the Coldspray Meter, allow us to validate numerical models (CFD) that can then be used to design cold spray nozzles that meet specific requirements in terms of particle velocity. Furthermore, they allow us to better understand the spray deposition windows of reactive materials to ensure that we avoid powder reaction during consolidation and also to maximize the reactivity of the consolidated powders.”

Prof. Bertrand Jodoin,
University of Ottawa, Canada