AOM-Systems

*Your Partner for **Smart Sprays***

AOM SYSTEMS

SpraySpy® ProcessLine

Spray Monitoring for Coating Processes

SpraySpy® ProcessLine - for highest process stability

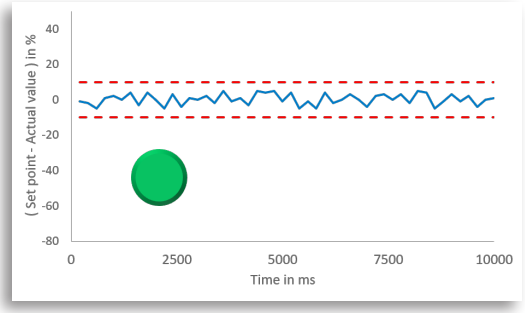
Even small variations within a spray can lead to a significant decrease in coating quality in production processes and therefore to extra costs. For decorative or functional coatings, this can incur unnecessary post-production costs or even rejection of units. In processes with guaranteed minimum layer thicknesses, this results in additional safety margins for the coating thickness, which in turn leads to unnecessary material and production costs. It is therefore of great interest to ensure that a spray is functioning properly and that deviations from nominal operation are kept to a minimum.

The solution to this task is the SpraySpy® ProcessLine. This laser-based sensor system monitors the spray inline and in real time, detecting even the smallest variations in spray operation. Deviations from the set-point value are immediately detected, and the operator is notified by the process control system. This allows corrective actions to be taken before rejections or extra costs are incurred — regardless of the number of spray media used, such as paints, or the number of spray parameters employed.

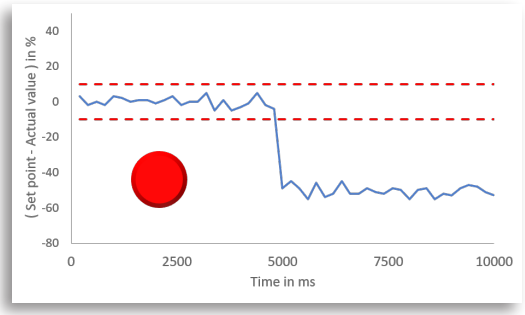
The measurement system detects not only all coating defects that emerge from the spray, but also variations in transfer efficiency and in the volume flow of the deposited layer, and consequently in the applied layer thickness. The integrated artificial intelligence software SprayAI® collects digital process data. This data can be used for further AI applications and for integrating the spray data into an overall data stream of the coating process. The SprayAI® software is easy to use, achieves a high detection precision, and is sensitive to anomalies in spray characteristics.

=> *Stop reacting to product failure. Start acting on the spray.*

SpraySpy® ProcessLine reliable monitoring of spray stability:



Classification of an okay spray

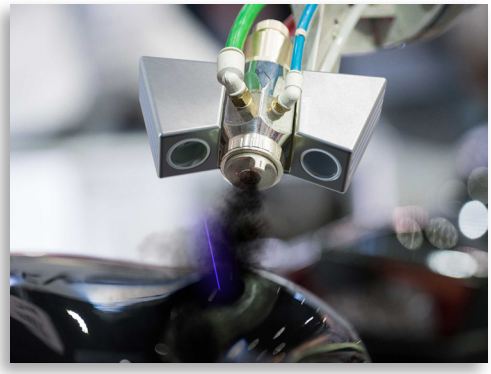


Classification of a not okay spray

SpraySpy® increases production and decreases costs

With the SpraySpy® ProcessLine, production runs become more stable. The comprehensive data collection allows for ongoing, complete documentation of product quality, predictive maintenance, and pattern recognition for failure analysis. When combined with AI, the SpraySpy® data can be used to identify the cause of a fault with over 90 percent certainty. As a result, SpraySpy® ensures higher spray quality, higher productivity, and lower costs. The implementation of closed-loop control for the coating process is just the next step.

SpraySpy® ProcessLine highlights:



- Inline monitoring of deviations in the spray
- Detects anomalies of 2% or higher in the spray
- Over 90% certainty in root-cause identification
- Minimal training time for operators
- Relays status signals in real time to the process control
- Objective and stable classification of production quality
- Digitalization of the spray process (AI-ready)
- Applicable for all kinds of atomizers and liquid sprays
- Applicable for fixed or moving nozzles
- Suitable for explosive atmospheres (ATEX)
- Suitable for high-voltage applications
- Minimizes lost production & increases productivity
- Monitoring of transfer efficiency and volume flow
- Monitor the process quality, instead of just product quality

The SpraySpy®-Technology

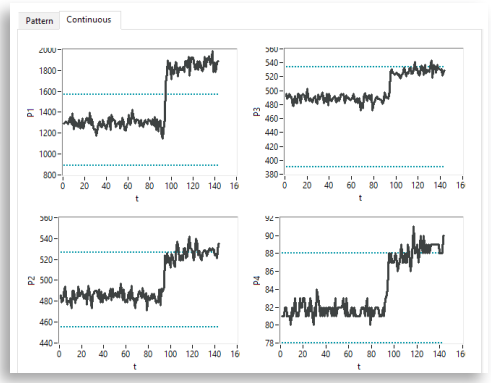
The SpraySpy® technology is based on the scattered light from a moving droplet or particle, illuminated by a light beam. The resulting light scattering is separated by the acquisition time into the individual scattering orders and registered by photodetectors. The characteristics of the scattering orders are correlated with the spatial and temporal flux density in the spray. Therefore, even the smallest fluctuations in spray properties are detected.

SpraySpy® & SprayAI® application

SpraySpy® monitors the droplet size, the droplet velocity, the spray angle and the volume flow rate in the spray by correlating light scattering parameters and assigned set values.

If the parameters of the spray are within the defined ranges, the spray is operating within specification. However, if the integrated artificial intelligence SprayAI® detects a deviation from the set value, an alarm signal is generated and made available in real time. Finally, SprayAI® has the capacity to ascertain the underlying cause of a spray fault, thereby minimizing periods of downtime.

The digitization of the spray provides the operator with data-driven certainty for process control and regulation.



SpraySpy® ProcessLine Model Specification

Model	SpraySpy® ProcessLine	
	PL100	PL200
Monitored spray / process parameters	• Drop size • Drop velocity • Number of drops • Volume flow / Transfer efficiency • Spray angle & geometry • Viscosity • Nozzle contamination / defect	
Measurement range • Size • Velocity	> 1 µm < 100 m/s	
Conditions • Explosive Atmosphere (ATEX) • High-Voltage Application	No No	ATEX: Zone 1 & 2 Yes
Drop characteristics	Transparent, Semi-transparent & Non-transparent	
Repeatability • Drop size • Drop velocity • Number of drops	1,7% 0,6% 1,5%	
Sampling rate	250 MS/s	
Interfaces	Ethernet, ProfiNet, Current loop or others	
Database (optional)	SQL database administration & WebApp	
Hardware size • Measurement probe • Processing unit	~175 x 91 x 45 mm or ~90 x 51 x 28 mm ~600 x 482 x 222 mm	
Operating parameters • Power supply • IP-Class	24 V / 4 A IP 67 (Measurement probe)	

AOM-Systems - *Your Partner for Smart Sprays*

For many years, AOM-Systems (Advanced Optical Measurement Systems) has been involved in droplet and spray measurements. The development of an easy-to-use and ATEX-compliant measurement technology has had a major influence on droplet and spray analytics.

The newly developed ProcessLine for use in production lines monitors spray anomalies and provides digitization data inline and in real time. SpraySpy® is equipped with the artificial intelligence SprayAI® and supports the data-driven coating process of current and future generations of atomization technologies.

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