FOCUS ON IMAGING

Fuel Spray Inspection

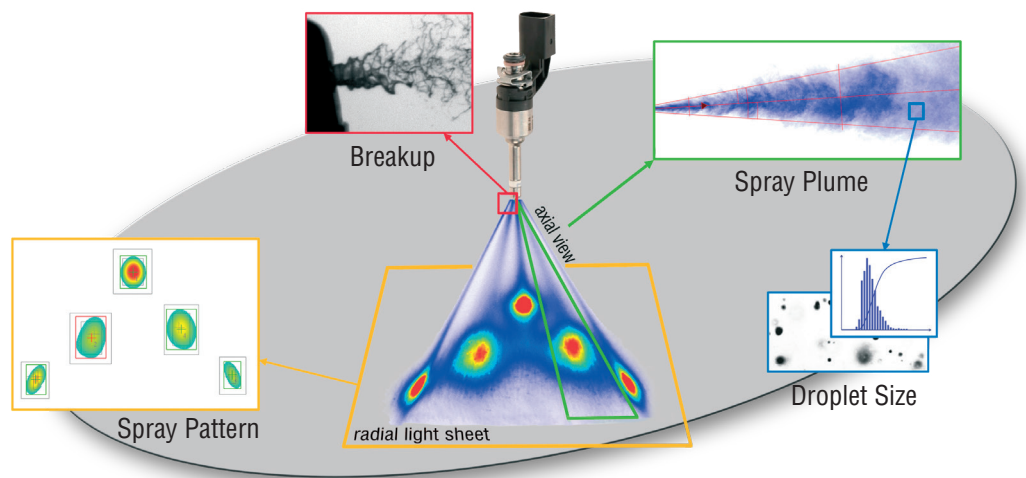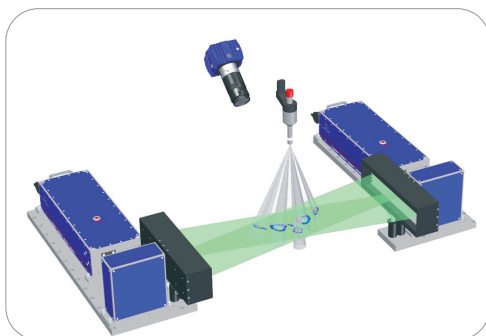**Fuel injector online quality control**

To ensure future operation of internal combustion engines it remains crucial to do everything possible to minimize their emissions. New challenges arise with the introduction of synthetic and e-fuels requiring adaption and optimization of combustion processes. Emission control starts with the injection of fuel. Only a high quality fuel injector can guarantee efficient fuel injection over a long lifetime.

LaVision's online production monitoring solutions for reliable 24/7 inspection of fuel injectors will allow you to guarantee high quality, increase productivity and operate more sustainably by reducing wastage.

SprayMaster imaging systems measure the following parameters for all types of fuel sprays:

Fuel spray characterization

Breakup

Spray Plume

axial view

Spray Pattern

radial light sheet

Droplet Size

**Online fuel injector quality control**

LaVision supplies online quality control systems specifically optimized for fuel injector inspection. These field proven production monitoring systems operate 24/7 with tact times of a few seconds, allowing 100% Q.C. of produced injection systems. Rugged hardware and software is designed for seamless integration into production environment.

Digital spray patternation with counter propagating laser light sheets
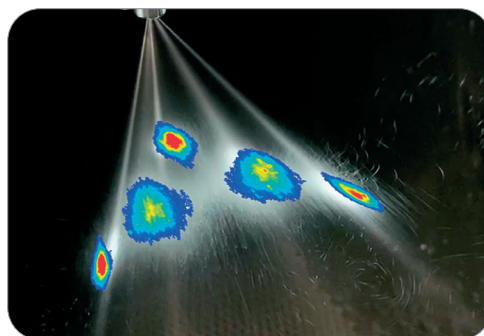
Raw image of multi cone fuel injection with overlayed spray pattern
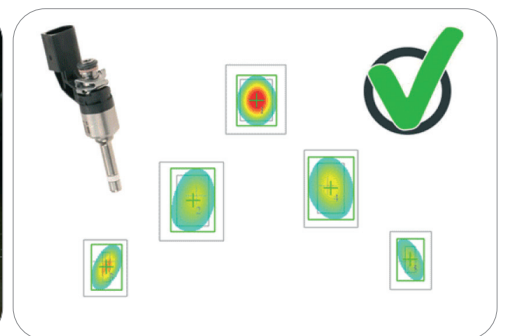
Quality control software result

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Quality control software

LaVision's **SprayMaster Q.C.** (**Quality Control**) **Software** provides real time spray image analysis for quality control and process monitoring. Process relevant spray geometry parameters are extracted from recorded spray images. These are compared to quality acceptance criteria to give instantaneous feedback to the operator or an automated production line.

Features

▶ automated image recording and analysis
▶ customized operator and administrator interfaces
▶ recipe-based testing for fast switching between products
▶ centralized recipe management for multiple production lines
▶ spray plume and pattern geometry analysis (e.g. angle, size, homogeneity, circularity)
▶ validation against reference patterns and tolerances
▶ customizable export (e.g. tabulated data, spray images)
▶ automatic report generation
▶ machine control via common protocols (e.g. Modbus)
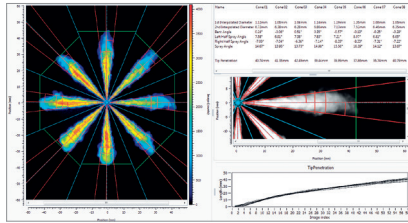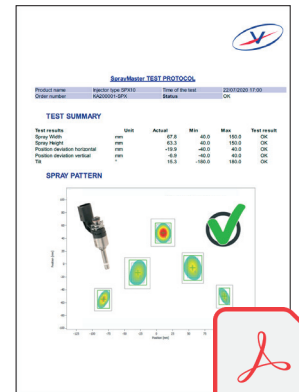
Fully customized user interface and remote control

Fuel injector production lines are highly developed and complex machines. Any integrated systems must be closely adapted to the machine to ensure optimal performance, quality and reliability of the production process. The **SprayMaster** software is designed to be adapted to the bespoke needs of each production line, featuring customized:

▶ spray characterization algorithms
▶ streamlined user interface
▶ fail safe user management (administrator, maintainer, operator, remote control)
▶ traceable data management and report generation
▶ remote control interface including communication protocol, data transfer and SDK (e.g. MODBUS, JSON, I/O lines, TCP/IP)
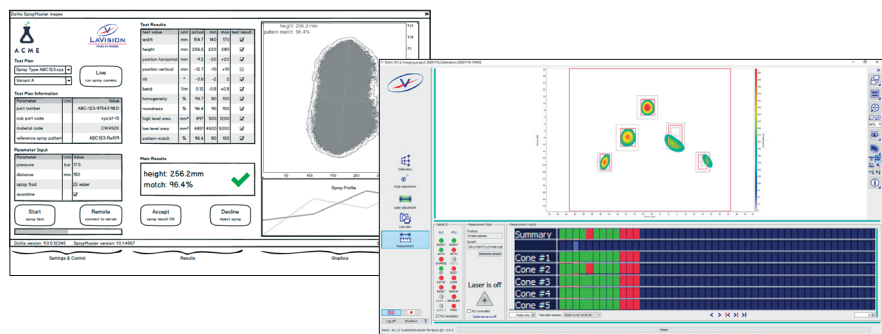
Want to know even more about your fuel spray?

LaVision is also the leading provider in scientific imaging based measurement systems for advanced spray diagnostics and endoscopic imaging in combustion engines. For more information please visit our website or contact us directly.

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