

Product Data Sheet

MultiCoat™ High Performance Thermal Spray Controller

As the name implies, MultiCoat™ can simultaneously control a number of thermal spray processes from a single controller. With advanced processing, trending and reporting features, MultiCoat™ offers superb performance and value for all types of spray operations, from R&D to high-volume production.

1 General description

The Sulzer Metco MultiCoat™ Controller with MultiCoat™ Vision Software offers unlimited thermal spray versatility and unmatched process control, all in one package. Employing a unique “twin-brain” management process using a PLC and an industrial grade PC, MultiCoat™ features advanced capability to log data and monitor the entire spray process. This industrial grade PC is equipped with two RAID-I technology hard disks which minimize the data loss.

Representing a quantum leap over all previous controllers, MultiCoat™ sets up easily because of its modular “plug and spray” component design. Offering the best of both worlds, it combines an enhanced, sophisticated technology with easy to use, high-resolution, touch-screen graphics, powerful recipe management and a flexible spray equipment and system components configuration choices.

MultiCoat™ is designed to accommodate a wide range of spray guns, powder feeders, power sources, gas management centers and remote robot controllers in combinations tailor-made to suit the customer’s needs.

An outstanding feature of the MultiCoat™ system is its ability to handle up to four separate thermal spray processes from a single operator station. Whether your coating process is

- Plasma spray (single and triple cathode guns),
- HVOF spray (gas and liquid fuel),
- Combustion powder spray,
- Combustion wire spray,

the versatile MultiCoat™ can monitor and control the operation of any of these processes, using the unique Control Panel interface. The Control Panel is available on a wall-mounted adjustable arm, in the new stand-alone, wheeled operator stand, or integrated onto the front panel of the Process Control Center (PCC).



MultiCoat™ • PCC with Wheeled Operator Stand

1.1 Description

The MultiCoat™ Controller System is Sulzer Metco's tailor-made solution for all of your current coating needs, which focuses on the needs of our customers, including:

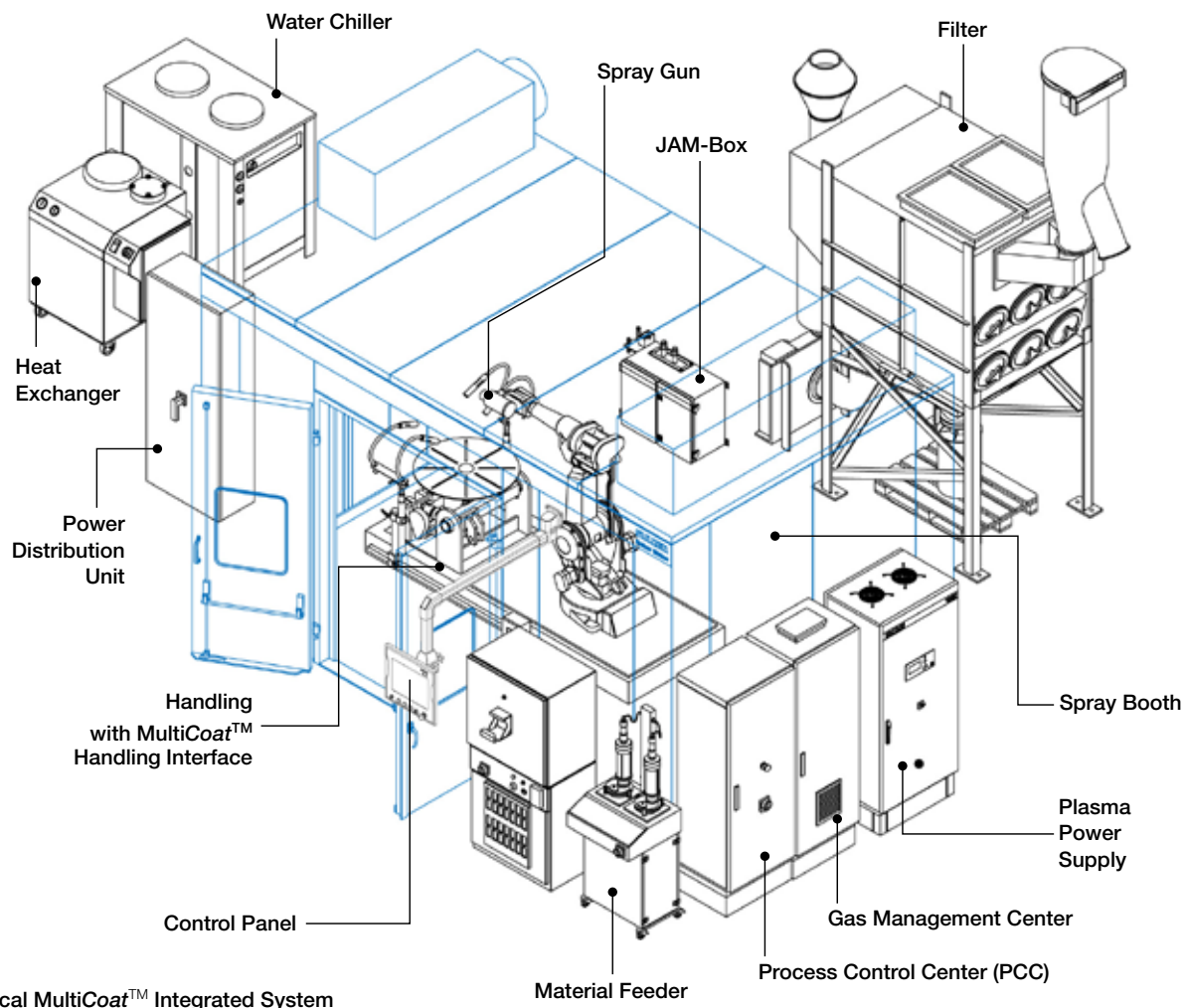
- Economic benefits
- Simple operation
- Absolute process reliability (quality assurance)
- Maximized coating quality and reproducibility
- Process versatility

The MultiCoat™ Controller System is a 'platform' concept; therefore, it can easily be adapted to meet current or future coating requirements.

The main components of the MultiCoat™ platform consist of the Control Panel and the Process Control Center

(PCC) as the basis of the "twin brain" design, which combines the advantages of a PC (process visualization and data management) with the strength of a PLC (reliable, industry-proven process logic controller). This combination of PC and PLC guarantees the outstanding performance of the MultiCoat™ System.

The PCC can be optimally configured to the customer's requirements with software and hardware components such as spray guns, powder feeders, JAM (Junction And Monitoring) Boxes and power sources, assembled into a custom-designed MultiCoat™ coating facility. This distinguishing feature of the MultiCoat™ system platform gives the customer absolute flexibility of choice for thermal spray system configuration.

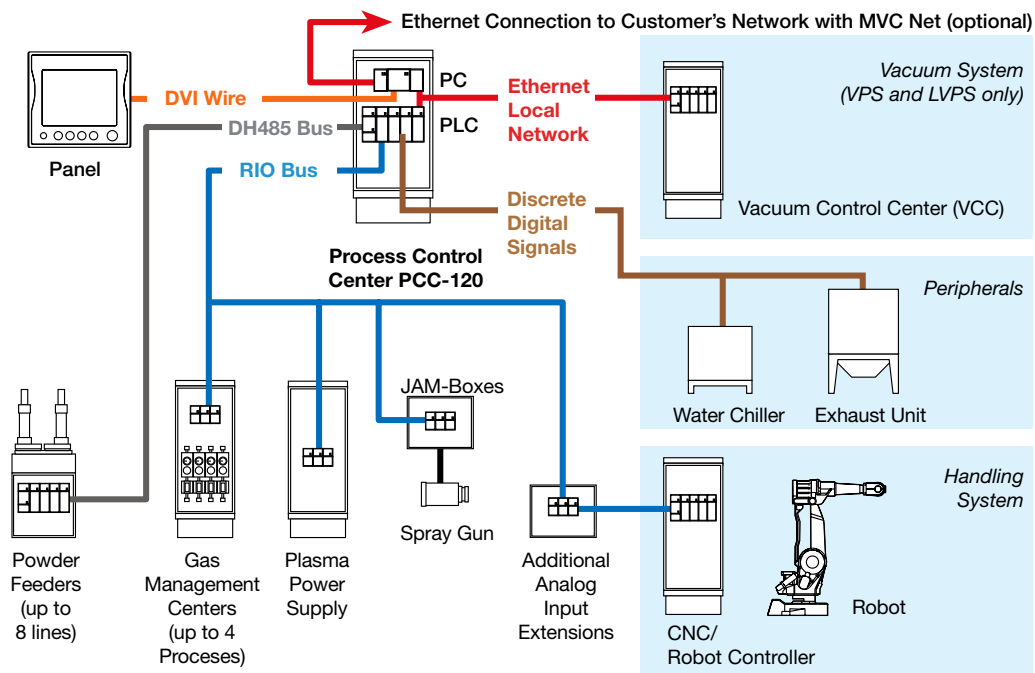


1.2 MultiCoat™ System Buses

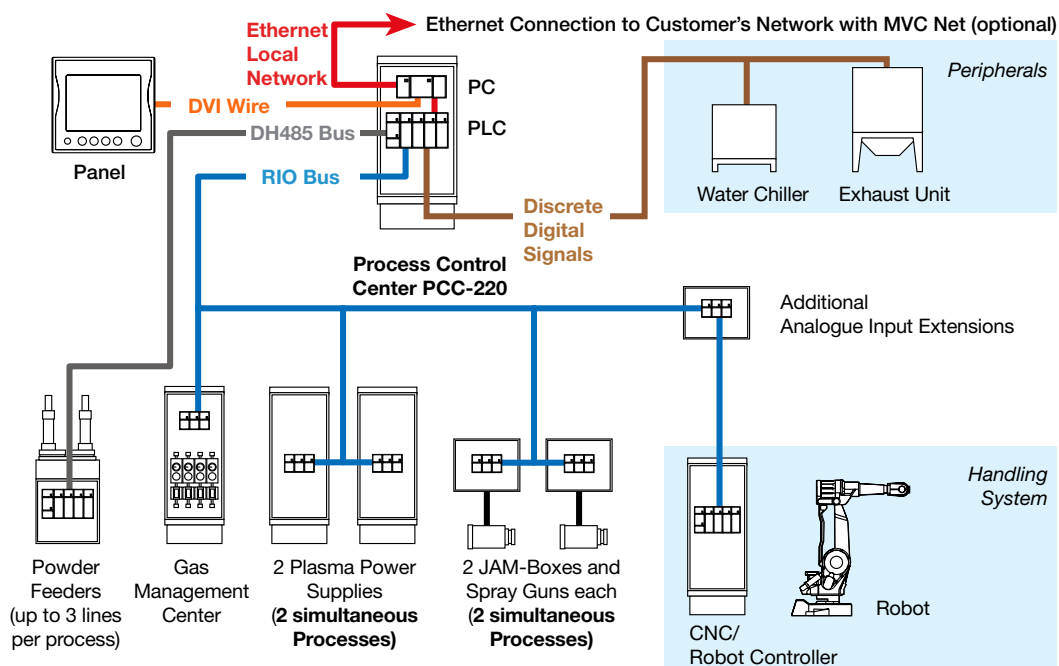
The core of the MultiCoat™ consists of an industrial-grade personal computer (PC) and a programmable

logic controller (PLC), connected to all components of a MultiCoat™ thermal spray system.

System bus with PCC-120 (one active spray process)



System bus with PCC-220 (two simultaneously active spray processes)



1.3 MultiCoat™ specific Components

The **PCC Process Control Center** contains all electrical controls, including the PLC and system safeties. It controls the whole process run in real time and collects process data as well as fault messages.

An industrial PC is used for process visualization, input and data management. The PC is equipped with RAID-1 that minimizes potential data loss.

A distinct software and hardware concept developed by Sulzer Metco provides flexibility for future upgrades or user-requested modifications.

The PLC is able to control 6 different process gas lines per thermal spray process that requires process gases. A maximum of 8 powder feed lines can also be controlled by the PLC.

PCC-120 for up to five different spray processes in sequential combination; control of up to eight powder feed lines.

PCC-220 for two simultaneously active processes (plasma). Both processes are constrained to same system or spray booth.

The **Control Panel** is the interface between the operator and the system. Entry, storage and recall of coating parameters is easy.

The integrated 15 in. TFT touch-screen has a color monitor and an integrated keyboard. Both are designed to withstand the harsh conditions of the spray environment.

Object-oriented, on-screen graphics simplify coating parameter setup and input. Spray recipes and related customer-defined data may be stored and recalled from memory, as required. The panel is factory-equipped with five languages that are easily selected as an operator choice. Additional languages are available, on request.

1.4 None MultiCoat™ specific Components

For Information about other system components, please refer to the respective product data sheet.



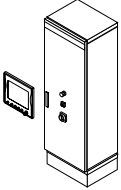
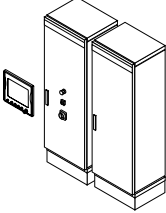
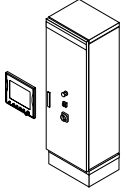
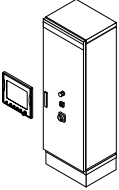
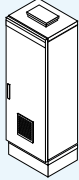
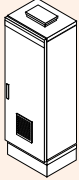
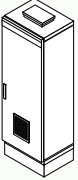
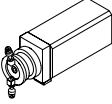
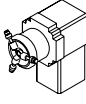
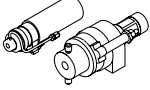
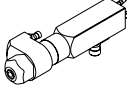
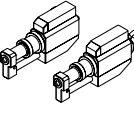
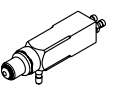
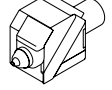
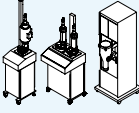
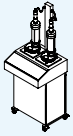
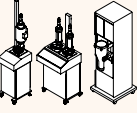
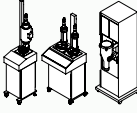
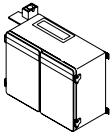
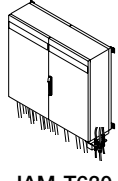
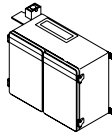
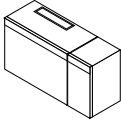
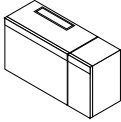
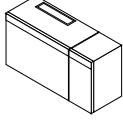
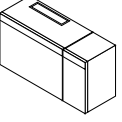
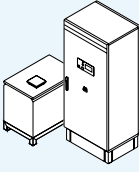
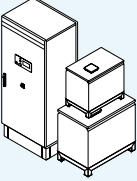
Process Control Center PCC-120 or PCC-220 with integrated Control Panel



MultiCoat™ wall-mounted, adjustable arm Control Panel

MultiCoat™ Control Panel on wheeled operator stand

1.5 MultiCoat™ System Configurations – Overview

Spray Process	Plasma			HVOF		Combustion	
	APS	Triplex	ChamPro™	GF	LF	Powder	Wire
Component							
PCC ¹ and Control Panel	 PCC-120, PC-220 ²		 PCC-120 und VCC	 PCC-120		 PCC-120	
Gas Management Center	 GMC Plasma			 GMC HVOF		 GMC Flame	
Spray Gun	 F4MB-XL ³	 Triplex-Pro-200	 F4-VB 03CP	 DJ Gun ⁴	 WokaJet-440 WokaStar-640	 6P-II ⁵	 EGD-K
Powder Feeder	 Single-220-A, TWIN-120-A, 9MPE-CL ⁶		 Twin-120-V	 Single-220-H, TWIN-120-H, 9MPE-DJ-CL20 ⁶		 Single-220-A, TWIN-120-A, 9MPE-CL ⁶	
JAM-Box	 Plasma	 JAM-T630	 Plasma	 JAMH-GF	 JAMH-LF	 Powder Combustion	 Wire Combustion
Power Supply	 PT Type TriStar Series		 TriStar Series, PT Type Plasma & TA ⁷	n/a			

¹ PCC with integrated Control Panel: PCC-120 BI, PCC-220 BI; PCC with external Control Panel (wall mounted or wheeled): PCC-120 BE, PCC-220 BE
² PCC-120: only one active process out of five, optional sequences; PCC-220: two identical processes (Plasma and HVOF or Flame) simultaneously active
³ or other Sulzer Metco single cathode gun
⁴ 2600DJM, 2700DJM, 3600DJM; 8ADJM, 9ADJM, 1050 DJM
⁵ or other Sulzer Metco Powder Combustion Spray Guns
⁶ or other Sulzer Metco Powder Feeders
⁷ Using a plasma spray gun in vacuum for part heating (transferred arc) or part cleaning (reverse transferred arc)

1.6 Software

The MultiCoat™ Controller System is equipped with the MultiCoat™ Vision Touch Screen graphical user interface, allowing the user to operate and monitor the system with easy to use, high resolution graphics.

Spray Process	Process Gas Lines	Additional Gas Lines	Powder Feed Lines
Plasma*	5	2	8
HVOF-GF	4	2	8**
HVOF-LF	1 + Kerosene	2	8
Combustion Powder	3	1	8**
Combustion Wire	3		
ChamPro	4		8

* Three options for plasma energy stabilization: constant current, constant power or constant voltage

** Spray gun uses a single powder feed line

MultiCoat™ Vision's special features:

- **Languages:** German, English, French, Italian, Spanish, Dutch; Russian and Japanese; with other languages with non-latin fonts on request.
- **Password protected:** MultiCoat™ Vision software features a five-level, password controlled security system. Personnel can be authorized to make changes at each of these levels or locked-out.
- **Recipes:** store up to 1000 spray recipes. Each recipe can be linked to different tolerance sets.
- **Data Logging:** continuous logging of all spray parameters and trending data; acquisition of all measured parameters every second; automatic storage for up to 30 days.
- **Message Center:** warnings, alarm status information and summaries are continuously displayed and stored for up to one month.
- **File Manager:** Simple handling of all user and system generated data.
- **Upgrades:** extend the functional range of the MultiCoat™ Vision with any number of available software options.



MultiCoat™ Vision Screen Graphics

2 Features and Benefits

Effective:

- **Multi process capability:** runs up to five spray processes sequentially (plasma single and triple cathode guns, HVOF-GF, HVOF-LF, Combustion Wire or Combustion Powder), in any combination, using the PCC-120.
- **Parallel Processes:** 2 atmospheric plasma processes can be run simultaneously using the PC-220; within the same spray booth.
- **ChamPro™:** support for controlled atmosphere spray systems with additional Vacuum Control Center (VCC).
- **“Twin-Brain” Design:** for excellent reliability, combined with ease of use.
- **Integration:** with a wide range of handling equipment

Environmental:

- **Safety:** designed and built for safety, CE conformant, industry-proven hardware.
- **Built-in Alarms:** multilevel system with warning messages to critical alarms with automatic shutdown.

Economical:

- **High Production:** designed for high production with low maintenance.
- **Smaller Footprint:** use of one controller for multiple processes means less hardware, less space and thus financial savings.
- **Touch-Screen Entry:** reduces learning curve and minimizes time for set-up and recall of spray recipes in production.

Efficient:

- **Modular Design:** upgrade existing systems quickly and easily.
- **Vision Software:** Simple and efficient parameter entry and retrieval of spray run data
- **Touch-Screen Graphics:** simplifies and enhances operating procedures.
- **Stores 1000 Recipes:** for rapid recall.
- **Quality Control:** output spray run data for quality control requirements.

3 Options and Accessories

3.1 MultiCoat™ Vision Software

- **MCV Net:** Connects the MultiCoat™ to the customer's network.
- **Standard Reporting:** Generates statistical data over a defined period of the coating process with manual or programmatic reporting start and stop. Reports can be used for quality control and supplemented with workpiece-specific data. The report header can contain a maximum of 50 entries, which can be freely chosen by the user.
- **Spray Sentry:** Integrated monitoring and reporting for intensity, position and geometry of the spray plume and particle velocity and temperature. Requires the installation of a Tecnar Accuraspray-g3, which is available from Sulzer Metco.
- **Schedule/t:** Plan your maintenance work for your MultiCoat™ with Schedule/t Maintenance Tool.
- **Sum/t:** Calculate your process-specific costs with Sum/t Consumables Counter for MultiCoat™.

3.2 MultiCoat™ Hardware

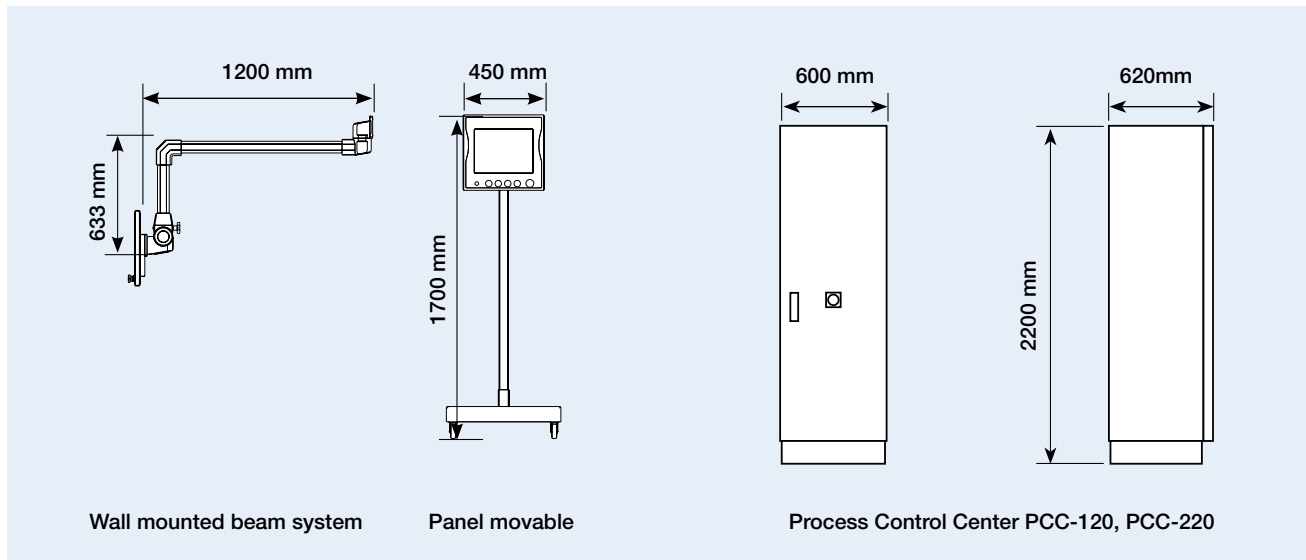
- **Handling Interface:** The MultiCoat™ Controller System is equipped with a Handling Interface which may be linked to a linear traverse unit, robot, turntable, or other handling equipment. Two interface levels are available:
 - **Low-Level Interface** – Integrated in the PCC with support for the spray process, powder feeders, air jets, etc., including standard reports
 - **High-Level Interface** – Execution as bus nodes built into a switchbox or as a robot axis; provides additional support for process changes, workpiece database and signal light.
- **Signal lamp:** Tri-colored light system shows system status, includes audible horn.
- **Printer:** Color Printer for hard copies of all reports

Other Options:

Other options are available for system upgrades and modifications, such as optional languages, hardware and software upgrades, etc.

4 Technical Data

4.1 Dimensions



4.2 Specifications

Control Panel			
Monitor	Size (diagonal)	15 in	
	Type	TFT Touch Screen	
Weight	Wall mounted, adjustable arm	25 kg	
	Stand-alone, wheeled	35 kg	
External Data Storage	Standard	USB	Port for Memory Stick
	Optional		Network Access
Process Control Center			
Weight		200 kg	
External Power Supply	Voltage	230 V (other voltages on request)	
	Frequency	50/60 Hz	