

earlier insight changes everything

tecnar

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Learn more
about the
DPV Evolution



“At Forschungszentrum Jülich, we have used the DPV extensively and successfully for over 15 years to better understand and optimize our thermal spray processes. Its unique capability to simultaneously measure the temperature, velocity and size of individual particles and to perform cross-sectional maps of the spray plume has had a tremendous impact on our activities in the fields of process development, parameter optimization and quality management.”

Dr. Georg Mauer
Head of Thermal Coating Technology Team
Institute of Energy and Climate Research (IEK-1)
Forschungszentrum Jülich GmbH, Germany

The logo for 'dpv evolution' is positioned in the upper center of the image. It features the letters 'dpv' in a bold, white, sans-serif font, with a small orange diagonal line above the 'p' and another below the 'd'. To the right of 'dpv' is the word 'evolution' in a lighter, white, sans-serif font. The background consists of a solid orange bar at the top and a dark grey area below it.

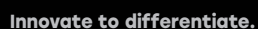
dpv evolution

The text 'Individual particle characterization device for thermal and cold spray processes' is located in the middle of the image. The words 'Individual particle' are in a bold orange font, while the rest of the text is in a white sans-serif font. The background is a dark grey area that transitions into a photograph of a machine at the bottom.

Individual particle
characterization
device for thermal
and cold spray
processes

The 'tecnar' logo is located at the bottom center of the image. It features the word 'tecnar' in a bold, white, sans-serif font, with the 'n' and 'a' in orange. The background is a dark grey area that transitions into a photograph of a machine at the bottom.

tecnar

The tagline 'Innovate to differentiate.' is located at the bottom center of the image, below the 'tecnar' logo. It is written in a small, white, sans-serif font. The background is a dark grey area that transitions into a photograph of a machine at the bottom.

Innovate to differentiate.

The thermal spray research community uses the DPV sensor to understand the fundamental process studies, modeling, and development.

Dimensions

Scanning unit

706 mm x 367 mm x 152 mm
(27.8 in. x 14.5 in. x 6 in.)

Controller

770 mm x 580 mm x 305 mm
(30.3 in. x 22.8 in. x 12 in.)

Calibration module

200 mm x 304 mm x 340 mm
(7.9 in. x 12 in. x 13.4 in.)

Total weight

56.4 kg (124 lb)

Plant supplies

Power requirements

120/230 VAC Auto-Switch
50/60 Hz 4.9/2.7A

Air supply

1.35-2 bar (20-30 psi)

The DPV was the first commercially available sensor to characterize thermal spray processes. With its cleverly designed measurement volume and pattern recognition algorithms, the *DPV evolution* can characterize particles individually and provide complete distributions & mean values of the temperature, size, and velocity.

Since 1990, the DPV has become the industry standard in the thermal spray research community and is cited in of over 1,000 scientific papers.

Capable of providing individual particle characteristics for most commercially available spray materials.

Temperature measurement from 1,050 to 4,000°C

Velocity measurement from 5 to 1,200 m/s

Diameter measurement from 5 to 300 microns

Get the *DPV evolution* advantages:



Individual particle temperature



Temperature distribution



Individual particle velocity



Velocity distribution



Individual particle size



Size distribution

Technical specifications

Measurement ranges

Particle temperature	$\geq 1050^{\circ}\text{C}$ ($\geq 1922^{\circ}\text{F}$), size and emissivity dependent at 3% precision
Particle velocity	Low speed configuration: 5-400 m/s at 2% precision High speed configuration: 400-1200 m/s at 2% precision
Particle diameter	5-300 μm (0.2-11.8 thou), morphology dependent

Measurement volume information

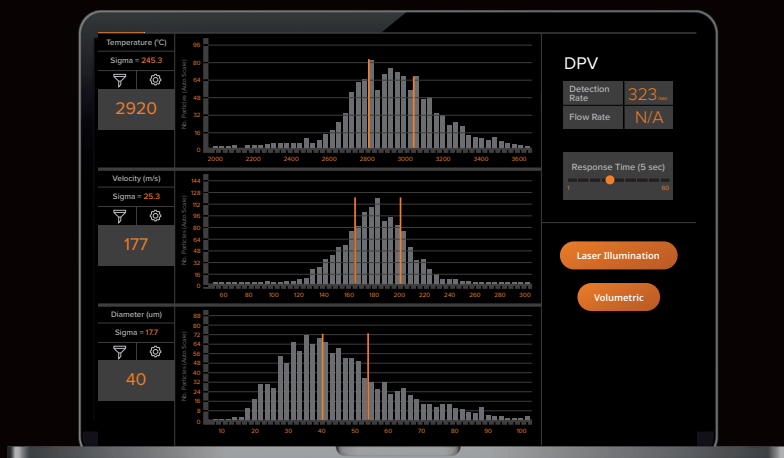
Temperature & velocity measurement volume	Low speed configuration: 0.15 mm ³ (9.1 e-6 in. ³) at 2.5 mm (0.1 in.) depth of field High speed configuration: 0.43 mm ³ (2.6 e-5 in. ³) at 2.5 mm (0.1 in.) depth of field
Working distance	100 mm (4 in.)
XY scanning unit travel range	100 mm x 100 mm (4 in. x 4 in.)

Product options

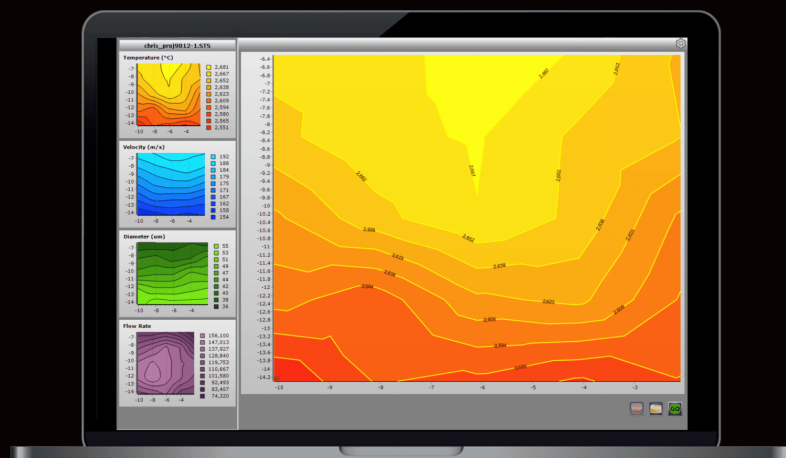
CPS Laser	Class IV laser 3.3W for cold particles characterization
Accuraspray 4.0 for DPV	For spray plume geometry characterization through camera analysis
Substrate temperature pyrometer	0-500 $^{\circ}\text{C}$ (32-932 $^{\circ}\text{F}$)

Measurements range with Accuraspray 4.0 for DPV option

Spray plume width and position	± 0.6 mm (± 0.02 in.) accuracy
Plume angle	0.2 degree accuracy
Plume intensity	5% accuracy



Correlates velocity and temperature with particle size for optimized spray parameters.



Provides cross-sectional mapping of velocity, temperature, and size distributions for precise spray control.