

The background of the entire page is a dark, high-contrast photograph of a spray nozzle. The nozzle is on the left, and a spray of particles is being emitted towards the right. The particles are illuminated, creating a bright, glowing trail that fades into the dark background. The overall aesthetic is technical and industrial.

# dpv evolution

**Individual particle**  
characterization  
device for thermal  
and cold spray  
processes

**tec**nar

Innovate to differentiate.

# Technical specifications

## Measurement ranges

Particle temperature	$\geq 1050^{\circ}\text{C}$ ( $\geq 1922^{\circ}\text{F}$ ), depending on process parameters, at 3% precision
Particle velocity	Low speed configuration: 5-400 m/s (16-1300 f/s) at 2% precision High speed configuration: 400-1200 m/s (1300-3900 f/s) at 2% precision
Particle diameter	10-300 $\mu\text{m}$ (0.39-11 $\mu\text{in}$ ), depending on process parameters
Spray plume width and position (Plumespector option)	0.2 mm (0.008 in.) precision

## Measurement volume information

Temperature & velocity measurement volume	Low speed configuration: 0.15 mm <sup>3</sup> (0.0000091 in. <sup>3</sup> ) at 5 mm (0.2 in.) depth of field High speed configuration: 0.43 mm <sup>3</sup> (0.000026 in. <sup>3</sup> ) at 5 mm (0.2 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-2000	for cold particles characterization
Plumespector	for spray plume cross-sectional intensity profile
Substrate temperature pyrometer	-18 to 525 $^{\circ}\text{C}$ (0 to 975 $^{\circ}\text{F}$ )



## Get the Dpv evolution advantages:

Single particle characterization  
(minute measurement volume)

Simultaneously measures temperature, velocity, size and flux of up to 4,000 parts per/sec.

Histograms with full distributions  
(not only mean values)

Computer-controlled cross-sectional mapping of spray plume properties

# The thermal spray research community uses the Dpv sensor extensively to understand the fundamentals of the process and for modeling and development

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 temperature, velocity and size distributions (not only mean values).

Over the last 21 years, the Dpv has become the industry standard in the thermal spray research community and is the basis of over 600 scientific papers.

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

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

**Velocity** measurement from 5 to 1,200 m/s

**Diameter** measurement from 10 to 300 microns

## Dimensions

### Sensor head

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

### Controller

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

### Calibration module

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

### Total weight

56.4 kg (124.3 lbs)

## Plant supplies

### Power requirements

120-240 VAC, 50-60 Hz 5A

### Air supply

20-30 psi of clean, dry compressed air

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Learn more  
about the  
DPV Evolution

## References

Aachen University  
Concordia University  
FZ-Juelich  
GE Global Research  
National research  
Council Canada  
NRIM  
Sandia National  
Laboratories  
SUNY Stony Brook  
University West  
Xian Aerospace  
Materials Institute



“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