AUTOJET®
MODULAR SPRAY SYSTEMS

NEXT GENERATION SPRAY CONTROL

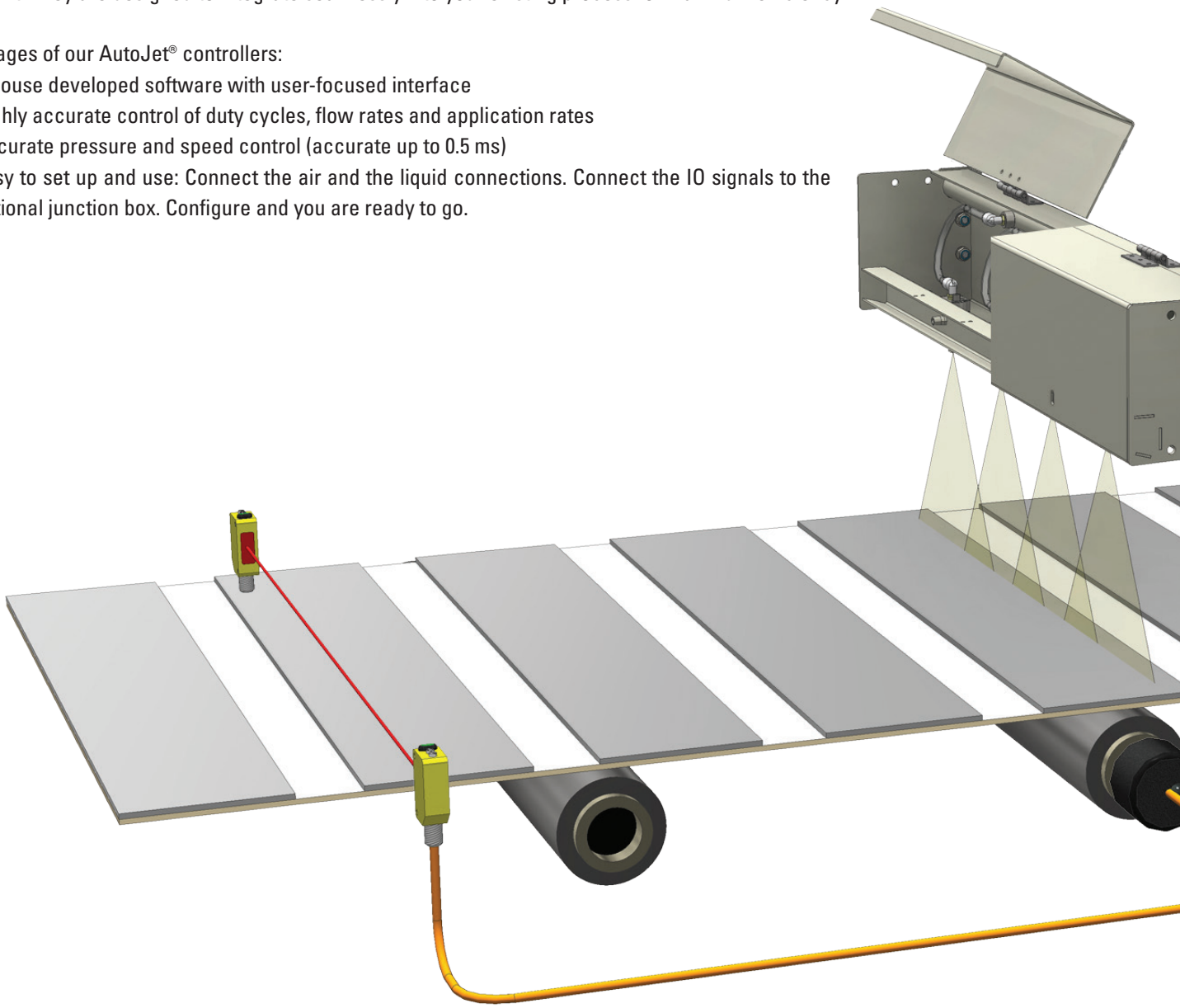
Spraying Systems Co.®
Experts in Spray Technology

OUR MODULAR SPRAY SOLUTIONS

Our Modular Spraying Systems are dedicated to controlling, monitoring, and improving spray operations at your plant. They are designed to integrate seamlessly into your existing process for maximum efficiency.

Advantages of our AutoJet® controllers:

- Inhouse developed software with user-focused interface
- Highly accurate control of duty cycles, flow rates and application rates
- Accurate pressure and speed control (accurate up to 0.5 ms)
- Easy to set up and use: Connect the air and the liquid connections. Connect the IO signals to the optional junction box. Configure and you are ready to go.



HOW WILL THIS BENEFIT YOUR SPRAY APPLICATION?

- Production Savings:
  Precision spray control with SprayLogic software results in significant savings of the sprayed fluids. Ignoring spray control often uses 5 to 50% more resources.
- Improved Product Quality:
  Full control over your spray process prevents unexpected issues and improves the quality of your end-product.
- Safety:
  Minimal overspray prevents misting or slippery conditions.
- Repeatability and Dependability:
  Continuous closed loop control detects variations in your production process and makes adjustments to supply inputs to keep your lines running.
- Proven Compatibility:
  A single supplier for your spray solutions guarantees compatibility throughout the process.
- Plant Floor Flexibility and Connectivity ?????????

HEADERS / MANIFOLDS

For an optimal coverage of your products.

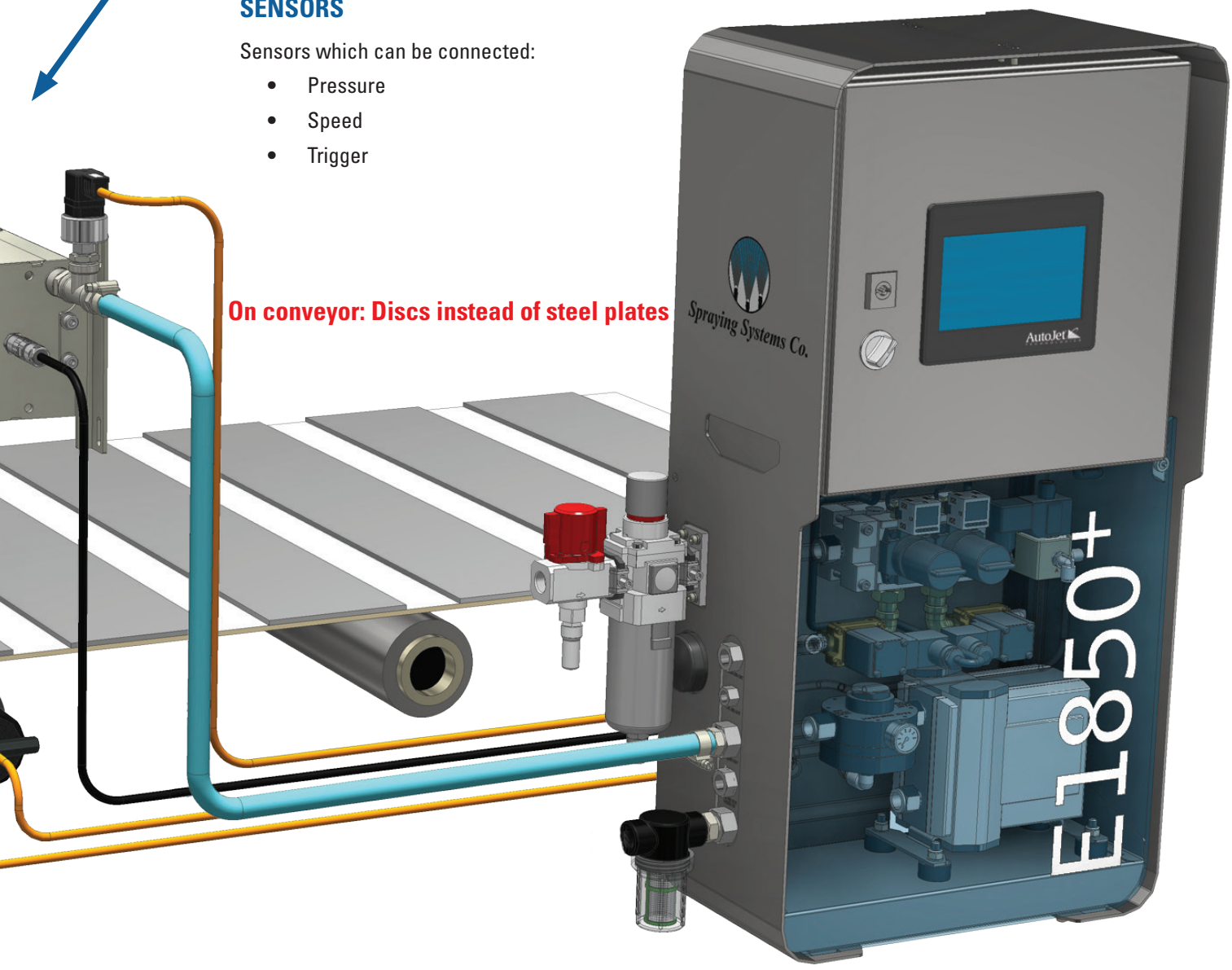
AUTOJET® SPRAY SYSTEM

Full control over your spray application.

SENSORS

Sensors which can be connected:

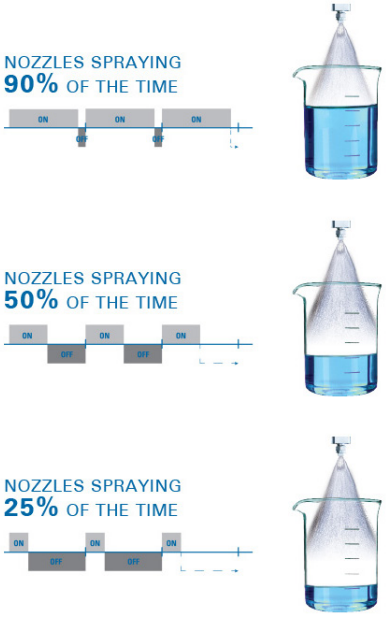
- Pressure
- Speed
- Trigger



- Local Expertise:
  We have spray experts all around the world for quick support and advice in your local language.
- Spray Research:
  Our research services on drop size, spray pattern, distribution, and automation options.???????
- Quality Equipment:
  From pharmaceutical environments to steel mills, our systems meet industrial requirements and are proven reliable.

*Available on select models

PRECISION SPRAY CONTROL & SPRAY LAYOUT



PRECISION SPRAY CONTROL

Electrically-actuated spray nozzles are turned on and off very quickly to control flow rate. This gives the following advantages:

- Uniform coverage and consistent application rate.
- Reduced product scrap caused by over- or under-application of coatings.
- Reduced use of costly coatings by applying the correct volume directly on the target.
- Less need to change spray set-ups between batches because a single nozzle can produce a wide range of flow rates.
- Very low flow rates means PSC can often eliminate costly compressed air and the misting associated with air atomizing nozzles.

https://www.spray.com/en-gb/products/spray-control-options/precision-spray-control

THE VALUE OF AUTOMATED PRECISION SPRAYING IN YOUR PROCESS

The pressure on industry increases constantly: cost reduction, quality improvement, optimal use of available capacity, increased safety, reduced emissions. A recent survey suggested the prime interest of customers looking at system control was the need to reduce product waste and the associated downtime caused by poor spray. These measures require extra means, such as the implementation of sophisticated process controls. However, often process automation is only considered when there is a problem, and not as a powerful strategic means for continuous improvement of processes and profitability.

One of the most remarkable studies ever published was carried out by Solomon Associates. The research was carried out in oil refineries and it aimed at establishing the main factors of their profitability. The result was astonishing: only two parameters had a statistically significant impact:

- The training level of personnel
- The implementation level of advanced controls.

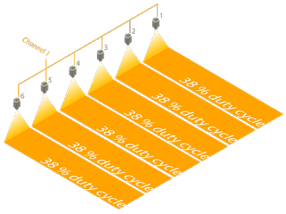
Other, at first sight more obvious factors (such as location, cost structure, age of equipment, etc.) appeared much less significant. Experience over the past 25 years has revealed that the same principles and mechanisms are also valid elsewhere, and the economic advantages are often similar.

The message is clear: in all industrial sectors, it is worthwhile to consider recent technologies and systems. In other words: process automation, and mainly advanced controls, must be implemented intensively in a well-thought way in order to bring improvements on a continuous basis and to meet ever increasing requirements.

We know from experience that a spray nozzle can only perform properly if the entire spray system operates efficiently. All system components - spray nozzles, pumps, sensors and other hydraulic and pneumatic components - must be accurately controlled. the AutoJet brand was created to engineer entire systems that optimize spray performance in order to improve product quality and reduce production costs.

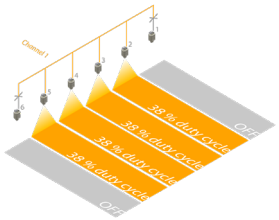
Where possible, purpose-designed spray controllers, such as the AutoJet Model 2300, are used in the heart of each system. Like PLC's these controllers offer a flexible, programmable interface for timing, sequencing, parameter control and system monitoring functions. In addition, these controllers have been purpose designed for spray related systems applications using the knowledge gained by the world's largest spray nozzle manufacturer. Such controllers are supplied pre-programmed with parameters and function screens specific to your application. Added to this is the capability of making on-site system improvements and upgrades through on-screen menus and SprayLogic® software.

Single Channel Spraying (Applicable for E1850+, E2150+ and E2850+)



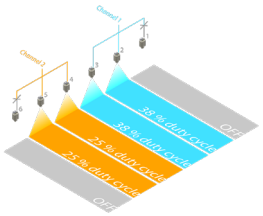
Spraying	All nozzles sprays at the same time
Duty cycle	All nozzles works at the same duty cycle
Trigger signal	Only one start / stop, or trigger signal is needed
Channels	Only one PWM control channel is needed

Single Channel with Zoning (Applicable for E1850+, E2150+ and E2850+)



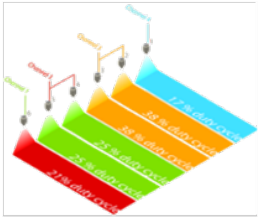
Spraying	All nozzles sprays at the same time, but some can be switched off
Duty cycle	All nozzles works at the same duty cycle
Trigger signal	Only one start / stop, or trigger signal is needed
Channels	Only one PWM control channel is needed

Single or Dual Channel with Zoning (Applicable for E2150+ (max. two channels) and the E2850+ (max. 16 channels))



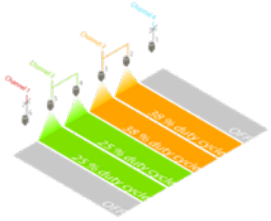
Spraying	Nozzles can spray at a different moments in time
Duty cycle	All nozzles works at the same duty cycle
Trigger signal	Only one start / stop, or trigger signal is needed
Channels	For every spray moment, a different channel is required

Multi PWM (Applicable for E2150+ (max. two channels) and the E2850+ (max. 16 channels))



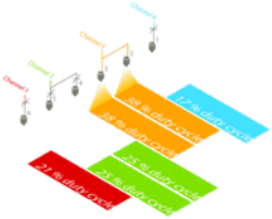
Spraying	All nozzles sprays at the same time
Duty cycle	Nozzles can work with different duty cycles
Trigger signal	Only one start / stop, or trigger signal is needed
Channels	For every Duty cycle, a different channel is required

Single Channel with Zoning (Applicable for E2150+ (max. two channels) and the E2850+ (max. 16 channels))



Spraying	All nozzles sprays at the same time, but some can be switched off
Duty cycle	Nozzles can work with different duty cycles
Trigger signal	Only one start / stop, or trigger signal is needed
Channels	For every Duty cycle, a different channel is required

Single or Dual Channel with Zoning (Applicable for E2150+ (max. two channels) and the E2850+ (max. 16 channels))



Spraying	Nozzles can spray in different moments in time
Duty cycle	Nozzles can work with different duty cycles
Trigger signal	Multiple start / stop, or trigger signals are needed
Channels	For every Duty cycle, a different channel is required

NEW GENERATION SPRAY CONTROL

	AutoJet® Spray Controller Features	E250+	E1850+			E2150+			E2850+
		BASIC	BASIC	STANDARD	HIGH PRECISION	BASIC	STANDARD	HIGH PRECISION	HIGH PRECISION
Spray Nozzles	Maximum number of PWM Channels	2	1	1	1	2	2	2	> 16
	Maximum number of PulsaJet nozzles (PWM, 10000AUH-03 series, 35°C Temp)	4	8	8	8	1x 16 or 2x 8	1x 16 or 2x 8	1x 16 or 2x 8	256
	PWM cycles per Minute (in cpm)		5 000	10 000	15 000	5 000	10 000	15 000	15 000
Timing	Time based spraying	✓	✓	✓	✓	✓	✓	✓	✓
	Distance based spraying			✓	✓		✓	✓	✓
	High speed application (reduce striping)				✓			✓	✓
Spray Check	Liquid Pressure Measurement + Duty Cycle Correction (Requires Liquid Pressure Sensor)			✓	✓		✓	✓	✓
	Flow Meter Supported							✓	✓
	Detection of clogged or worn nozzles							✓	✓
Flow Control	Adjust flow via HMI (liquid and atomizing air)							✓	✓
	Adjust flow via remote signal		✓	✓	✓	✓	✓	✓	✓
	Adjust flow via Profinet							✓	✓
	Closed loop flow control								✓
Miscellaneous	Recipes				✓			✓	✓
	Pixel spray algorithm								✓
	Automatic Rinsing and priming								Optional
	4G router (remote service)		Optional	Optional	Optional	Optional	Optional	Optional	✓
	Junction box: Input & Output		Optional	Optional	Optional	Optional	Optional	Optional	Optional
	Junction box: PulsaJet® PWM		Optional	Optional	Optional	Optional	Optional	Optional	Optional
	ATEX version		Optional	Optional	Optional	Optional	Optional	Optional	Optional
	Food version		Optional	Optional	Optional	Optional	Optional	Optional	Optional
	Controller-only version		Optional	Optional	Optional	Optional	Optional	Optional	Optional

AUTOJET® E250+ SPRAY CONTROLLER

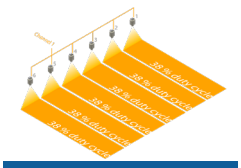
The AutoJet® E250+ Spray Controller is designed to provide basic timing control over your air- and electrically-actuated spray nozzles.
It improves the performance of your automatic spray nozzles for a more efficient use of resources and a high quality end result.

In combination with the automatic nozzles the system achieves high cycling speeds. It can easily be set up and allows adjustment of the spray by setting spray times and delays with a resolution of 0.1s.

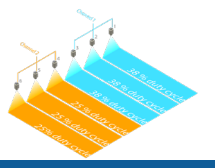
Other features include:

- 20 timing recipes
- 2 timing channels
- Save multiple objects between trigger sensor and automatic spray nozzle position
- ... and more

The AutoJet® E250+ Spray Controller can be used as a basic spray control solution for low precision applications.



Single Channel



Dual Channel

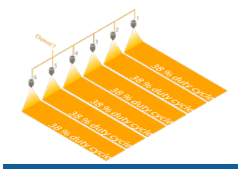
AUTOJET® E1850+ SPRAY CONTROLLER

The AutoJet® E1850+ Spray System is designed to be a perfect fit for nearly every spray application.
The system optimizes the performance of your automatic spray nozzles for an efficient use of resources and a high quality end result.

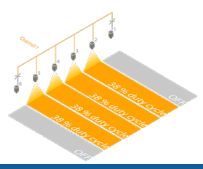
In combination with the PulsaJet® automatic nozzle the system achieves very high cycling speeds.
This allows adjustment of the flow rate based on changing operating conditions such as:

- Belt speed
- Pressure fluctuations
- Product change
- Recipes
- ... and much more

The AutoJet® E1850+ Spray System can be used as an autonomous spray system or can be integrated into any existing process control system.



Single Channel



Single Channel with Zoning

AUTOJET® E2150+ SPRAY CONTROLLER

The AutoJet® E2150+ Spray System is designed to be a perfect fit for advanced spray applications.
The system optimizes the performance of up to 16 automatic spray nozzles for an efficient use of resources and a high quality end result.

In combination with the PulsaJet® automatic nozzle the system achieves very high cycling speeds.
This allows adjustment of the flow rate based on changing operating conditions such as:

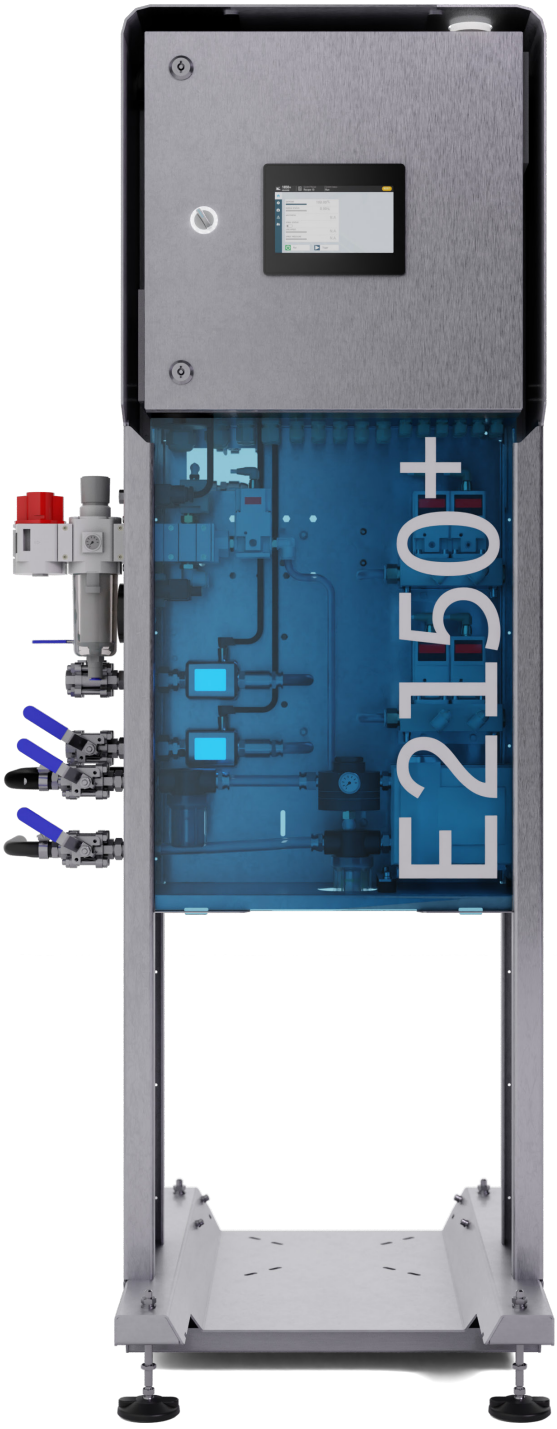
- Belt speed
- Pressure fluctuations
- Product change
- Recipes
- ... and much more

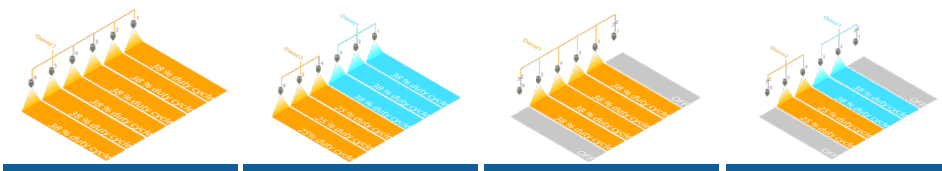
The automatic spray nozzles can be controlled via a single channel (max. 16 nozzles) or via two channels (each with max. 8 nozzles).

High precision editions also offer optional functionality:

- One flowmeter per channel for more accurate spraying
- Automatic liquid pressure and air pressure control
- Profinet support for full integration of your PLC

The AutoJet® E2150+ Spray System can be used as an autonomous spray system or can be integrated into any existing process control system.





Single Channel	Dual Channel	Single Channel with Zoning	Dual Channel with Zoning

AUTOJET® E2850+ SPRAY CONTROLLER

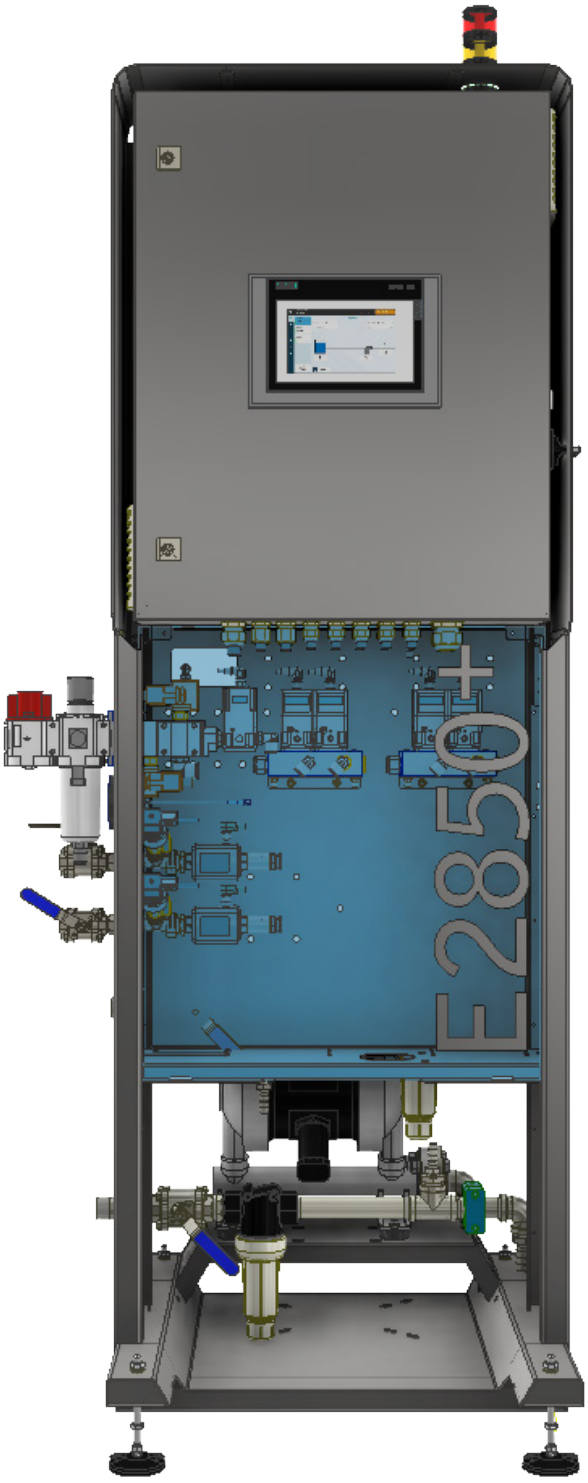
The AutoJet® E2850+ Spray System is designed to be a perfect fit for all spray applications, no matter how challenging.
The system uses custom-built firmware and software to allow optimal flexibility in setting up custom-built spray solutions.

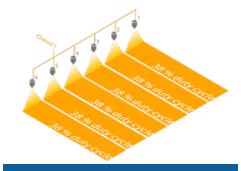
The system optimizes the performance of automatic spray nozzles for an efficient use of resources and a high quality end result. Due to the modular nature of the E2850+ there are no limits to the number of spray nozzles that can be controlled for your spray process.

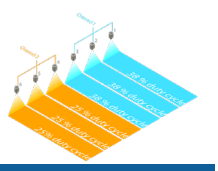
There are limitless possibilities with spray applications so the E2850+ offers a large variety of options as standard:

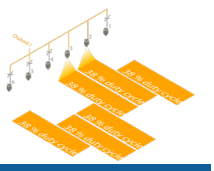
- To improve integration and usability the system uses a Siemens PLC System. This allows remote connection and control to the system
- The set-up of all of the parameters can be done on the touch panel.
- Tower light for an easy check on the state of the system
- The E2850+ can generate warnings and alarms to alert operators. In a worst-case senario the system will even shut down alltogether to prevent any damage to your equipment or facilities.

The AutoJet® E2850+ Spray System can be used as an autonomous spray system or can be integrated into any existing process control system.



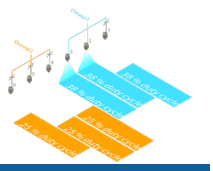

Single Channel


Single Channel with Zoning


Single or Dual Channel with Zoning


Multi PWM


Single Channel with Zoning


Single or Dual Channel with Zoning

SPRAY CONTROL OPTIONS

1. LIQUID SUPPLY

Pressurized liquid supply can be provided by the production environment or can be provided by one of our options.

LIQUID SUPPLY - STANDARD

Applicable for the AutoJet® E1850+, E2150+ and E2850+ models.

LIQUID SUPPLY - LOW

LIQUID SUPPLY WITH PRESSURE TANK

Available sizes: 4, 6, 10, 20 and 40 L.

LIQUID SUPPLY - BIG AOD

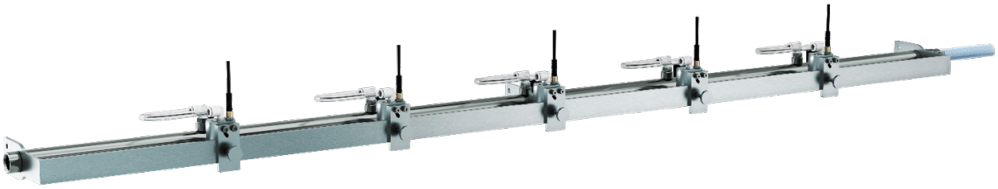
Liquid connections VFD pump (standard, can be switched depending on flowrate & pressure)
Applicable for the AutoJet® E2150+ and E2850+ models.

LIQUID SUPPLY - HIGH (VFD)

Liquid connections VFD pump (standard, can be switched depending on flowrate & pressure)
Applicable for the AutoJet® E2150+ and E2850+ models.

2. HEADERS

BASIC PULSAJET SPRAY HEADER



Specifications
Min. length 500 mm
Max length 6 000 mm
Available manifolds Liquid
Atomizing air
Liquid circulation
Main Liquid connection 13 mm ID to 1/2'' BSPT male
Material Stainless Steel 304
Options Liquid pulsation damper

BASIC PULSAJET SPRAY HEADER

Specifications
Min. length 500 mm
Max length 6 000 mm
Available manifolds Liquid
Atomizing air or Liquid circulation
Main Liquid connection 13 mm ID to 1/2'' BSPT male
Material Stainless Steel 304
Options Liquid pulsation damper

3. SENSORS AND CYCLES

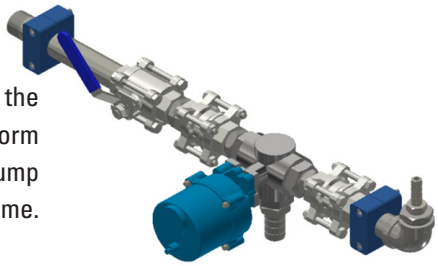
PRESSURE SENSOR FOR OPEN LOOP CONTROL

The liquid pressure to the nozzles is measured by the pressure sensor. Warnings are generated when the measured value is outside minimum/maximum limits or when a sensor error occurs.

Flow through an orifice is dependent on applied pressure. By measuring the pressure change, it is possible to calculate a new theoretical duty cycle to compensate for flow differences caused by pressure differences. Since the actual flow is not measured (e.g. with a flow meter) and it is a calculated value, it is called an open loop control.

RINSING & PRIMING

The AutoJet® E2850+ Spray Controller has a built in rinsing and priming cycle. This allows the customer to automatically switch to a cleaning agent or other liquid of choice and perform necessary steps automatically such as draining the piping, draining the PulsaJets, priming pump and priming of PulsaJets. The system can also be activated automatically after a set period of time.



CLOSED-LOOP FLOW METER

With closed-loop the liquid flow to the nozzles is measured by the electromagnetic flow sensor. Warnings are generated when the measured value is outside minimum/maximum limits and automatically compensate for changes in flow rate.

Functionality combined with E2850+:

- Automatic nozzle duty cycle calibration
- Closed loop regulation on actual flow
- System integrity, checking max deviation and clogged or worn nozzles

SYSTEM INTEGRITY SYSTEM FLOW METER

The System integrity line is used to detect clogging of the PulsaJet spray nozzles. The flow meter can also be used in closed loop with the PulsaJet spray nozzles to make sure the required amount of liquid is sprayed. The conductivity of the sprayed liquid needs to be higher than 25 µS/cm (electro-magnetic flow meter).

Functionality combined with E2850+:

- Automatic nozzle duty cycle calibration
- Closed loop regulation on actual flow
- System integrity, checking max deviation and clogged or worn nozzles

4. NOZZLES

ELECTRICALLY-ACTIVATED SPRAY NOZZLES

The electrically-activated spray nozzles have a plunger that is activated by changing polarity in a coil. Most of these spray nozzles are suited for PWM (Pulse Width Modulation) and therefore seemlessly integrate into our sophistaced line of controls offering precise spray control.

OVERVIEW OF SELECTED ELECTRIC PRODUCTS

	For Air Atomizing Setups	For Hydraulic Spray Tips
PulsaJet® 03 Up to 15'000 cycles/minute	 AAB10000JJAU	 AAB10000AUH
PulsaJet® JAU / -10 Up to 5'000 cycles/minute	 AAB10000JAU	 AAB10000AUH-10
Compact HF Up to 12'000 cycles/minute		 D55571
Mini PulsaJet® Up to 20'000 cycles/minute		 AAB10000AUH-0050
Up to 5'000 cycles/minute	 AAB250AUH	 DS55573

AIR-ACTIVATED SPRAY NOZZLES

Air activated spray nozzles are easy to control by pressurized air. Models with single action functionality are normally closed. Activation by air pressure will open a needle or plunger, switching the pressure off will let the needle close through a spring. For a few models we can offer a double action needle, that needs air pressure for both actions, opening and closing.

OVERVIEW OF SELECTED PNEUMATIC PRODUCTS

	For Air Atomizing Setups	For Hydraulic Spray Tips
1/4J setups + TPU spray tips Up to 180 cycles/minute	 B1/4JAU	 B1/4JAUH
Compact Design Up to 300 cycles/minute	 Compact JAU: D55500-P18JAU	 Compact JAUH: D55500-P18JAUH
Compact Design Up to 600 cycles/minute	 E Compact JAU: D55573	
Variable Spray Pattern Up to 180 cycles/minute	 B1/4VMAU	

AUTOJET® E1850+ CASE STUDIES

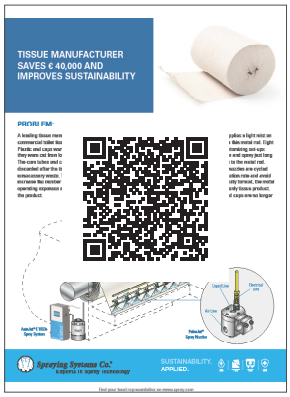
CS E4032 Steel Bar Manufacturer Saves More Than € 750,000 with New Spray Cooling System

CS E4033 Hardwood Flooring Manufacturer Saves € 40,000 Per Year by Spraying Pigment

CS E4034 Plastic Cup Manufacturer Saves € 18,000 Annually with Automated Anti-Static Spray System

CS E4035 Automated Spray System Helps **Elastomer** Manufacturer Reduce Release Agent Usage and Save € 50,000

CS E4036 Wood Pellet Manufacturer Saves More than € 10,000 Annually Spraying Oil with Automated Spray System



CS E4037 Tissue Manufacturer Saves € 40,000 and Improves Sustainability

CS E4038 OSB Manufacturer Saves € 25,000 per Year by Recycling 2 Million Liters of Wastewater

CS E4039 Modular Retaining Wall Manufacturer Cuts Release Agent Use by 75% to Save More than € 60,000 per Year

CS E4040 Cable Manufacturer Halves its Chemical Consumption with Automated Spray System

NEED ADVICE? PICTURE OF SPRAY EXPERTS

CS E4041 Fiber-Cement Siding Manufacturer Reduces Coating Consumption, Saves € 80,000 Annually

CS E4042 Auto Manufacturer Reduces Defects and Saves € 300,000 with Automated Spray System

CS E4043 Structural Insulated Panel (SIP) Manufacturer Increases Product Quality and Saves Resources

CS E4044 Steel Bar Manufacturer Eliminates Oil Overspray, and Saves € 17,500 per Year

CS E4045 Cement Board Manufacturer Reduces Chemical Use and Saves € 27,000 per Year

CS E4046 Automated Spray System Saves **Building Products** Manufacturer More Than € 35,000 per Year

CS E4047 Automated Spray Lubrication System Saves **Foam Parts** Producer More Than € 30,000 per Year

CS E4048 Can Manufacturer Increases Yearly Revenue by € 4 Million Thanks to New Spray System

REPRESENTATIVES & MANUFACTURING SITES

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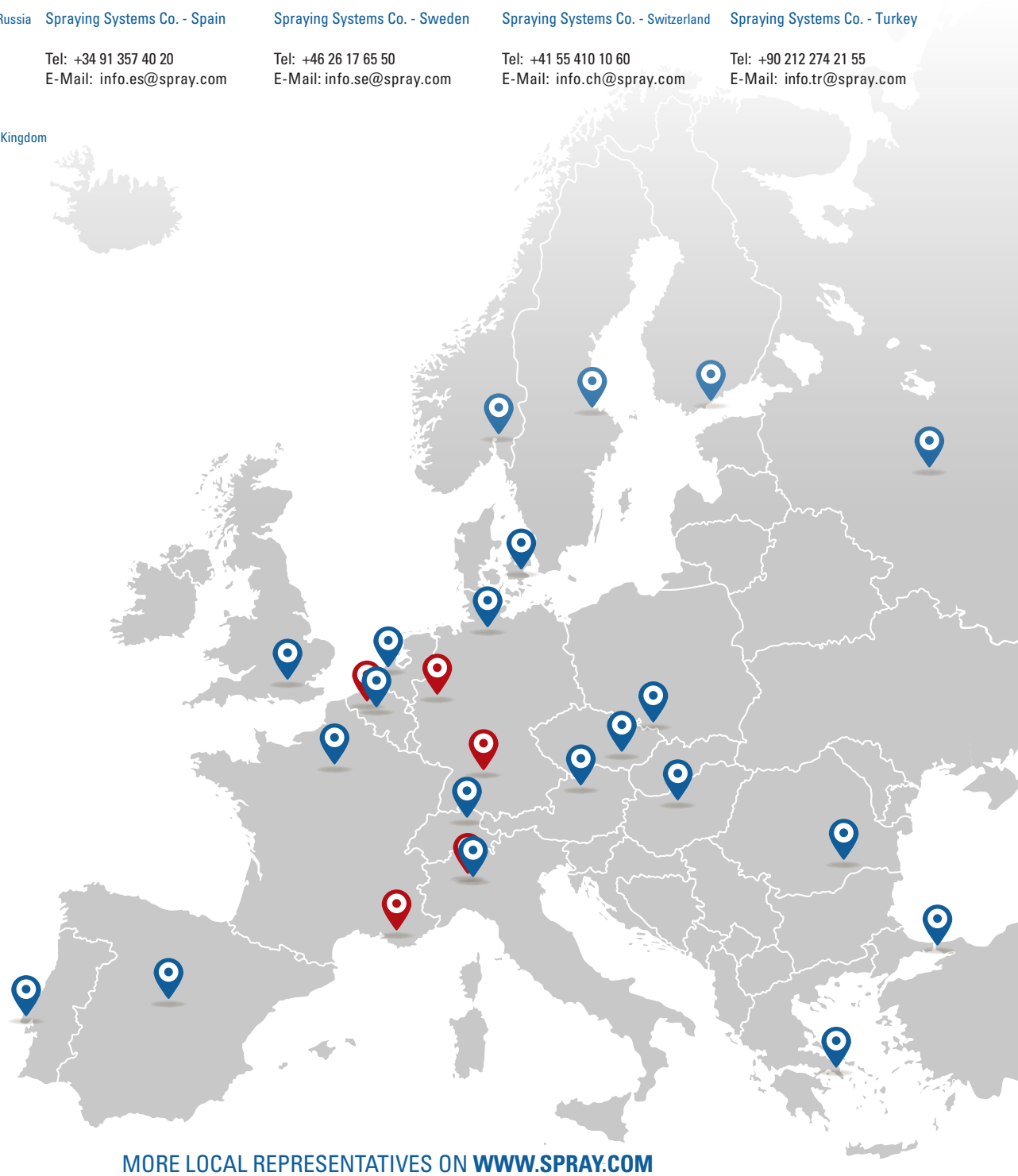

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