oerlikon metco

Product Data Sheet
UniCoatPro Plasma

UniCoatPro™ Plasma is the latest generation controller platform from Oerlikon Metco. Combining simple operation with the latest technology and safety features in a compact cabinet, the universal UniCoatPro Plasma 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 atmospheric plasma spray controllers to pack UniCoatPro Plasma with advanced features that ensure reliable, repeatable and safe operation.

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 screens used frequently. Values are simply and intuitively entered via the touchscreen. A scroll wheel makes scrolling through recipes or trending data quick and easy.

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.

UniCoatPro Plasma 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 UniCoatPro Plasma features are a multilingual user interface, the ability to store spray parameters and highly responsive digital mass flow control for process gases.

UniCoatPro Plasma Controller for Thermal Spray

1.1 Main Components

1. Controller cabinet
2. Operator panel
3. Main power switch
4. Electronics
5. Lockable wheels
6. Digital mass flow controller for process gases
7. Hydrogen sensor (on units equipped with hydrogen)
8. Process media outlets to gun (plasma gases, air)
9. Process media inlets (plasma gases, air)

Front View   Rear View
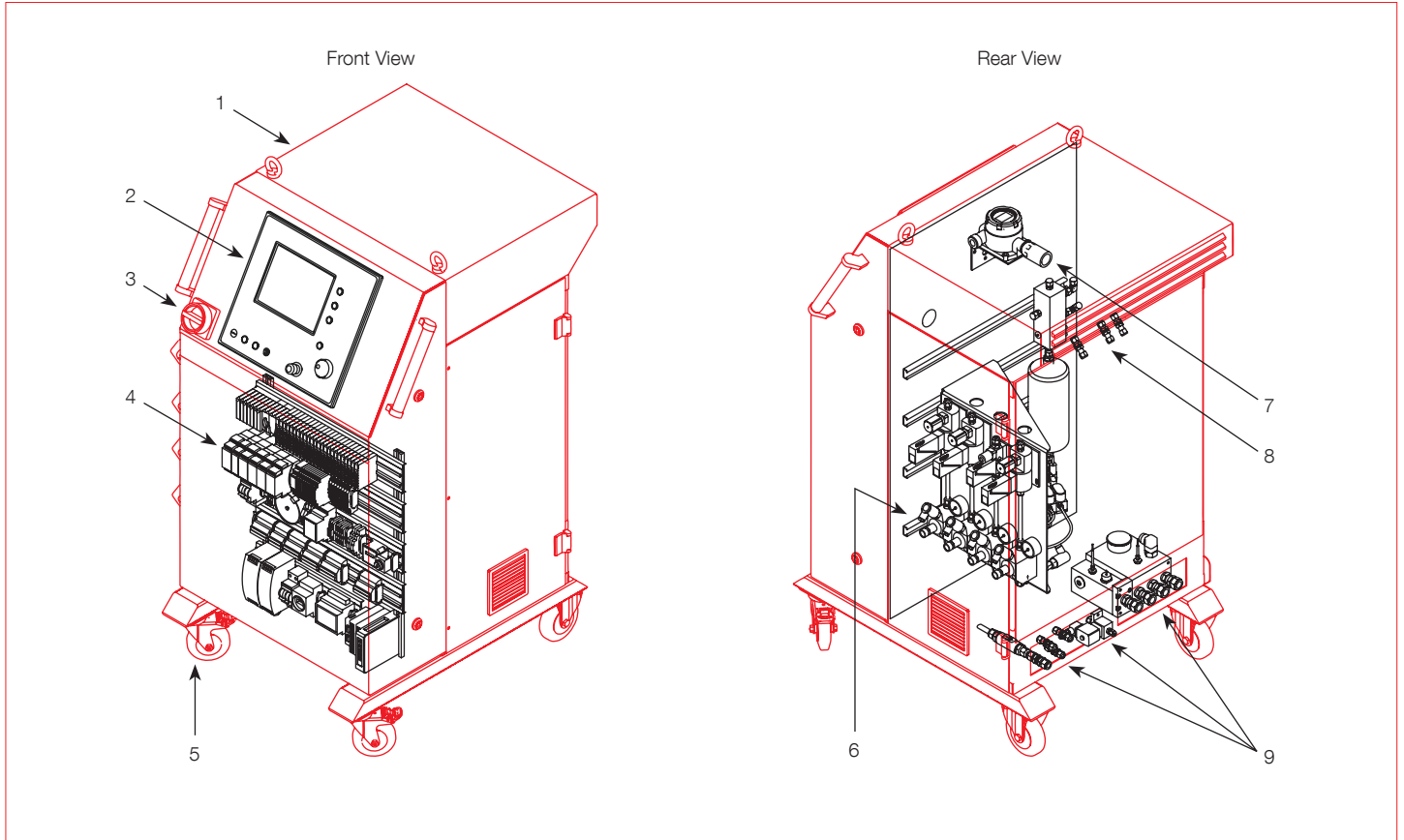
1.2 Operator Interface

The operator interface consists of an analog-resistive, 10.4 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 touchscreen and a scroll wheel. 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 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
- French
- Italian
- Swedish
- Polish
- Portuguese
- Czech
- Hungarian
- Chinese
- Japanese
- Korean

Other languages can be supplied as a factory-installed option.
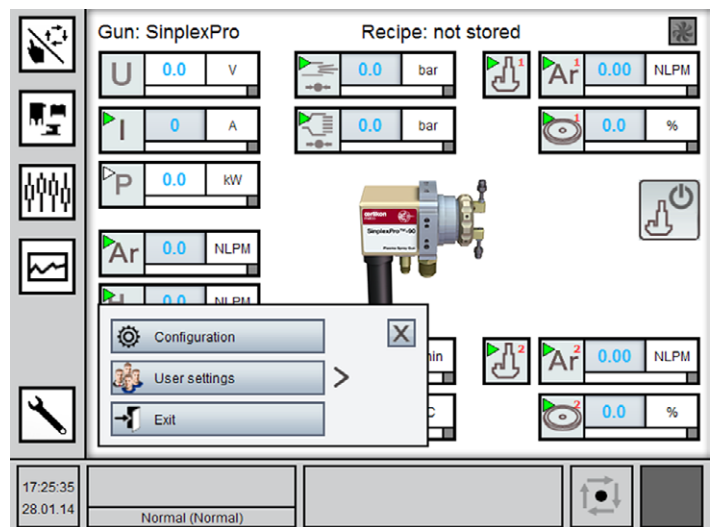
UniCoatPro Plasma – Touch Screen Operation

1.3   Remote Maintenance System

The Remote Maintenance System is a standard feature of UniCoatPro Plasma. 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 3G. If internet access is via the customer's network, VPN access is needed) to connect the UniCoatPro Plasma 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
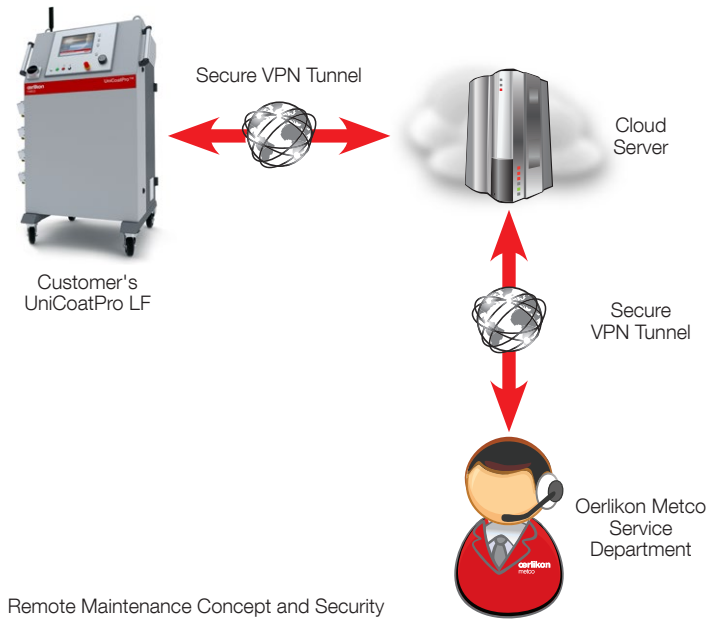
Remote Maintenance Concept and Security

1.4   Trending and Reporting

The trending and reporting package is an outstanding feature of UniCoatPro Plasma.

Trending records all parameters that can be set and monitored from the operator panel in weekly intervals. The data can be recalled on-screen and display as many as five spray parameters at a time, which are user selectable. 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 UniCoatPro Plasma 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 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
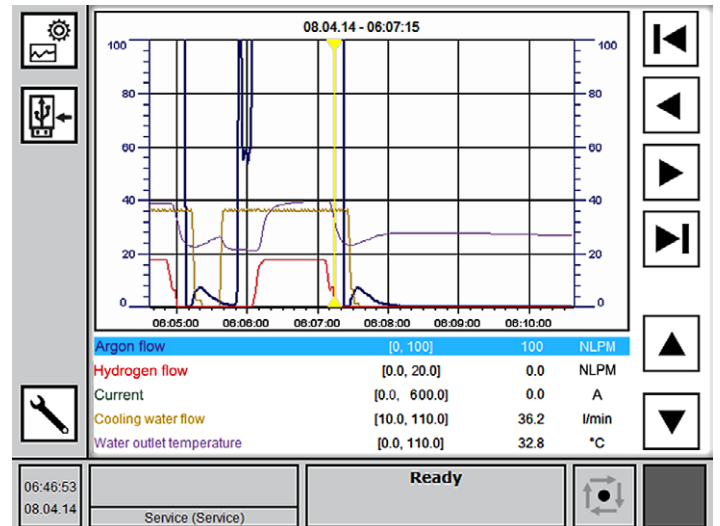
Trending Data Shown On-Screen

Entering Header Information for a Report

1.5 UniCoatPro Plasma JAMBox

UniCoatPro Plasma spray systems are supplied with the JAM-1040 Junction and Monitoring (JAM) box that is networked to the UniCoatPro Plasma console. This unit acts as a junction for the electrical supply and cooling water before routing both to the spray gun. Two models of JAM-1040 will be available for the UniCoatPro Plasma:

■ Standard: supports conventional plasma spray guns
■ Optional: 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. The electrical supply powers the spray gun and the UniCoatPro Plasma controller.

When the operator selects the spray gun to be used and the amperage for the spray recipe at the UniCoatPro Plasma console, the JAMBox regulates the spray recipe amperage and the gun ignition sequence for either a conventional or a cascading arc (SinplexPro) spray gun.

The JAM-1040 supports conventional single cathode spray guns and can support SinplexPro cascading arc spray guns as an option.

1.6 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

2 Outstanding Standard Features

Productivity and Ergonomics

■ Easy to use, touchscreen graphical user interface with visualization software
■ Small footprint cabinet includes gas flow control and all input and output connections
■ Stores up to 100 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

Process Control

■ Closed-loop monitoring and control of plasma gas flows
■ Real-time monitoring with very fast screen updating
■ Monitoring of water flow, temperature and conductivity
■ Full powder feeder integration with the Single-240, Twin-140 or Twin-150 Powder Feeder
■ Control for two pressure-regulated auxiliary air lines
■ Automated ignition sequence

■ Interfaces for exhaust, chiller, spray booth, powder feeder and handling
■ Full-featured handling interface by an external controller

Safety

■ Multi-level alarm system with safe shutdown in critical situations
■ Built-in E-stop system
■ Built-in hydrogen detection in 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, log and alarm data for troubleshooting

3   Recommended System Configurations

UniCoatPro Plasma 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 UniCoatPro Plasma when the Twin-140 or Twin 150 powder feeder is used.

The UniCoatPro Plasma 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 part cleaning during spraying.

In addition, UniCoatPro Plasma 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	Plasma Gases (Choose up to 4)	Spray Gun (Selectable)		Powder Feeder (Choice of; up to 4 powder feed lines)	JAMBox	Power Supply (Choice of)
UniCoatPro Plasma	**Argon** [a]: software selectable ■ 100 / 200 NLPM max. **Nitrogen:** choice of ■ Primary: 100 NLPM max. ■ Secondary: 20 NLPM max. **Hydrogen** ■ Secondary: 20 NLPM max. **Helium** ■ Secondary: 50 NLPM max.	**Conventional:** ■ 9MB series ■ F4MB-XL series ■ 8MB [c] ■ Praxair SG-100 **Cascading Arc:** ■ SinplexPro series	■ SM-F100 ■ SM-F210 [b] ■ SM-F220 ■ iPro-90 [c]	**Volumetric:** [d] ■ Twin-140 ■ Twin-150 **Gravimetric:** ■ Single-240 [d] ■ 5MPE [e] ■ 9MPE [e] ■ 9MP [e,f]	■ JAM-1040 ──────── ■ JAM-1040 + Cascading Arc Option	■ PT3X-1000 ■ PT-1140

[a] All UniCoatPro Plasma systems must be supplied with Argon gas capability
[b] Limited functionality; shroud gas not controlled at UniCoatPro Plasma
[c] Currently limited to 80 kW operation
[d] Full integration with UniCoatPro Plasma including recipe integration
[e] Start/stop functionality only, all other functions are set at feeder; each feeder equipped with 1 hopper; up to four feeders may be run in parallel for which interface cables are required
[f] Not CE-conformant, adapter box required for use with UniCoatPro Plasma

4   Options and Accessories

- External interface to control the UniCoatPro Plasma controller through a robotic handling interface
- Gun/hose package with customer-specified length
- Hoses for all process media
- Interface cable to support parallel powder feedstock on/off for 5MPE, 9MP or 9MPE feeders

5   Technical data

5.1   Dimensions

Front View — 843 mm (33.2 in), 711 mm (28 in), 866 mm (34 in)

Side View — 1359 mm (53.5 in), 875 mm (34.4 in)
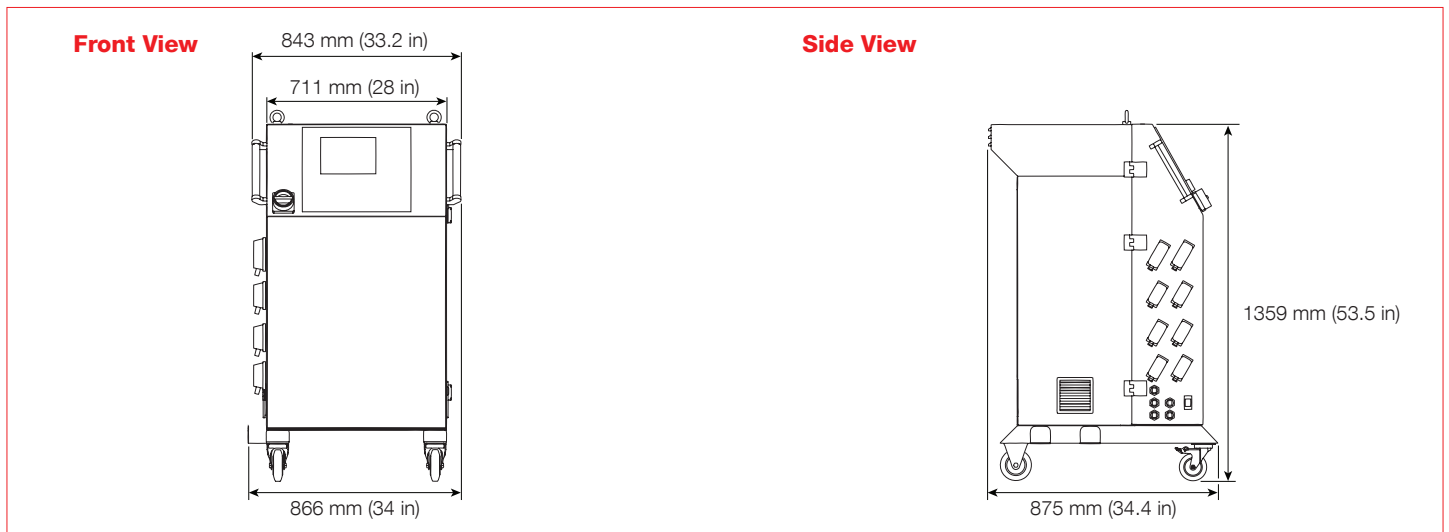
5.2   Specifications

Power Supply				
Voltage	100 to 120 VAC or 200 to 240 VAC			
Frequency	50/60 Hz			
Current (max)	16 A			

Cabinet Protection Rating				
Electrical Enclosure	IP 54			
Gas Enclosure	IP 43			

Weight				
Total	185 kg (408 lb)			

Process Gases	Argon (Ar) [a]	Nitrogen (N$_2$) [b]	Hydrogen (H$_2$)	Helium (He) [b]
Cooling (at max power)	55 kW	80 kW	60 kW	
Flow (max)	100 NLPM (212 SCFH) 200 NLPM (424 SCFH)	20 NLPM (42 SCFH) 100 NLPM (212 SCFH)	20 NLPM (42 SCFH)	50 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	3/8 in	3/8 in	1/4 in	3/8 in

Cooling Water [c]	F4MB-XL Series	9MB Series	SinplexPro	
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)	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	

Exhaust				
Air Flow	> 10000 m^3/h (> 354000 ft^3/h)			
Environment				
Temperature	10 to 40 °C (50 to 104 °F)			
Humidity	< 75 %, non-condensing			

Compressed Air (optional)				
Pressure	8 bar (116 psi); oil free			

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			

Compatibility				
Spray Gun	F4MB-XL series, 9MBM, iPro-90, 8MB, SM-F100, SM-F210, SM-F220, Praxair SG-100, SinplexPro series			
Powder Feeder	Full Integration: Single-240, TWIN-140, Twin-150; Start/Stop Only: 5MPE, 9MP, 9MPE			
Power Supply	PT3X-1000, PT-1140			
JAMBox	JAM-1040			

[a] Argon is required for all UniCoatPro Plasma 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

Information is subject to change without prior notice.

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