

Product Data Sheet

MultiCoat5 APS

MultiCoat™5 APS is the latest generation thermal spray controller platform from Oerlikon Metco. Combining simple operation with the latest technology and safety features in a compact cabinet, the universal MultiCoat5 APS is an outstanding choice for spray shops of all sizes.

1 General Description

Oerlikon Metco has taken our many decades of experience in the design of thermal spray controllers to pack MultiCoat5 APS with advanced features that ensure reliable, repeatable and safe operation. The MultiCoat5 platform is an ideal choice for single process applications as well as up to four thermal spray technologies.

The operator controls the entire spray process via a touch screen, where ease of use is a very important consideration. Hot buttons provide quick access to start/stop process. Values are simply and intuitively entered via the touchscreen. Our unique Clarity2 user interface makes controlling your entire production coating process as easy as plug and spray, which includes advanced software features such as maintenance tool, coating cost analysis tool, advanced user management improving efficiency and productivity output.

MultiCoat5 APS comes with pre-installed and ready to use Edge Gateway using OPC UA protocol to transmit data. Leverage data acquisition to deliver more value using our optional Metco IIoT Cloud service.

The built-in Remote Maintenance System allows Oerlikon Metco to remotely analyze and troubleshoot the customer's controller via a secure Internet connection, thus reducing costly service calls and downtime.

MultiCoat5 APS incorporates the latest safety features. A multi-level monitoring and alarm system notifies the operator of out-of-range conditions and safely shuts down the system in critical situations.

A sophisticated and intuitive trending and reporting package is standard, which aids parameter monitoring, parameter development and quality control.

Among the other standard MultiCoat5 APS features are a multi-lingual user interface, the ability to store spray parameters and highly responsive digital mass flow control for process gases.



MultiCoat5 APS Controller for Thermal Spray

1.1 Main Components with Dimensions

1. MultiCoat5 Process Control Center (PCC)
2. Twin 160 Powder Feeder
3. Media Management Center (MMC)
4. PTPro 120 Power Supply
5. JAM 1C Junction and Monitoring Unit for Single Cathode and Cascaded Guns
6. JAM 3C Junction and Monitoring Unit for TriplexPro Series



1.2 Clarity2 Operator Interface

The operator interface consists of a projected capacitive touch, multitouch, anti-glare analog-resistive 21.5 in. TFT touchscreen display with intuitive visualization software. Hot buttons quickly bring the operator to the most frequently needed screens. Entering of parameter values is quick and easy using the anti-glare touchscreen. Selection of the spray gun to be used sets the operating limits for the gun, thereby enhancing safe operation.

A multi-level alarm system notifies the operator visually on signal tower and audibly to out-of-bound and critical issues.

Parameter data can be read and set in metric or U.S. customary units. Standard, selectable languages for the user interface are:

- English
- German
- Chinese
- Japanese

Other languages can be supplied as a factory-installed option.



MultiCoat5 APS – Touch Screen Operation

1.3 Remote Maintenance System

The Remote Maintenance System is a standard feature of MultiCoat5 APS. It uses a secure AES-encrypted VPN Ethernet-based connection (Customer must supply access router and internet access or data plan for the optional mobile 2G, 3G and 4G/LTE. If internet access is via the customer's network, VPN access is needed) to connect the MultiCoat5 APS controller directly to Oerlikon Metco's service department. It can be used to troubleshoot and diagnose the system status.

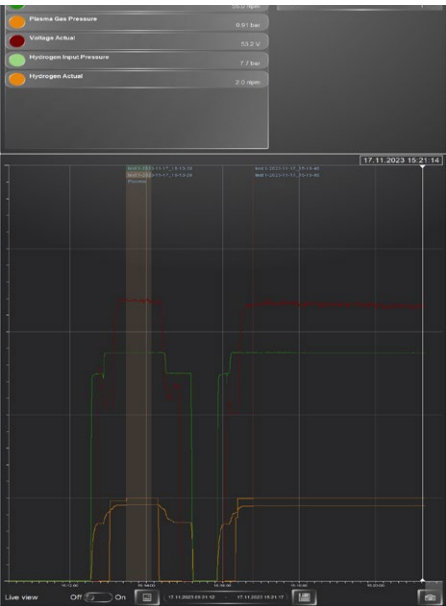
The Advantages:

- Faster response on system issues reduces downtime
- Significantly reduces costly service calls
- Improves productivity with direct demonstration access to Oerlikon Metco experts
- Safe and secure, since the encrypted connection must be initiated by the customer

1.4 Metco IIoT Connectivity

Oerlikon Metco IIoT enables you to improve your production process and enables an easier, faster and more efficient operation. Your company benefits from access to machine data improving availability, reducing scrap rate and increasing throughput.

- Possibility to consolidate process related machine data from one or multiple systems on a central platform for easy access
- Access to raw data for further analysis in case of quality issues
- No need to physically access one or multiple machines
- Enables locally storage and centralization data for historical analysis and quality control purposes.



Trending Data Shown On-Screen

1.5 Trending and Reporting

The trending and reporting package is an outstanding feature of MultiCoat5 APS.

Trending records of all parameters can be set and monitored from the operator panel. The data can be recalled on-screen and display as many as 16 spray parameters at a time, which are user selectable for up to 30 days. For additional data monitoring, an optional Metco™ IIoT service is available. (See datasheet DSE-0126) The operator can also set the run time and the excursion limits for the screen (any values that go beyond the set limits are clipped). Each parameter is assigned a different graph color. The MultiCoat5 then tracks the values in real time.

Reporting is set up prior to a spray run by the operator. When configuring a report, the operator can enter header information to identify the report. Reports show both the actual spray data and deviations beyond allowable values.

Trending and reporting data can be exported in Excel and saved for later recall and output to a flash drive.

Use the trending and reporting package for:

- Spray parameter development
- Process control
- Spray run quality control
- Customer reporting for coating of critical components
- Spray gun and system maintenance scheduling
- General system troubleshooting
- Operator training and qualification

Product ID		Start time	24.08.2022 07:54:45
Serial Number	2022-08-24_07-54-45	Stop time	24.08.2022 08:01:36
		Duration	00:06:50
Type	Process		
Process	HvoGF	Start time	24.08.2022 07:54:45
Recipe Name	HVOFGF Methane	Stop time	24.08.2022 08:01:36
Operator	Service Oerlikon	Duration	00:06:50
Gun	2700D.JM		

Parameter	Unit	Set Value	Min Value	Max Value	Average	Deviation	Evaluation
Oxygen	nlpm	190.0	189.2	192.5	190.0	0.2	-
Methane	nlpm	202.0	200.5	203.5	202.0	0.5	-
Shroudgas	nlpm	320.0	319.5	320.5	320.0	0.2	-
Oxygen Pressure	bar	-	8.1	8.2	8.2	0.1	-
Methane Pressure	bar	-	7.5	7.6	7.6	0.1	-
Hydrogen Pressure	bar	-	7.5	7.6	7.6	0.1	-
Shroudgas Pressure	bar	-	6.9	6.9	6.9	0.0	-
Carrier Gas 3	nlpm	12.0	12.0	12.0	12.0	0.0	-
Insert 3 Pressure	bar	-	6.1	6.1	6.1	0.0	-
Water Flow	l/min	-	17.4	18.7	18.2	0.2	-
Water Temperature In	°C	-	18.8	19.8	19.2	0.3	-
Water Temperature Out	°C	-	24.1	25.3	24.6	0.3	-
Water Conductance	µS	-	0.0	0.0	0.0	0.0	-

Sample Report

1.6 MultiCoat5 APS JAMBox 1C

MultiCoat5 APS spray systems are supplied with a single cathode JAM-1C Junction and Monitoring (JAM) box that is connected to the MultiCoat5 APS console. This unit acts as a junction for the electrical supply and cooling water before routing both to the spray gun.

- Supports both conventional plasma spray guns and SinplexPro cascading arc spray guns

The cooling water is used to cool the power cables and the gun components.

When the operator selects the spray gun to be used and the amperage for the spray recipe at the MultiCoat5 APS console, the power supply (PTPro) regulates the spray recipe amperage and the gun ignition sequence for either a conventional or a cascading arc (SinplexPro) spray gun.

Also compatible with competitor single cathode spray guns.



The JAM-1C supports conventional single cathode spray guns and SinplexPro cascading arc spray guns. (Required for Atmospheric Plasma process only)

1.7 Full-Featured Handling Interface

This feature functions with an external controller (such as a robot) to

- Start / stop the process, powder, auxiliary gases, reporting
- Get status handling system and spray system
- Call stored spray recipes
- Remotely control the chiller and exhaust with BUS interface

Supported protocols:

- Discrete
- Profinet

2 Outstanding Standard Features

Productivity and Ergonomics

- Easy to use, touchscreen graphical user interface with visualization software
- Stores up to 10000 recipes
- Metric or U.S. customary unit display
- Selectable display language
- Multi-range input voltages for worldwide usage
- Use conventional or cascading arc (SinplexPro) plasma spray guns for MultiCoat5 APS systems

Process Control

- Closed-loop monitoring and control of process media flows
- Real-time monitoring with very fast screen updating
- Monitoring of water flow, temperature and conductivity
- Fully integrated Twin Feeder
- Supports Fluidized Bed Feeder 9MPE-CL20
- Control for two pressure-regulated auxiliary air lines
- Automated ignition sequence
- Discrete interface for exhaust, chiller, spray booth safety, and handling

Safety

- Multi-level alarm system with safe shutdown in critical situations
- Built-in E-stop system
- Built-in combustion gas detection in MMC cabinet
- Electronics safely separated from processing media
- CE conformity

Quality Control

- Sophisticated built-in trending and reporting software with output features
- Built-in remote maintenance software allows for off-site troubleshooting
- Help button for quick access to the user manual or creation of an exportable file of all configuration, logging and alarm data for troubleshooting
- Enables monitoring and recording of maintenance activities while activating alerts and notifications to guarantee timely execution of maintenance tasks
- The advanced user management feature enables the creation of unique user accounts with customized access privileges

3 Recommended System Configurations

MultiCoat5 APS is available with two to four gas lines for primary and/or secondary gas. Carrier gas lines are located in the powder feeder, however carrier gas flow and other powder feeder parameters can be controlled by the MultiCoat5 APS.

The MultiCoat5 APS is equipped with control for two separate compressed air lines. Generally, one of these air lines will be used for the spray gun cooling air jets and the other for air

knives used for special treatment of the plasma plume during spraying.

In addition, MultiCoat5 APS has input and output for gun cooling water, where the water temperature and conductivity are measured and monitored by the controller. A chiller suitable for the spray gun(s) to be used, must be chosen by the customer. Oerlikon Metco has several models available.

Controller	Process Media (Choose up to 4)	Spray Gun (Selectable)	Powder Feeder (Choice of; up to 8 powder feed lines)	JAMBox	Power Supply
MultiCoat5 APS	Argon ^a : ■ 100 NLPM max. ■ 200 NLPM max. Nitrogen : choice of ■ Primary: 100 NLPM max. Hydrogen ■ Secondary: 20 NLPM max. Helium ■ Secondary: 200 NLPM max.	Conventional: ■ 3MB series ■ 9MB series ■ F4MB-XL series	Volumetric: ^c ■ Twin-160 Gravimetric: ■ 9MPE-CL20 ■ SinglePro	■ JAM-1C ■ JAM-3C ■ Dual Jam	■ PTPro
		Cascading Arc: ■ SinplexPro series ■ TriplexPro series			
		Internal Spray Gun: ■ SM-F1 ■ SM-F100 ■ SM-F210 ^b ■ SM-F300 ■ iPro90 ■ 3MBTD ■ 7MST-2 ■ 7MT-2 ■ 11MB			

^a All MultiCoat5 atmospheric plasma spray systems must be supplied with Argon gas capability either 100 or 200 NLPM.
^b Limited functionality; shroud gas not controlled at MultiCoat5 APS
^c Full integration with MultiCoat5 APS including recipe integration

4 Options and Accessories

- External interface to control the MultiCoat5 APS controller through a robotic handling interface
- Gun/hose package with standard length
- Fully embedded AccuraSpray (optional) for monitoring and controlling coating quality
- PiP video surveillance embedded in MC5 HMI

5 Technical data

5.1 Specifications

Power Supply				
Voltage	100 to 120 VAC or 200 to 240 VAC			
Frequency	50/60 Hz			
Current (max)	16 A			
Protection Rating				
Electrical Enclosure	IP 54			
Gas Enclosure	IP 43			
Environment				
Temperature	10 to 40 °C (50 to 104 °F)			
Humidity	< 75 %, non-condensing			
Interfaces				
Handling Start/Stop	Type L: plasma, powder, air jet, report			
Handling Feedback	Type L: spray system ready, parameter established			
Safety	Dual channel: E-Stop master/slave, E-Stop reset, door supervision, gas alarm			
Atmospheric Plasma Spray				
Process Gases	Argon (Ar) ^a	Nitrogen (N ₂) ^b	Hydrogen (H ₂)	Helium (He) ^b
Flow (max)	200 NLPM (424 SCFH)	100 NLPM (212 SCFH)	20 NLPM (42 SCFH)	200 NLPM (106 SCFH)
Inlet Pressure (gauge)	6 to 8 bar (87 to 116 psi)	6 to 8 bar (87 to 116 psi)	6 to 8 bar (87 to 116 psi)	6 to 8 bar (87 to 116 psi)
Quality Grade	4.8	5.0	4.8	4.8
Connector Swagelok	1/2 in	1/2 in	1/2 in	1/2 in
Cooling Water ^c	F4MB-XL Series	9MBM Series	SinplexPro Series	
Cooling (at max power)	55 kW	80 kW	60 kW	
Flow (min)	12 l/min (3.2 gal/min)	17 l/min (4.5 gal/min)	22 l/min (5.8 gal/min)	
Conductivity	< 5 μS	< 5 μS	< 5 μS	
Hardness CaCO ₃	< 10 ppm	< 10 ppm	< 10 ppm	
Dissolved O ₂	< 10 ppm	< 10 ppm	< 10 ppm	
Inlet Temperature	15 to 25 °C (59 to 77 °F)	15 to 20 °C (59 to 68 °F)	18 to 22 °C (65 to 72 °F)	
Inlet Pressure	13.5 bar (196 psi)	9 bar (130 psi)	13.8 to 17 bar (200 to 250 psi)	
Connector Swagelok	3/4 in	3/4 in	3/4 in	
Auxiliary Gas 1 and 2 ^d				
Inlet Pressure	8 bar (116 psi)			
Outlet Pressure	0 to 6 bar (87 psi)			
Connector	1/2 in			
Compatibility				
Spray Gun	3MB series, F4MB-XL series, 9MB, SM-F100, SM-F210, SinplexPro series, TriplexPro series			
Powder Feeder	Full Integration: Twin-160, SinglePro; Supported: 9MPE-CL20			
Power Supply	PTPro			
JAMBox	JAM-1C or JAM-3C; optional dual JAM			

^a Argon is required for all MultiCoat5 APS units; gas flow is software selectable

^b Maximum flow selection requires a different mass flow controller; customers can choose up to 4 gas controllers in total

^c For other spray guns, please refer to the manual

^d Compressed air for Airjet & Silvent, other configurations upon request. Minimum regulated set value is 2% of maximum value.

Information is subject to change without prior notice.

6 Life-Cycle Status and Support Options

Our four-phase life cycle model keeps you informed about available services and support options throughout the life span of your equipment



6.1 MultiCoat APS

- Current Life Cycle Status: Active
- Inception Date: December 2023

During the Active phase, you have our full support and range of services. Using our life-cycle services will keep your equipment in the best operating condition

6.2. Keeping You Informed

We will notify you early and transparently about your options as your equipment enters into the next life-cycle phase, providing your equipment is registered with Oerlikon Metco

6.2.1. Life-Cycle Notification

Provides early information about the upcoming life-cycle phase change and how your equipment can be best supported.

6.2.2. Life-Cycle Status Statement

Provides information about the current life-cycle status and all available options and services to maintain your equipment in best condition.

6.3. The Oerlikon Metco Difference

Benefit from our selection of comprehensive services designed to ensure:

- Consistent spray quality, with little to no parameter shift
- Compliance with your ISO quality requirements
- Maximized equipment uptime
- Extended overall equipment lifetime
- Fast availability of spare parts

6.4. Your Best Value for Peak Performance

Choose from our broad portfolio of services to keep your equipment in top condition now and in the future

- Spare parts
- Preventive maintenance
- Repair Service
- Customer training

Take advantage of an Oerlikon Metco Service Agreement tailored to your specific needs!

For more information on your service and support options, please contact your Oerlikon Metco Account Manager.