

# IAV Cross – Injection Analyzer for Small and Mid-Size Engine Application

The best combination of measuring injection quality and quantity

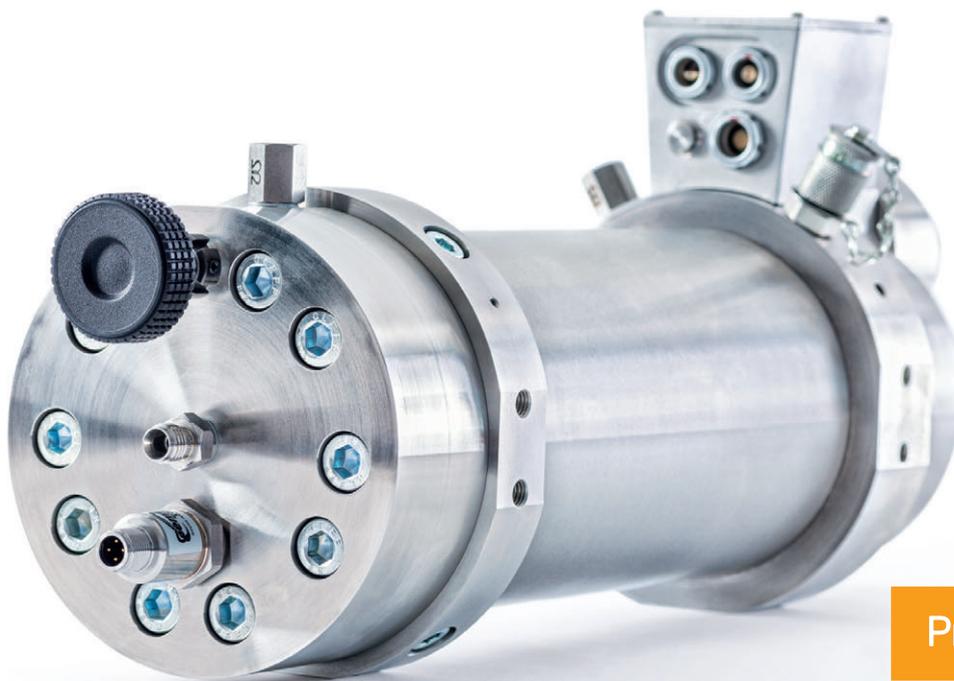
Using its vast experience in engineering injection systems, IAV set out to develop the best shot-to-shot measuring system for today's and tomorrow's injectors. From the customer's perspective, we identified all demands on the measuring system and optimized the device to meet them in full. The result is IAV's latest Injection Analyzer which permits highly detailed and accurate measurements of all key parameters while also being low-maintenance and robust.

In addition to the current and injection rate signal, the newly developed electrical unit records up to three freely parameterizable channels at the high-precision sampling rate of 200 kHz per channel. This permits rapid and detailed analysis of the injector. Following repeated optimization of the hydraulic unit's design, the Injection Analyzer can be used for all kinds of fuels, from test fluids, such as test oil and n-heptane, to real fuels like diesel and gasoline as well as highly aggressive fuels in the form of bio-diesel or AdBlue® for example.

The Injection Analyzer is the ideal measuring system in all fields of application. It meets the most exacting demands in development activities by displaying the actual injection signal and permits fast differential analysis of the measurement readings using the offline analysis tool. At the same time, its robust design makes the system ideal for in-production use. It requires very little maintenance, is highly reliable (for example, it is possible to use return engine parts without clogging the device) and also provides excellent performance in terms of repeatability and reproducibility.

## Advantages

- *Extremely detailed rate signals for perfect analysis*
- *Highly reproducible and accurate injection mass*
- *Extensive measurements of additional signals for extremely fast differential analysis*
- *Measurement of transient and realworld driving cycles without stops*
- *Capability of measuring first shots*
- *High level of resistance to nearly all fluids*
- *No moving parts, keeping maintenance very low*
- *High-performance electrical system for acquiring all data*
- *Simple and extensive software for measurements and analysis*



Product by IAV

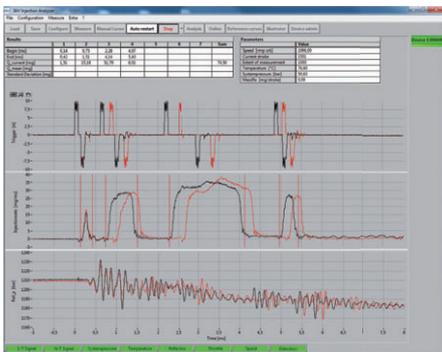
# Technical Details



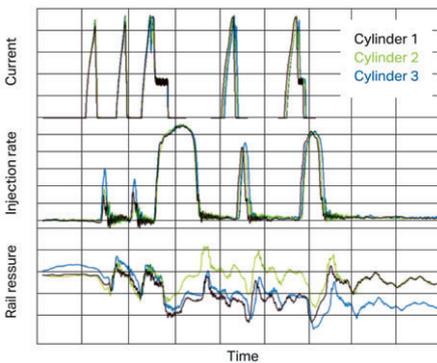
The complete IAV Cross – Injection Analyzer family for all kinds of applications



High-performance electrical unit for acquiring and processing all data



Intuitive software for fast and yet detailed analysis



Multi-device functionality for measuring a complete injection system

System	Type N-050-28	Type N-050-50
Measurement range (mg/stroke)	0.3 – 150	0.6 – 400
Max. injection rate (mg/ms)	150	260
Injection frequency (Hz)	0.5 – 30*	0.5 – 30*
Repeatability (mg/shot)	< 0.1 for 0.3 – 50 < 0.2 for 50 – 150	< 0.3 for 0.6 – 150 < 0.5 for 150 – 400
Sampling rate (kHz)	200	200
Events per cycle	14	14
Number of cycles recorded	1 – 10,000	1 – 10,000
Adjustable backpressure (bar)	5 – 180	5 – 180
Temperature range (°C)	Fluid -40 to +190** Ambient -40 to +140**	Fluid -40 to +190** Ambient -40 to +140**
Usable fluids	Diesel fluids (test oil, diesel, bio-diesel) Gasoline fluids (gasoline, Exxsol, n-heptane)	
Analog input channels	3 analog input channels (+/- 10V) with 200kHz sampling rate per channel	
Injection timings	Measurement of the injection timings and delays according to customers preferences	
Remote use	.dll interface for simple external use of the software	
First shot measurement	Possible with pre-filling of the device	

## Multi-device capability

IAV has developed a new and unique system for conducting measurements on a complete injection system. The Injection Analyzer software provides the capability of using up to eight (!) devices with only one control computer. This allows our customers to analyze a complete injection system with several injectors at once, allowing for all in-car influences occurring in the real world under all boundary conditions.

## Transient measurements

The Injection Analyzer allows the user to measure highly transient cycles without stopping the system or adjusting any properties. Stable system pressure provided by nitrogen makes it possible to record the injection cycle while it is being changed. This means that in addition to real-world driving cycles, gain curves with minimum and maximum masses are not a problem.

\* Other frequency ranges possible

\*\* Suitable device for your application will be defined