



# dpv evolution

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

**tecnar**

our sensors, your productivity.

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

### Sensor head dimensions

90 mm x 33 mm  
3.5 in. x 1.3 in.

### Xy scanner dimensions

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

### Main enclosure dimensions

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

## 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

# Technical specifications

## Measurement ranges

Particle temperature range (size and emissivity dependent)	1000°C and higher at 2.5% precision 1832°F and higher at 2.5% precision
Particle velocity range	5 - 1200 m/s at 0.5% precision 16.3 - 3900 ft./s. at 0.5% precision
Particle diameter	5 - 7 % precision
Center plume position	0.2 mm precision 0.008 in. precision
Particle relative flow	normalized a.u.

## Measurement volume information

Dpv measurement volume	0.25 mm <sup>3</sup>
Sensor head working distance	100 mm (4 in.) from spray torch axis at 90°
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 °C / 0 to 975 °F



## Get the Dpv evolution advantage:

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

# earlier insight changes everything

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## References

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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  
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