



dpv evolution

Individual particle
characterization
device for thermal
and cold spray
processes

tecnar

Innovate to differentiate.

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

90 mm x 33 mm
3.5 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

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 ³
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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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