

Metallisation

Thermal spray equipment and consumables



Equipment Specification

Met-PCC(PLAS) Plasma Spray System

INTRODUCTION

The following specification covers the standard range of the Met-PCC(PLAS) system. For the specific offer, please refer to the dedicated quotation and cross-reference the part numbers for each piece of equipment.

The Metallisation Met-PCC(PLAS) is the latest development to our Atmospheric Plasma Spray (APS) systems.

The Met-PCC(PLAS) system applies all of the simple control / operator interface features of our previous Plasma and HVOF systems but now allows the use of the Metallisation 50kW PL50 pistol and/or non-Metallisation plasma pistols. 50kW pistols use a single power source with an additional power source added for 80kW systems.

The Met-PCC(PLAS) system has re-packaged the control elements and utilised the latest technology to optimise functionality and reliability. At the front end, the operator interface utilizes an intuitive Graphical User Interface (GUI), including the option to integrate video images into the display. The interface runs on a familiar touchscreen Windows PC platform with Intel Dual Atom processor which is great for usability, integration and communication. Behind the scenes, the latest PLC runs the system with communication between devices via the reliable Ethernet protocol.

As you would expect from a system of this standard, the gases are all mass-flow controlled for optimum repeatability of coatings. All spray parameters can have real-time trending on the system.

The result is a truly unique, compact design, flexible, easy to operate Plasma system, backed up by Metallisation's 90 year+ industry experience and support.

Safety: The equipment quoted will produce levels of noise, ultra violet light and dust that will require safety measures to be taken by those using the equipment. It will use pressurised gases which can be flammable and inert (asphyxiant). Careful consideration should also be given to the positioning of this equipment. It is the responsibility of the user to ensure that all appropriate measures are taken to ensure safe operation in accordance with local requirements. Metallisation will be pleased to advise as appropriate.

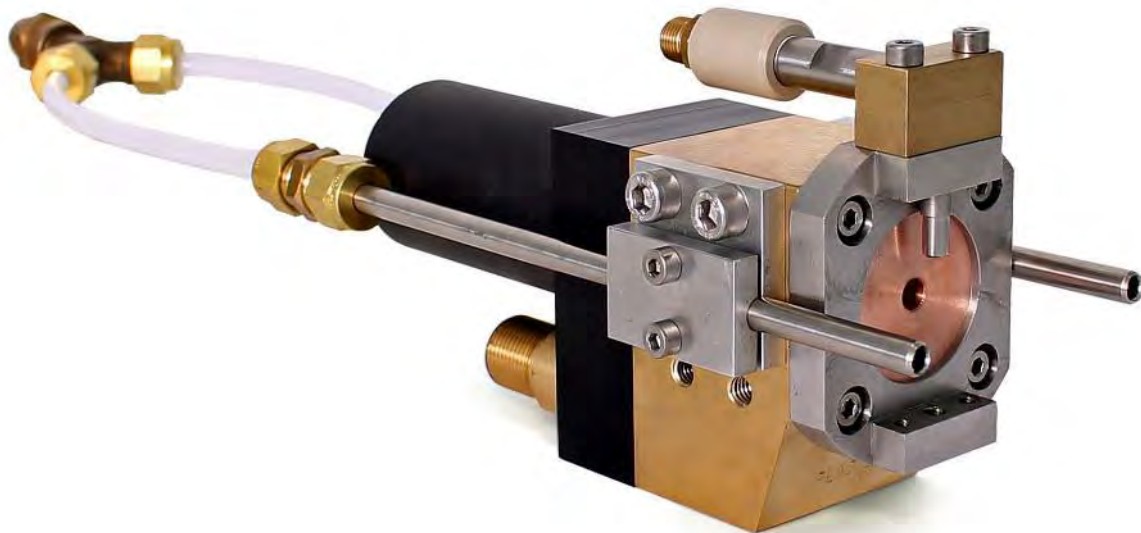
BENEFITS

- ✦ Mass flow control of primary, secondary and carrier gases = repeatability
- ✦ Inverter power supply = stability
- ✦ Easy to use, intuitive operator interface
- ✦ PC control with touch screen operator interface
- ✦ Optional keyboard control or operator interface unit
- ✦ Unlimited recipes and parameter recording
- ✦ Manual or fully sequenced start-up, operation and shut-down
- ✦ Various straight, angled and extension guns can be used
- ✦ Internal and external powder ports
- ✦ Safety interlocks to prevent running without coolant and gases
- ✦ Argon or Nitrogen primary, Helium, Nitrogen or Hydrogen secondary gases
- ✦ Other powder feeders/power sources can be interfaced

PISTOLS

Part No.	Description
PL50	PL50 Plasma Torch (50 Kw)
PL50-90	PL50 90 Degree Option Plasma Torch (50Kw)
PL50-KIT	PL50 Conversion Kit from Standard to 90 Deg Option

Non-Metallisation pistols can also be used with the Met-PCC(PLAS) control system. See next page for more details.



TECHNICAL OVERVIEW:

- ✦ Compact design for small access areas
- ✦ 90 degree option for use with a manipulator or robot
- ✦ 50kW capacity (suited for the majority of plasma spray applications)
- ✦ Internal and external nozzles allow optimum parameters for a range of materials
- ✦ Simple pistol maintenance for reduced downtime when changing consumables
- ✦ Ample cooling allows extended lifetime of consumables
- ✦ Optional cooling jets can be fitted to the pistol
- ✦ Argon Primary gas and Nitrogen, Hydrogen secondary gas.
- ✦ Robot mounting interface

TECHNICAL DATA

Description	Characteristics
Weight – PL50	1.76kg (3.87lbs)
Dimensions – PL50 (mm)	L-158 x W-80 x H-70
Weight – PL50-90	1.76kg (3.87lbs)
Dimensions – PL50-90 (mm)	L-103 x W-80 x H-124

Note: - Photo above shows PL50 Plasma pistol in standard configuration with PL50-AJ Air Jets fitted.

TYPICAL PERFORMANCE FIGURES FOR A SELECTION OF POWDERS FOR THE MET-PCC(PLAS) SYSTEM USING A PL50 PLASMA PISTOL:

MATERIAL	Reference	Throughput g/min	Deposit efficiency %
Grey Alumina (97/3)	99205	20	67
Alumina Titania (87/13)	99216	33	67
Alumina Titania (60/40)	99220	24	76
Chrome Oxide	99225	39	47
Magnesium/Zirconium Oxide	99275	38	75
Nickel Aluminium Moly	99627	51	67
Nickel 20% Aluminium	99635	43	62
Tungsten Carbide Cobalt	99735	55	75
Aluminium Polyester	99106	44	51

All figures are approximate and dependent on many factors including powder type and parameters.

ALTERNATIVE PISTOLS:

Metallisation's Met-PCC(PLAS) system can operate pistols from other manufacturers. The Metco 9MB, F4 and Praxair SG100 plus 2086 extension pistols have already been interfaced to the system but others could also be technically reviewed for suitability.

Alternative pistols can either be supplied by the customer or Metallisation can offer similar pistols to those mentioned.

The supplies package to each of the pistols would remain the same as the standard Metallisation supplies package. Adapter kits will be offered to fit at the pistol end to enable interchangeability of pistols if required.

Performance data for the non-Metallisation pistols is not offered. The performance of the pistol would be generally the same as if supplied by the OEM. The Met-PCC(PLAS) controller will provide the pistol with reliable, repeatable and easy to control gases, power and powder. The parameters are easily programmed and adjusted. The use of a Met-PCC(PLAS) controller would not detrimentally affect the coating produced by a non-Metallisation pistol.

STANDARD SUPPLIES PACKAGE

Part No.	Description
SUP-PCC(PLAS)	Met-PCC(PLAS) 10mSupplies Package - Single Powder Feeder
SUP-PCC(PLAS)-2PF	Met-PCC(PLAS) 10m Supplies Package - Twin Powder Feeder
SUP-PCC(PLAS)-LINK	Met-PCC(PLAS) Supplies Pack To Link Second 'DIPS' To Control Box
SUP-PCC(IG-I)-3	Met PCC(IG-I) Ignition Box Supplies Package 3Mtr

SUP-PCC(PLAS) INCLUDES

- ✦ 1 x +ve water cooled cable from the Igniter box to the pistol.
- ✦ 1 x -ve water cooled cable from the Igniter box to the pistol.
- ✦ 2 x heat exchanger water hose from chiller to DIPS power supply. 1 x 1/2" BSP and 1 x 7/8 JIC at chiller with quick release fitting at the other end.
- ✦ 2 x heat exchanger water hose from chiller to gas box. 1 x 3/4" BSP to 3/4" BSP gas box to chiller and 1 1/16" JIC to 1 1/16 JIC chiller to gas box.
- ✦ 4 x 120mm² power cable from the Igniter box to DIPS power supply.
- ✦ 1 x Carrier gas hose from gas box to powder feeder 1/4" BSP to 1/4" BSP.
- ✦ 1 x Argon gas hose from regulator to gas box. Fitting 9/16"-1/4" BSP Non Return Valve.
- ✦ 1 x Nitrogen gas hose from regulator to gas box. Fitting 9/16"- 3/8" BSP LH Non Return Valve.
- ✦ 1 x Hydrogen gas hose from regulator to gas box. Fitting 9/16" LH- 3/8" BSP LH Non Return Valve.
- ✦ 1 x Nitrogen primary gas or Helium secondary gas hose from regulator to Gas box. Fitting 9/16"- 3/8" BSP Non Return Valve.
- ✦ 1 x Plasma gas hose from gas box to plasma pistol 1/4" BSP to 1/4" BSP LH.
- ✦ All hose lengths In and Out are 10m as standard, unless otherwise stated.

SUP-PCC(PLAS)-2PF INCLUDES

Same as SUP-PCC(PLAS) plus

- ✦ 1 additional Carrier gas hoses from Gas box to Powder Feeder.

SUP-PCC(PLAS)-LINK INCLUDES

- ✦ 2 x heat exchanger water hose from Chiller to DIPS power supply. 1 x 1/2" BSP and 1 x 7/8 JIC at Chiller with quick release fitting at the other end.

SUP-PCC(IG-I)-3 INCLUDES

- ✦ 1 x Coolant Hose - CTRL to Igniter Box (3/4"BSP).
- ✦ 1 x Coolant Hose - CTRL to Igniter Box (1.1/16"JIC).
- ✦ 1 x CTRL to Ignition Box Lead 3Mtr.

OPTIONAL INPUT SUPPLIES PACKAGE'S

Part No.	Description
SUP-PCC(PLAS)-5-IN	Met-PCC(PLAS) 5m Input Supplies Package
SUP-PCC(PLAS)-7-IN	Met-PCC(PLAS) 7m Input Supplies Package
SUP-PCC(PLAS)-10-IN	Met-PCC(PLAS) 10m Input Supplies Package

OPTIONAL OUTPUT SUPPLIES PACKAGE'S

Part No.	Description
SUP-PCC(PLAS)-5-OUT	Met-PCC(PLAS) 5m Output Supplies Package - Single Powder Feeder
SUP-PCC(PLAS)-7-OUT	Met-PCC(PLAS) 7m Output Supplies Package - Single Powder Feeder
SUP-PCC(PLAS)-10-OUT	Met-PCC(PLAS) 10m Output Supplies Package - Single Powder Feeder
SUP-PCC(PLAS)-2PF-5-OUT	Met-PCC(PLAS) 5m Output Supplies Package - Twin Powder Feeder
SUP-PCC(PLAS)-2PF-7-OUT	Met-PCC(PLAS) 7m Output Supplies Package - Twin Powder Feeder
SUP-PCC(PLAS)-2PF-10-OUT	Met-PCC(PLAS) 10m Output Supplies Package - Twin Powder Feeder

OPTIONAL SUPPLIES PACKAGE'S INCLUDES

- ✎ Same items as the STANDARD SUP-PCC(PLAS) but with different supply lengths.
- ✎ Various combinations of supplies lengths can be chosen e.g. 5m In and 10m Out.

CONTROL SYSTEM

Part No.	Description
PCC(PLAS)-CTRL20	Met-PCC(PLAS) Gas Box Console (Up to 20 Bar coolant Pressure)
PCC(PLAS)-CTRL-S	Met-PCC(PLAS) Gas Box Console (20 Bar) with Gas Detection Sniffer
PCC(PLAS)-CTRL20-GB	Met-PCC(PLAS) Gas Box Console (Up to 20 Bar coolant Pressure) (No HMI)
PCC(PLAS)-CTRL-S-GB	Met-PCC(PLAS) Gas Box Console (20 Bar, No HMI) with Gas Detection Sniffer
MET-TROL**	Metallisation Ancillary Trolley
MF-PF-CTRL	Mass flow powder feeder kit in the Gas box
9880	HMI Mounting Bracket Kit



** Ancillary Trolley sold separately



Ignition Box

The control system is shown with the HMI on an accessory trolley (offered separately). The HMI can be wall mounted, post mounted or moving arm mounted (9880) via standard VESA mounting point on the rear of the box. In a typical installation, the Gas box would be inside the spray booth along with the Ignition Box and Powder Feeder. The HMI operator interface would be outside the spray booth.

TECHNICAL OVERVIEW:

The control system for the Met-PCC(PLAS) consists of a PC with a touch-screen operator interface, an Ignition box, a Gas box and a Standard Robot interface (Robot Master). The PC provides a means of operator interface. For reliability of operation, the actual control of the individual operations of the system are controlled by PLC's in the gas box and powder feeder.

The "GB" Gas Box controllers are used for multi spray systems, where only one HMI touch screen PC is required to operate several PCC spray systems.

6m is the standard length for the communication cable between the Gas box and HMI with 3m for the communication cable between the Ignition box and the Gas box. Longer lengths for both these cables are available on request.

Ethernet Cabling to link the operator interface to the Gas box and Powder Feeder is included, 10m as standard, maximum possible distance is 250m.

GAS BOX CONTAINS:

- ✦ Primary and secondary gas mass flow controller.
- ✦ Control PLC with industry standard Ethernet interface.
- ✦ Control valves and switching for sequencing and safe operation of the system
- ✦ E-stop circuit with external interface to integrate into the safety circuit of the spray booth. Signals from the booth door, extraction system, robot, etc. can all be linked into the system.
- ✦ Interlocks to inhibit system operation unless the following are within preset limits: coolant pressure, temperature and flow; primary/secondary/carrier gas pressure and flow.
- ✦ Fault indication strobe.
- ✦ Interface between the gas box, powder feeders and robot by industry standard Ethernet. Up to 255 items can be interfaced, allowing multiple powder feeders to be linked.
- ✦ Gas connections for two separate powder feeders to facilitate bond and top coat spraying.
- ✦ Control connections for up to two DIPS power supplies to facilitate spraying at up to 100 kW.
- ✦ New enclosure allowing supplies to exit to the front, rear or sides of the gas box.
- ✦ Hydrogen gas sniffer incorporated in PCC(PLAS)-CTRL-S unit.
- ✦ MF-PF-CTRL is a kit that is factory fitted into the gas box to enable non-Metallisation powder feeders to be operated and mass flow controlled if they don't have their own mass flow controller.

IGNITION BOX:

- ✦ Can be wall mounted away from the Gas box (Standard 3m, other lengths available on request).
- ✦ Contains all Water and DC power connections.
- ✦ Contains Plasma Ignition Circuit, thereby reducing any radiated interference.

ROBOT INTERFACE (ROBOT MASTER):

- ✦ Contains a PLC mounted on a DIN rail which would be installed within the Robot / Manipulator Controller.
- ✦ 4 off Inputs, Flame On/Off, Powder On/Off, Robot Fault and Air Jets On/Off.
- ✦ 4 off Outputs – Flame Ok, Spray Ok, Air Jets Ok and Fault Signal.
- ✦ PLC requires 24 DC – 1.2 amp supply from the Robot / Manipulator.

SPECIFICATION AND SUPPLY REQUIREMENTS

Description	Characteristics
Primary gas – Argon	100 l/min (max) @ 4-8 bar
Primary gas – Nitrogen	100 l/min (max) @ 4-8 bar
Secondary gas – Nitrogen	15 l/min @ 4 bar
Secondary gas – Helium	80 l/min @ 4-6 bar
Secondary gas – Hydrogen	15 l/min @ 4-6 bar
Coolant – deionised water	14 l/min thru the PL50 Plasma Pistol @ 6bar.
Max. coolant inlet temperature at the pistol	16 degrees Celsius
Electrical - console	240/110V 1ph, 8A/15A
Weight	Gas box – 100kg : HMI Operator interface – 20kg
Dimensions (mm)	Gas box - W-860 x D-560 x H-1250 Ignition box – W-400 x D-300 x H-500 (wall mount) Operator interface - W-560 x D-175 x H-410
Cooling requirements	35kW at 30 degrees C ambient

OPERATOR INTERFACE:

- ✦ Integrated PC with 17” touch screen, mounted in an industrial box with standard VESA mount.
- ✦ Security levels, password protected for operation or programming.
- ✦ Comes with Windows7 as an operating system that is widely familiar.
- ✦ Parameter trending allows real-time monitoring of operation and setting of ‘out-of ‘range’ limits.
- ✦ Real time data logging with programmable intervals. System logs the required parameters and actual operating parameters (gas flows, powder feeder speeds, voltage, current) against time and also logs sequence events and faults.
- ✦ Data log output via .csv data format through USB or Ethernet to enable remote SPC analysis.
- ✦ If touch screen operation is not desirable, USB interfaces are included to allow connection of a keyboard, mouse or other generic/custom USB input devices. Industrial keyboard is included.
- ✦ Full, on screen diagnostics to advise operator of the system status.

As the operator interface is PC based, it is extremely flexible to control. The functionality can be as complex or as simple as needed. However, as standard, the system can run in 3 modes of operation: manual; recipe or external interface.

MANUAL PARAMETER SELECTION

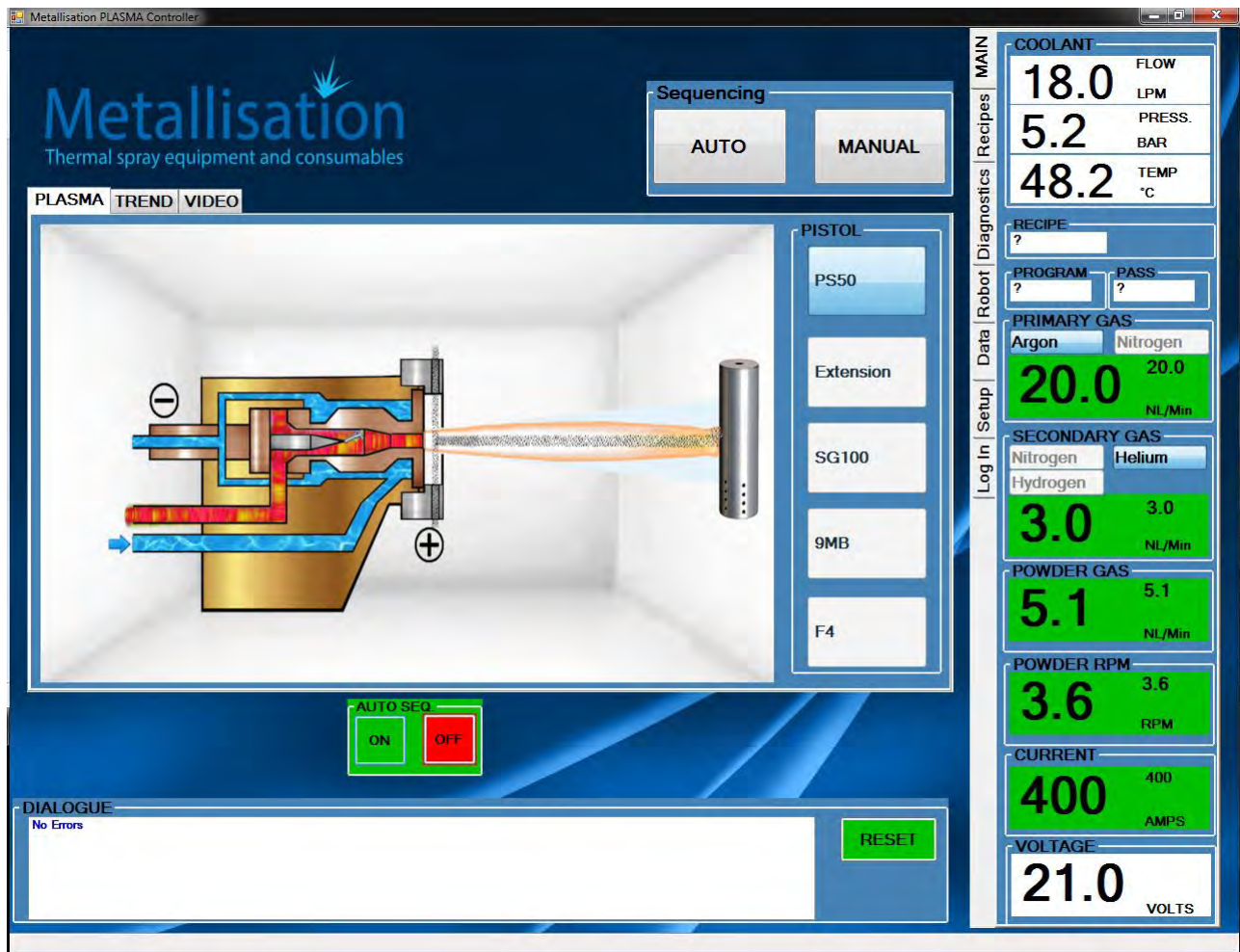
- ✦ Operator first selects MANUAL from the 'Sequencing' box.
- ✦ Operator manually sets the desired parameters for primary gas, secondary gas, current, carrier gas and powder feed rate. This is done by double clicking on the parameter boxes on the right hand side which brings up a keypad to enter the desired values.
- ✦ Once parameters are set, the green buttons are manually sequenced through from left to right, first starting the coolant.
- ✦ Once the coolant is flowing and the system detects that coolant flow, pressure and temperature are within limits, the primary gas button can be pressed.
- ✦ The sequence continues from left to right until the powder is feeding and if appropriate, the robot sequence is started. Operation of the next button in sequence is inhibited until the interlocks are satisfied, e.g., the system cannot be ignited until the main power is switched on.
- ✦ During running, the gas and current parameters plus powder feed rate can be adjusted.
- ✦ To stop the system, the button sequence must be actuated in reverse.
- ✦ Operating status and faults are displayed in the dialogue box.
- ✦ At each change of sequence, the animated pistol image will change to graphically show the status, e.g. when the coolant is off, it will not show blue on the pistol but will show when coolant on is pressed.

RECIPE SELECTION

Recipe No.	Powder No.	Description	Prim Type	Prim Flow	Sec Type	Sec Flow	Carrier	RPM	Amps	Nozzle
1	99106	Aluminium Polyes...	Ar	33.9	N2	0.5	5.4	8.9	500	6-EXT
2	99205/35	Grey Alumina	Ar	17.0	N2	2.1	4	7.5	750	8-EXT
3	99216/30	AlO2/TiO2	Ar	17.0	N2	3.1	4	6.3	600	8-Int
4	99220/35	AlO260/TiO240	Ar	17.0	N2	0.5	4	5.2	850	8-Ext

- ✦ Operator first selects RECIPE from the tabbed menu box.
- ✦ Operator scrolls the recipe screen (that has a familiar Excel look to it) and selects the required recipe. The recipe selection screen is programmable so it can show recipe numbers or recipe descriptions. For example, the description could be the name of the part being sprayed.
- ✦ Once the recipe is chosen, the operator presses the SET RECIPE button. The parameters are loaded.
- ✦ If the operator has logged in with the appropriate permissions, they can create new recipes and save them on this screen.
- ✦ Once the parameters are selected, the system can either be manually sequenced as described on the previous page or automatically sequence as described on the following page.
- ✦ Pre-loading of up to 10 recipes is included.

AUTOMATIC SEQUENCING



The screenshot displays the 'Metallisation PLASMA Controller' software interface. The main window features a central diagram of a thermal spray gun with a plasma torch and a spray gun nozzle. To the right of the diagram is a 'PISTOL' selection menu with buttons for PS50, Extension, SG100, 9MB, and F4. Below the diagram are 'AUTO SEQ.' buttons for 'ON' (green) and 'OFF' (red). A 'DIALOGUE' box at the bottom left shows 'No Errors' and a 'RESET' button. On the right side, a vertical sidebar contains a 'MAIN' panel with various real-time data points:

- COOLANT:** FLOW 18.0 LPM, PRESS. 5.2 BAR, TEMP. 48.2 °C
- RECIPE:** ?
- PROGRAM:** ?
- PASS:** ?
- PRIMARY GAS:** Argon 20.0 NL/Min, Nitrogen 20.0 NL/Min
- SECONDARY GAS:** Nitrogen 3.0 NL/Min, Helium 3.0 NL/Min, Hydrogen 3.0 NL/Min
- POWDER GAS:** 5.1 NL/Min
- POWDER RPM:** 3.6 RPM
- CURRENT:** 400 AMPS
- VOLTAGE:** 21.0 VOLTS

- ✦ Instead of manually sequencing through the process, a single button auto option is available.
- ✦ Once the operator is happy that the components are ready to spray, the green AUTO SEQUENCE ON button is pressed.
- ✦ The system automatically sequences the spraying cycle, starting the coolant, primary gas, main power, ignition, secondary gas and powder sequence.
- ✦ Powder feed and Air jets can be automatically switched On/Off during the spraying cycle if required.
- ✦ If manually manipulating the pistol, the system will spray until the operator presses the OFF button.
- ✦ If automatically manipulating the pistol, the system will interface with the robot or automation and they will start the spraying sequence. Once complete, the robot / automation will trigger the system to sequence through to shutdown.
- ✦ Operating status and faults are displayed in the messages box and data logging can be activated during spraying.

ROBOT/AUTOMATION INTERFACE

The robot/automation interface allows the plasma control system to be interfaced with an external robot/automation.

As standard, the spray controller will operate as the slave (robot master). The robot program will call the plasma pistol to light and once it is stable, the spray controller will indicate back to the robot that it can start.

The robot will run through a sequence, switching On/Off the powder feeder and air cooling jets as required. The spray controller will give an output to acknowledge these requests have been processed.

Any faults in the spray controller or robot are also communicated between the two systems, as a single fault signal.

Once complete, the robot / automation will trigger the system to sequence through to shutdown.

The system can be programmed on request for the robot to be the Slave. If the robot is programmed in such a way, the spray system can select the appropriate robot program and number of passes for the robot to make for a given spray job.

EXTERNAL INTERFACE OPERATION

The system is capable to interface via USB to an external interface source. This could, for example, be a barcode reader, an interlocked signal to production automation or a manual component selection switch box.

If, for example the system is barcode interfaced, once the barcode is scanned, it will set the correct parameters and advice the operator which powder to load into the powder feeder. Once the component is ready to spray, the system is started in an automatic sequence in the same way as recipe operation above.

If a multiple coating is required, the system can sequence through the bond coat and top coat, automatically selecting multiple powder feeders if required or stopping to prompt the operator to change powders & nozzles.

Data can be logged against individual bar-codes and stored to produce traceability of the coating and component.

External interface integration and programming can be quoted to your exact specification.

POWDER FEEDER

Part No.	Description
2007MF-PF(2800)	Mass flow powder feeder – 2.8L hopper
2007MF-PF(3350)	Mass flow powder feeder – 3.35L hopper
2007MF-PF(2.8)-QR	Mass Flow Powder Feeder, 2.8 Ltr with Quick Release hopper
2007MF-PF(3.35)-QR	Mass Flow Powder Feeder, 3.35 Ltr with Quick Release hopper
QRPFH-2.8	Quick Release Powder Feeder Hopper (2.8 L)
QRPFH-3.35	Quick Release Powder Feeder Hopper (3.35 L)
QRPF-BRKT	Quick Release Powder Feeder Hopper Support Bracket for 2 hoppers
MET-TROL**	Metallisation Ancillary Trolley
6688C	Heater Jacket & Plug Assembly

Technical overview

- ✦ Mass flow control of carrier gas = repeatability.
- ✦ Volumetric feed via hopper and rotating disc design.
- ✦ Two disc variants to allow optimum feeding of a wide range of powders.
- ✦ Parameters are displayed on the powder feeder and also relayed to the operator interface unit for display and logging.
- ✦ Contains PLC for control and integration to operator interface unit
- ✦ Feed disc rotational speed is controlled via a closed loop AC inverter for improved feeding accuracy.
- ✦ Control can either be via the operator interface or directly at the powder feeder for stand-alone operation.
- ✦ Multiple power feeders can be integrated into the system.
- ✦ Powder Feeder comes complete with the connection for a Hopper Heater Jacket.
- ✦ Supplied with 1 x Powder Feeder control Ethernet cable from Gas box to Powder Feeder Std 7m, longer lengths available at request.
- ✦ 4mm bore Anti-static powder feed hoses (max length of 5m) from powder feeder to the pistol. Optional 2.5mm bore powder feed hose (9641) available.
- ✦ Various Powder Feeder options available with various sized hoppers, quick release hoppers or weigh scales to suit specific customer requirements.



** Ancillary Trolley sold separately

SPECIFICATION AND SUPPLY REQUIREMENTS

Description	Characteristics
Canister capacity	2,800cc or larger as indicated
Electrical supply	240/110V 1ph, 5A*
Weight	40kg
Dimensions (mm)	W-400 x D-400 x H-700

* Use a suitable MCB or Motor / T rated fuses

POWER SOURCE

Part No	Description
PS50M*DIPS	1000A Dual Voltage Inverter Power Supply



TECHNICAL OVERVIEW

- ✦ Direct current inverter power supply.
- ✦ Maximum power output 50kW, 1000A @ 50Vdc (or 500A @ 100Vdc).
- ✦ Runs off normal factory three-phase electrical supply.
- ✦ Capable to run either medium or high current operation – enables use with a wide range of gases.
- ✦ Possible to link two units to obtain higher outputs, e.g. 2000A@50V or 1000A@100V = flexibility to run higher power pistols up to 100 kW if required.
- ✦ Supplied with 1 x Power supply control cable (9649) from the Gas box to the DIP's Power supply, maximum distance 7m.

SPECIFICATION AND SUPPLY REQUIREMENTS

Description	Characteristics
Electrical supply	380/480V, 3 phase, 80A/ph per power supply
Weight	105kg
Dimensions (mm)	W-445 x D-775 x H-640
Water Cooling	10 lpm (7 bar) per power supply

MINI-PLASMA PISTOL EXTENSION

Part No	Description
MINIGUN-A	Mini Plasma Pistol (Angled)
MINIGUN-S	Mini Plasma Pistol (Straight)



TECHNICAL OVERVIEW

- ✦ 7-15kW maximum operating range.
- ✦ Compact 50mm diameter – excellent for difficult access areas and internal bores.
- ✦ Low power – low substrate heating.
- ✦ Simple nozzle/electrode design – quick changeover of consumable parts.
- ✦ Large surface area of nozzle = longer service life.
- ✦ 400mm length standard (maximum 900mm available).
- ✦ Minigun-A has a 68° angled head (to spray in the corner of blind bores).
- ✦ Minigun-S has a 90° head (to spray along the sides of internal bores).

TOOLKIT AND ACCESSORIES

Part No	Description
PL50-ACC	Accessories, Nozzles & Toolkit for PL50 Pistols
PL50-AJ	PL50 Plasma Air Jet Assembly
PL50-AJ-90	PL50 90 Degree Option Plasma Air Jet Assembly

PL 50-ACC ACCESSORIES PACKAGE INCLUDES:

- ✦ 6 & 8mm Internal and External 6mm Copper Nozzles, complete with 'O' Rings.
- ✦ Straight Powder Feed Block.
- ✦ Tools for the maintenance of the PL50 Plasma Pistol.

REGULATORS

Part No	Description
21239	Argon regulator
21240	Hydrogen regulator
21244	Nitrogen regulator
21250	Helium regulator
21122A	Flashback Arrestor Acetylene/Propane/Hydrogen

- ✚ Argon, helium and nitrogen bottle connection = $\frac{5}{8}$ " BSP.
- ✚ Argon, helium and nitrogen outlet connection = $\frac{9}{16}$ " UNF.
- ✚ Hydrogen bottle connection = $\frac{5}{8}$ " BSP Left Handed.
- ✚ Hydrogen outlet connection = $\frac{9}{16}$ " UNF Left Handed.
- ✚ Flashback Arrestor = $\frac{9}{16}$ " Left Handed.

REFRIGERATED HEAT EXCHANGER

Part No	Description
PS50-CHILL	Plasma refrigerated chiller max ambient 43 Degree C – 400v 50hz 3 phase.
PCC(PLAS)CHILL-MAN	Plasma Chiller Manifold for Single Power Supply
PCC(PLAS)CHILL-MAN2	Plasma Chiller Manifold for Double Power Supply

TECHNICAL OVERVIEW

The Metallisation packaged water chiller is a complete, factory assembled unit, designed to provide chilled water for cooling Plasma systems.

- ✦ Self-contained, including all control items.
- ✦ Despatched with a running charge of refrigerant.
- ✦ Cool water is produced within the chiller and used to cool the pistol water via a water/water heat exchanger.
- ✦ Demineralised water is pumped to the Plasma system via an integral pump.
- ✦ Units are designed to run continuously and will circulate chilled water as long as the unit is switched on.
- ✦ The chiller is rated for operation at the ambient temperatures stated. Other ambient temperatures or chillers for non-Metallisation pistols can be accommodated. Please contact Metallisation for a specific quotation.



Metallisation

Thermal spray equipment and consumables

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