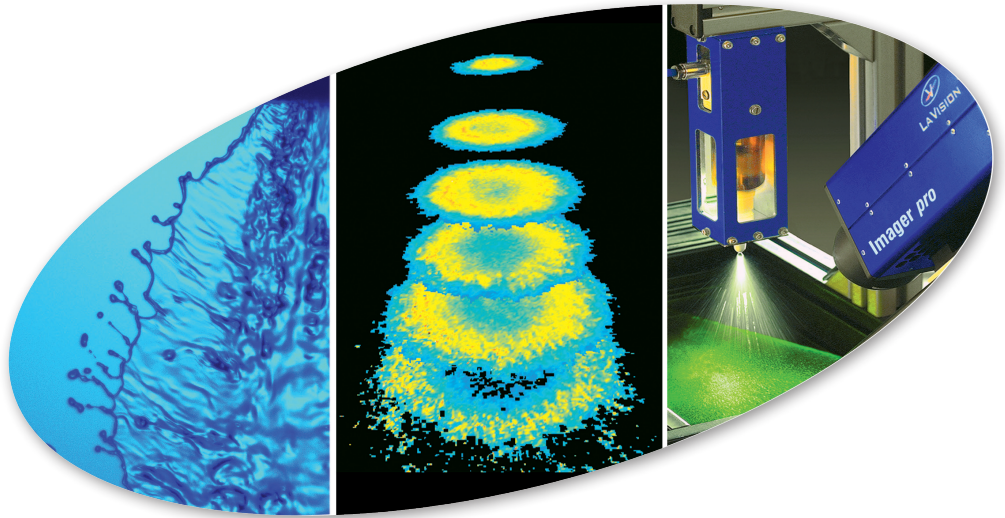


SprayMaster Geometry Software

designed for a wide range
of spray imaging applications

LaVision's **SprayMaster Geometry** package extracts spray plume morphology and geometry information from backlight and light sheet spray images. It replaces conventional patterning by an optical measurement.

Depending on the optical arrangement, the LaVision **SprayMaster** system obtains information about the spray plume shape and propagation (axial spray cuts) or the plume pattern (radial cuts). Analysis of multi-hole injectors (e.g. automotive fuel sprays) reveals geometry information from each individual spray cone separately.



Plume geometry and propagation

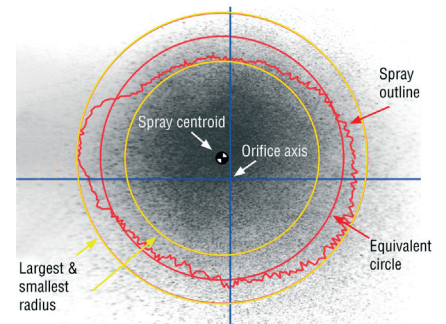
Axial cuts are aligned with the spray propagation direction. Measurements are achieved using light sheets, global lighting or backlighting.

- ▶ spray cone angle measured at a fixed distance or from the interpolated rim
- ▶ bent angle (deviation from orifice axis) and both half angles to indicate the symmetry and direction of the spray plume
- ▶ tip penetration to represent the propagation of the spray
- ▶ angular spray density plot to show the uniformity of the spray

Spray patterning

Radial cuts are derived from a light sheet in cross section with the spray axis. The result of this layout is comparable to mechanical patternators or testing paper.

- ▶ spray pattern area and its equivalent diameter
- ▶ mass circle diameters according to SAE definition
- ▶ centroid position based on spray image intensity
- ▶ largest and shortest radius of the pattern rim
- ▶ plots about radial and angular spray distribution to reveal the structural characteristics of spray plumes



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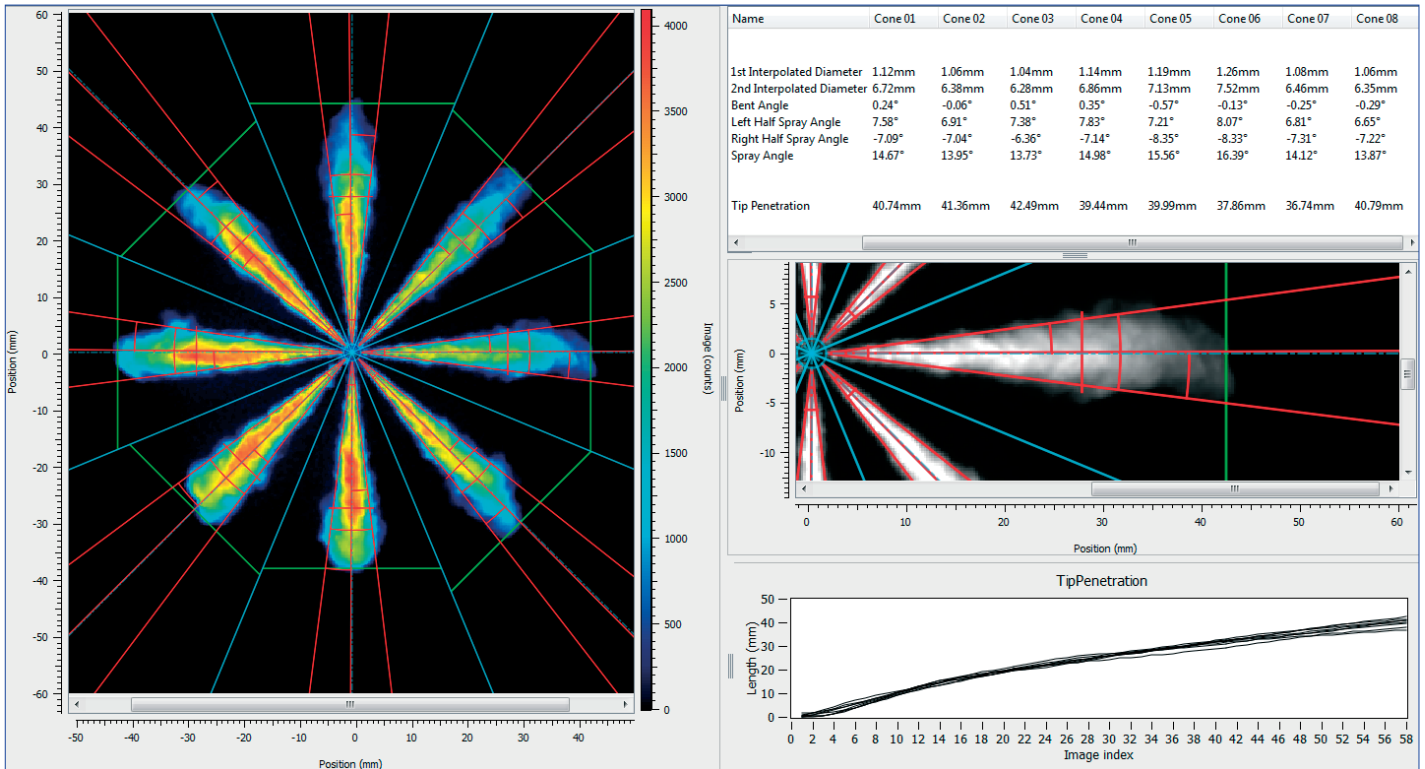
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Multi-hole injection

For Diesel injectors and multi-hole gasoline injectors it is necessary to get detailed information about the stability and uniformity of each single spray cone. The geometry of each cone is processed individually to present information about the uniformity of the spray formation. Time-resolved measurements of individual spray strokes allow to measure the shot-to-shot stability in time.



SprayMaster Geometry dialog

The **SprayMaster Geometry** package allows to arrange results presentations defined by the operator. Multiple windows can be arranged together in a view according to individual needs. If more space is needed on the screen, information can be spread over multiple tabs. Integrated screenshots and movie generation allow to achieve reportable results with a minimum of user interaction. Multi-threading and multi-processor support drastically increases the computation speed. Changes made to the processing parameters are shown in real-time to give instant feedback to the operator.

SprayMaster packages

Additional **SprayMaster** software packages make use of Laser Induced Fluorescence (LIF) and radiometric 2-color-techniques (LIF/Mie, Exciplex LIF) in order to obtain more quantitative data.

SprayMaster LIF - spray density and planar Sauter Mean Diameter (D_{32})

SprayMaster Exciplex - liquid-vapor phase separation

SprayMaster Flux - 2D mass flux measurements

Data provided by LaVision are believed to be true. However, no responsibility is assumed for possible inaccuracies or omissions. All data are subject to change without notice.

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