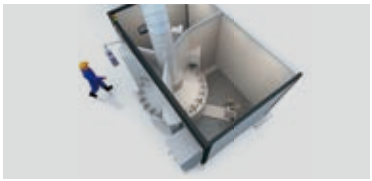
PRODUCTS CATALOG *of*

THERMAL SPRAY SYSTEMS AND PERIPHERALS









Based on integrity and decades of experience in the field of thermal spray, Hillmat Coatings LLC is committed to providing our customers in the field of thermal spray with a variety of core systems, peripheral equipment, automated production lines, consumables, after-sales services and turn-key solutions.

Hillmat Coatings
Here you coat

Hillmat Coatings
Total Thermal Spray Solutioner

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UC1000 Air Plasma Spray System

1.1 Brief Description:

The process accuracy, reliability and repeatability are critical for the complex control required for the Plasma Spray technology. UC1000P control system from Hillmat Coatings is designed and built for such needs. With equipped with top-level components, high-accuracy mass flowmeters, digitalized parameters readout, on-board PC for recipes storage, adaptability to mainstream torches, and infinite software upgradability, Hillmat Coating's UC series system can address all your plasma spray challenges.

UC1000 is Hillmat Coating's the top advanced thermal spray control platform. It integrates performance and intelligence, can realize multi-process control function (including APS, HVOF, flame and detonation), and keep up with development of the times by continuously upgrading its software.

1.2 Features of UC1000P Plasma Spray System:

1)Configurated of plasma gun, control module, gas module, power supply unit, powder feeder, jambox and chiller.

2)User friendly touch screen Man-machine-interface (MMI) with graphic display of all core system and peripheral components.

3)Built by top-level components.

4)Adopt advanced mass flowmeters for gases regulation, realize high precision of process control with digital parameters output.

5)PC+PLC can store up to 1,000 process recipes, including integrated robot program with external axes setups.

6)Can set low power mode (Idle Mode) when operators perform short tasks within the spray booth while the spraying process can be paused.

7)Can configure with various mainstream torches including cascade gun.

8)By upgrading software and configuring new components, more thermal spray process controls can be added to the control system for versatile process operation.

9)Data logging and trending available.

10)Remote diagnostics supported.

11)By cooperating with the gun exchanging function of the integrated robot can realize seamless continuous operation of multi-process spraying, especially for the tasks of bondcoat followed by topcoat.

12)Best compatible with Hillmat Coating's automation line.

UC800 Air Plasma Spray System

2.1 Brief Description

The UC800 control platform is designed for durability, stability, and affordability, while still maintaining advancedness. It can adapt to the most mainstream plasma spray guns today. In addition to the UC800P control platform for plasma spray, the UC800F flame spray and UC800H HVOF spray systems are also built based on the UC800 system control concept.

2.2 Features of UC800P Plasma Spray System:

1)Configurated with plasma gun, control module, gas module, power supply unit, powder feeder, jambox and chiller.

2)User friendly touch screen MMI with graphic display of all core system and peripheral components.

3)Only use proven and reliable spare parts that have been tested for long-time application.

4)Adopt hi-precision mass flowmeters for gases regulation, realize high precision of process control with digital parameters output.

5)PLC controller can store up to 100 process recipes, including integrated robot program with external axes setups.

6)Can configure with various mainstream torches.

UC1000H kerosene HVOF system

3.1 Brief Description

The UC1000 Thermal Spray Control System is a world-leading, highly intelligent, fully automated, and multi-purpose control platform created by Hillmat Coatings LLC. It offers unparalleled process control on abundant coating process data to provide customers with the best coating quality and user experience.

The UC1000 system adopts a PC+PLC control system. Operator can easily input relevant process parameters or call the previous spraying recipes through the graphical man-machine interface (MMI). The system records and monitors the entire spraying process in real time. UC1000 is a closed-loop control system. All process gases, fuel and powder feeders are digitally managed through advanced mass flowmeters to ensure high accuracy and repeatability of the spraying process.

The full set of UC1000H kerosene HVOF spray core system includes electrical control module, fuel+gas module, powder feeder, kerosene HVOF spray gun, and chiller. All connections between the system components are made by plug-in type to ensure the accuracy and convenience of installation. By configuring different combinations of soft and hardware, the UC1000 system can operate four different spraying processes, such as flame spray (including powder and wire materials), plasma spray, HVOF spray and detonation spray. The built-in gun parameters of the system make it adaptable to all kinds of mainstream spraying guns. Due to the "platform" manufacturing concept, UC1000 system can accommodate more work options through future soft and hardware packages and can continue its advanced technology through continuous upgrades.

3.2 Features of UC1000H HVOF System:

1)Consists of HVOF gun, control module, gas+fuel module, power feeder and chiller.

2)User friendly touch screen MMI with graphic display of all core system and peripheral components.

3)Built by top-level components.

4)Adopt hi-precision mass flowmeters for gases and fuel regulation, realize high precision of process control with digital parameters output.

5)PC+PLC can store up to 1,000 process recipes, including integrated robot program with external axes setups.

6)Can set low power mode (Idle Mode) so that operators can perform short tasks within the spray booth while the spraying process can be paused.

7)By upgrading software and configuring new components, more thermal spray process controls can be added to the control system for versatile process operation.

8)Data logging and trending available.

9)Remote diagnostics supported.

10)By cooperating with the gun exchanging function of the integrated robot to realize seamless continuous operation of multi-process spraying, especially for the tasks of bondcoat followed by topcoat.

11)Best compatible with Hillmat Coating's automation line.

UC800H Kerosene HVOF System

4.1 Brief Description

The UC800 control platform is designed for durability, stability, and affordability, while still maintaining advancedness. In addition to the UC800H control platform for HVOF spray process, the UC800F flame spray and UC800P air plasma spray systems are also built based on the UC800 system control concept.

4.2 Features of UC800H Kerosene HVOF Spray System:

1)Consists of kerosene HVOF, control module, gas+fuel module, powder feeder and chiller.
2)User friendly touch screen MMI with graphic display of all core system and peripheral components.
3)Only use proven and reliable spare parts that have been tested for long-time application.
4)Adopt hi-precision mass flowmeters for gases and fuel regulation, realize high precision of process control with digital parameters output.
5)PLC controller can store up to 100 process recipes, including integrated robot program with external axes setups.

5.1 Brief Description

The L'Arc-380 arc spray system from Hillmat Coatings is the perfect choice for power plants' boiler tubes and large area anti-corrosion spraying applications. L'Arc-380 is designed to provide reliable and robust performance in harsh working conditions and is suitable for long time and heavy-duty operation. With its 380 Amp current, it is capable of efficiently spraying and effectively melting various wire materials. The system also features a hand-held gun which is lightweight and durable, and a robotic version gun is available upon request.

L'Arc-380 arc spray system

5.2 Features

5.2.1 Power Supply

1)Heavy duty rectifier, can work long time under DC40V 380A at 100% duty cycle.
2)Higher open-circuit voltage meets the need of heavy-duty operation on site.
3)Dust proof and heat insulation guarantees long time operation within harsh and dusty condition.
4)Process control in real time by PLC.
5)Wheels with stopers.

5.2.2 Wire Drive Unit

1)20 kg in weight.
2)Enclosed plastic wire drum holders protect the wire from pollution.
3)Push feeding.
4)DC motor, feeding with stability.
5)Wire driven by synchronous dual wire feeding with 4 drive roll system on each side, offers steady and constant wire driving of both hard and soft wires.
6)Can be carried into manhole for easier boiler spraying on site application.

5.2.3 Gun

1)1.1kg lightweight handheld gun, machine gun is offered under request.
2)Engineering plastic gun body material prevents from corrosion and clash.
3)Different air cap supplied to satisfy various wires' metallurgy.

5.2.4 Hoses

1)Two power hoses and one control hose from the power supply unit to the wire driving unit, with 1.5-meter standard length. Other length on request.
2)Two wire driving hoses and one air hose from the feeder to the gun, 5 meters standard length. Other length on request.

5.2.5 Others

1)L' Arc-400 combines exceptional performance with compact external design, easy to use, all purpose and high performance price ratio and requires minimal maintenance.
2)Electric current, voltage, as well as compressed air pressure can be easily read via the LED meter on the front panel.
3)Front panel knobs are lighted underneath, very useful for operations under dark or night environment.
4)Can spray different diameter wire by changing the gun' s hardware.
5)By integration with peripheral units realize automatic operation.
6)Atomizing air pressure can be adjusted for different melting effect.
Wide adjustable bandwidth, suitable for different wire materials including cored wire.

5.3 Applications

1)Boiler Tubes of power plant
2)Fan blades and turbine
3)Pulp and paper
4)Wire-drawing pulley and roll
5)Bond coats for other coatings
6)Hard, lubricious coatings for bearing surfaces
7)Corrosion resistant coating of steel structure
8)Restoration of mis-machined component dimension

UC1000FW Flame Wire Spray System

UC1000FP Powder Flame Spray System

UC1000F Flame Spray System

6.1 Brief Description

UC1000F is a high precision, high reliability and high repeatability full automation flame spraying system designed and built based on Hillmat Coating's advanced UC1000 control platform. Hillmat Coatings LLC provides UC1000FP Powder Flame Spray System and UC1000FW Flame Wire Spray System by adopting today's mainstream flame spraying torches. UC1000F is most compatible with the automated flame spraying production line required for some large-scale and continuous production. All connections between the system components are made by plug-in type to ensure the accuracy and convenience of installation.

UDS-200 Hi-frequency Detonation Spray System

UDS-200, Universal Cumulative Hi-frequency Detonation Spray System, marketed by Hillmat Coatings LLC is a novel version of Detonation Spray technique with creative features which largely improve the deposition efficiency, handling flexibility and coating quality, provides new solution choice for the thermal spray industry.

7.1 Features and Benefits

1)Materials Diversity:
can spray different types of materials, including Metal, Alloy, Carbides, Cermet, MCrAlY and etc.

2)Cumulative Pressure:
two-chamber design of UDS detonation gun creates cumulative flame pressure as a result upgrade the propelling force and accelerate the particle velocity.

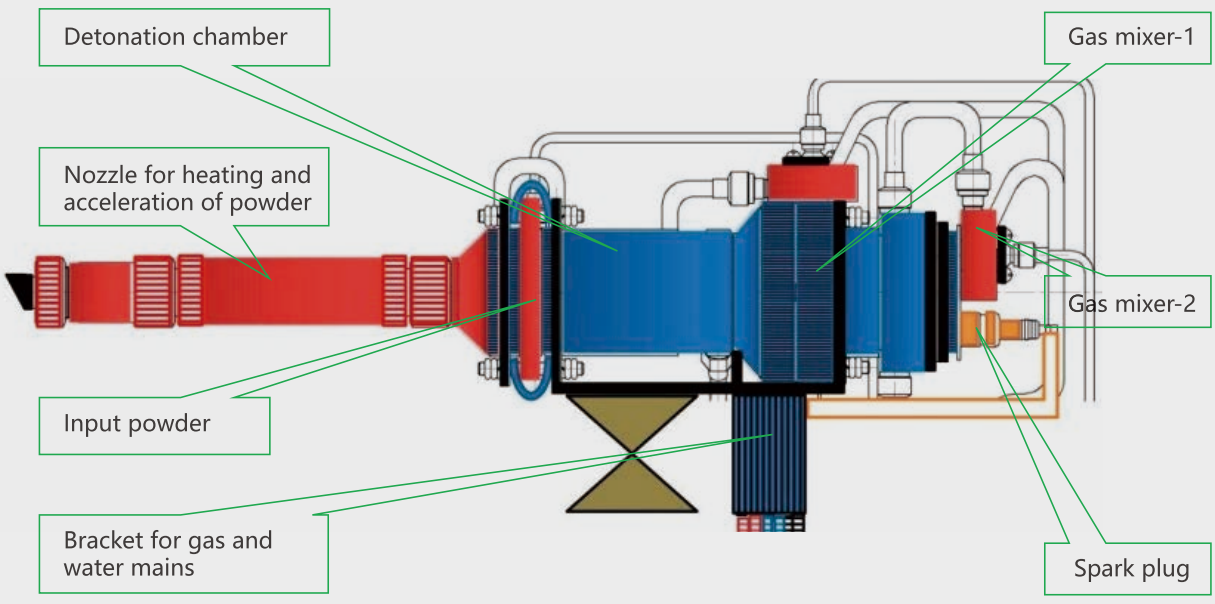
3)Hi-frequency:
compare with traditional D-Gun which detonates 2-10 times per second, UDS-200 can reach 20 to 50 times per second. Production efficiency largely increased.

4)Superior Coating:
very dense and strong coating with high bonding strength and low porosity achieved with workable thickness is from 0.02mm to 2mm.

5)Economy:
compare with the known thermal spray processes, UDS-200 saves powder and gas.

6)Unique Characteristics:
creates intermetallic compounds in the coating when spraying Cermet coating and secondary carbides when spraying Cr3C2-NiCr and shows advantage on spraying nanomaterials.

7.2 UDS-200 detonation Gun Sketch



UDS-200 applies UC1000, the most advanced thermal spray control platform developed by Hillmat Coatings as its operation system. Powerful PLC that Hillmat Coatings used in its UC1000' s Control Module guarantees the outstanding performance and reliability of UDS-200. The mass flow meters in UC1000' s Gas Module precisely control the gas flow and monitor the process under close-loop condition. User friendly touch screen MMI allows easy input and storage of all coating parameters, as well as monitor the entire spray process.

7.3 The complete UDS-200 core system consists of the following components:

1)UDS-200 Detonation Gun
2)UC1000 Control Module
3)UC1000 Gas Module
4)UP80 Powder Feeder
5)Jam (junction and monitoring) Box
6)UCh-15 Chiller

Peripherals of Thermal Spray Installations

The peripherals of thermal spray system usually refer to turntable, lathe, spray booth, dust collector, manipulator and so on. The accuracy, stability, design, layout and integration of peripheral components play important roles in the quality and efficiency of thermal spray works.

8.1 Linear Manipulator (U2lin) and robot

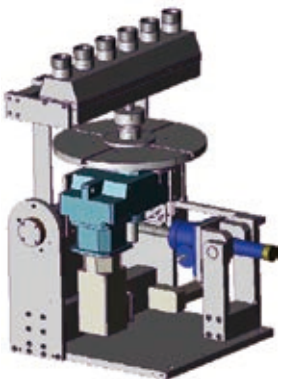
Gun Manipulator is an electrical mechanism for clamping and operating thermal spray guns, usually a 6-axis robot, sometimes also an XY linear motion device (U2lin by Hillmat Coatings). Nowadays, more and more spraying workshops are choosing 6-axis robot like the brands of ABB, Kuka, Fanuc etc. as the standard gun manipulator, but for the long shaft type parts, linear motion manipulators are commonly used.
Hillmat Coatings provides multi-axis robots and linear motion manipulators that can integrated with turntable, lathe and spraying system. PLC control is adopted to ensure precise walking speed and thus ensure uniform coating.

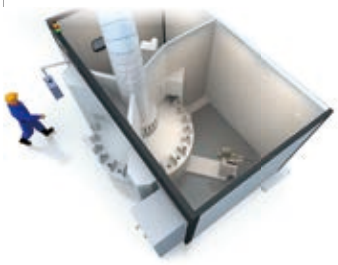
8.2 Turntables

Turntable is one of the most common devices used in thermal spray processes for clamping sprayed parts. It is often used to clamp and rotate ring-shaped and short-cylindrical parts, while cooperate with the robot to complete the surface deposition process. In this process, the rotation speed of the turntable needs to be precise, and the coordination (integration) with the robot and core coating system is also critical to ensure uniform coating thickness.

Item	Model	Features	Drewing
1	**UT-300**	Maximum load of 300 kg, 0-300 rpm, driven by a servo motor. RPM accuracy ≤ ±1° /minute. Table plate cannot be tilted. PLC control is used to set the speed RPM through the touch screen and displayed in real time. Switches, E-stop button on the control panel, I/O interfaces with thermal spray core system.	
2	**UT-300R**	Maximum load of 300 kg, 0-300 rpm, driven by a servo motor. RPM accuracy ≤ ±1° /minute. Table plate can be 0-90 degree tilted. PLC control is used to set the speed RPM and tilting degree through the touch screen and displayed in real time. Switches, E-stop button on the control panel, I/O interfaces with thermal spray core system.	
3	**UT-300 Auto**	Maximum load of 300 kg, 0-300 rpm, driven by a servo motor. Indexing and CW/CCW rotation available. RPM accuracy ≤ ±1° /minute. Table plate can be 0-90 degree tilted. PLC control is used to set the speed RPM and tilting degree which work as external axes of 6 axes robot through common teach pendant screen and displayed in real time with robot data to realize 8 axes coordination. Switches, E-stop button on the robot control panel, I/O interfaces with thermal spray core system. Need to purchase with robot as a pack.	
4	**UT-500**	Maximum load of 500 kg, 0-300 rpm, driven by a servo motor. RPM accuracy ≤ ±1° /minute. Table plate cannot be tilted. PLC control is used to set the speed RPM through the touch screen and displayed in real time. Switches, E-stop button on the control panel, I/O interfaces with thermal spray core system.	

Item	Model	Features	Drewing
5	**UT-500R**	Maximum load of 500 kg, 0-300 rpm, driven by a servo motor. RPM accuracy ≤ ±1° /minute. Table plate can be 0-90 degree tilted. PLC control is used to set the speed RPM and tilting degree through the touch screen and displayed in real time. Switches, E-stop button on the control panel, I/O interfaces with thermal spray core system.	
6	**UT-500 Auto**	Maximum load of 300 kg, 0-300 rpm, driven by a servo motor. Indexing and CW/CCW rotation available. RPM accuracy ≤ ±1° /minute. Table plate can be 0-90 degree tilted. PLC control is used to set the speed RPM and tilting degree which work as external axes of 6 axes robot through common teach pendant screen and displayed in real time with robot data to realize 8 axes coordination. Switches, E-stop button on the robot control panel, I/O interfaces with thermal spray core system. Need to purchase with robot as a pack.	
7	**UT-1000**	Maximum load of 1000kg, 6-90 rpm, driven by a VFD. RPM accuracy ≤ ±5%. Table plate cannot be tilted. Speed RPM set through a control box and displayed in real time. Switches, E-stop button on the control box, I/O interfaces with thermal spray core system.	
8	**UT-5T**	Maximum load of 5t, 6-60 rpm, driven by a VFD. RPM accuracy ≤ ±5%. Table plate cannot be tilted. Speed RPM set through a control box and displayed in real time. Switches, E-stop button on the control box, I/O interfaces with thermal spray core system.	
9	**UT-10T**	Maximum load of 10t, 3-30 rpm, driven by a VFD. RPM accuracy ≤ ±5%. Table plate cannot be tilted. Speed RPM set through a control box and displayed in real time. Switches, E-stop button on the control box, I/O interfaces with thermal spray core system.	
10	**UT-20T**	Maximum load of 20t, 3-15 rpm, driven by a VFD. RPM accuracy ≤ ±5%. Table plate cannot be tilted. Speed RPM set through a control box and displayed in real time. Switches, E-stop button on the control box, I/O interfaces with thermal spray core system.	

Item	Model	Features	Drewing
11	**UT-RT**	This two-station rotator features two small turntables located at each end of the device, which can be used to hold a component to rotate during spraying while on the opposite end is in loading and unloading. After spraying ends, the device rotates 180 degrees to enable continuous operation. PLC control is used to set the speed RPM and process steps through the touch screen and displayed in real time. Switches, E-stop button on the control panel, I/O interfaces with thermal spray core system. Need to purchase with robot as a pack.	
12	**UT-300-6L**	A row of small turntables (6 to 10 according to customer requirement) driven by the gearbox installed on the turntable' s face plate. The RPM of the small turntable is the same, and each can hold a part (≤ 20kg) to rotate while robot holding the gun to spray one by one. The row of small turntables on the tabletop can be disassembled, and the UT-300 turntable can be used individually. The speed can be set through the touch screen, and the control panel is equipped with switches and W-stop buttons, with a safety I/O interface with the thermal spray core system. Needs to be ordered with robot as a package.	
13	**UT-6SR**	Built on a UT-300R turntable, six smaller turntables that clamp six parts, each up to 20 kg, are evenly distributed around the circle of table plate. The face plate of the large turntable can rotate indexing or CW/CCW to locate the small turntable one by one to the spraying position, where robot holds the gun to fulfill the spraying job continuously. The small turntable mechanism at the circle edge of UT300 table plate can be disassembled, and then UT-300 can work as an individual turntable. The RPM speed can be set on the touchscreen of controller, and the control panel is equipped with switches and E-stop button. I/O interfaces with thermal spray core system. Need to purchase with robot as a pack.	

Item	Model	Features	Drewing
14	**UT-24S**	This system is a 24-spindle carousel mechanism, with 24 small turning spindles evenly distributed around the circle edge of a large turntable’ s faceplate. Each spindle can hold up to 10kg of the same part. The large tabletop can rotate one or three small spindles indexing at a time to the sprayed address while robot holding the gun(s) to fulfill the spraying. After integration with the automation line, this system can realize continuous sandblasting, spraying, and cooling for mass production. Needs to order with entire automation line as a pack.	
15	**Rota-100**	This vertical rotating device is designed for parts such as gas turbines transition piece and combustion chamber that need to be ID sprayed. It can embrace a cylindrical part of max 150kg and rotate it while an ID gun spraying its internal surface so through-wind can blow the dust and heat out of the component cabin, thus improve the quality of the ID coating and protect the ID gun from overheated. The equipment is driven by a servo motor and controlled by PLC. The RPM speed can be set on the touchscreen of controller, and the control panel is equipped with switches and E-stop button. I/O interfaces with thermal spray core system. Need to purchase with robot as a pack.	

8.3 Lathe

If you are spraying shafts, rollers, rods, tubes or a row of ring components or ball valves, then you need a lathe to complete the spraying process. For thermal spray application, the lathe needs to have precise rotation speed (rpm) and can be adjusted according to fit the part’ s diameter and length. Generally, the smaller the diameter of the part, the higher the required rpm.

Hillmat Coatings offers a variety of lathe types, always having one to suit your application. In addition to different speeds of rpm, Hillmat Coating's lathe has been designed different models for different weight loads of parts. The tailstock can be electrically moved forward and backward to meet different length requirements of the parts.

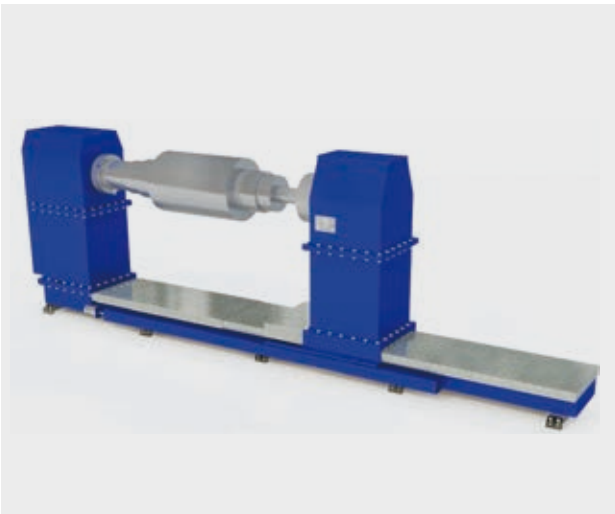
8.3.1 UL1t

Lathe model	UL1t
Max load	1,000kg
Rotation speed	0-300rpm (higher upon request)
Rotation speed fluctuation rate	0.002%-0.5%
Rotation drive	AC brushless servo motor
Length of clamping workpiece	2,000mm-5,000mm
Center height	100 – 800mm
Tailstock moving drive device	VFD motor or manual
Workpiece thermal expansion device	Optional

8.3.2 UL3t

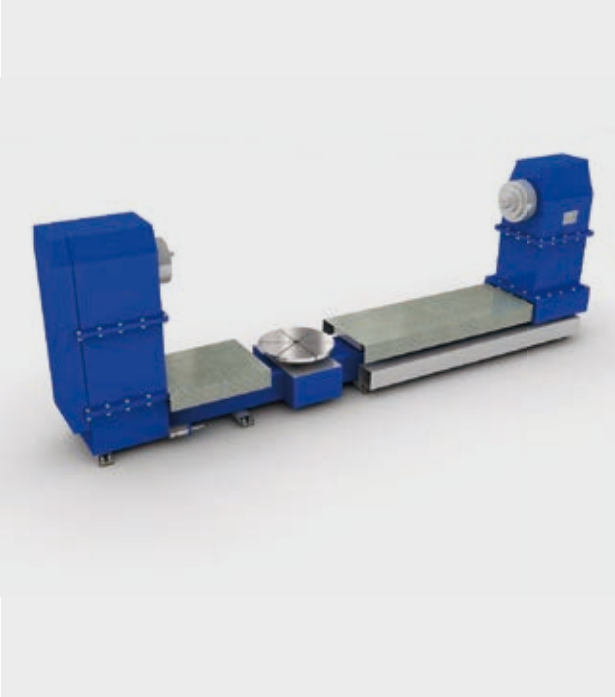
Lathe model	UL3t
Max load	1,000kg
Rotation speed	0-300rpm (higher upon request)
Rotation speed fluctuation rate	0.002%-0.5%
Rotation drive	AC brushless servo motor
Length of clamping workpiece	2,000mm-5,000mm
Center height	100 – 800mm
Tailstock moving drive device	VFD motor
Workpiece thermal expansion device	Optional

8.3.3 UL5t



Lathe model	UL5t
Max load	1,000kg
Rotation speed	0-300rpm (higher upon request)
Rotation speed fluctuation rate	0.002%-0.5%
Rotation drive	AC brushless servo motor
Length of clamping workpiece	2,000mm-5,000mm
Center height	100 – 800mm
Tailstock moving drive device	VFD motor
Workpiece thermal expansion device	Optional

8.3.4 UL6ta-1



Lathe model	UL6ta-1 (turntable in bed)
Max load	5,000kg (higher upon request)
Rotation speed	0-300rpm (higher upon request)
Rotation speed fluctuation rate	0.002%-0.5%
Rotation drive	AC brushless servo motor
Length of clamping workpiece	3,000 – 10,000mm
Center height	1000 – 800mm
Tailstock moving drive device	VFD motor
Workpiece thermal expansion device	Optional
Turntable loading	300kg
Turntable rotation speed	300rpm max
Turntable position	500mm to the headstock of lathe
Turntable movability	Cannot be moved

8.3.5 UL6ta-2

Lathe model	UL6ta-2 (turntable on bed)
Max load	5,000kg (higher upon request)
Rotation speed	0-300rpm (higher upon request)
Rotation speed fluctuation rate	0.002%-0.5%
Rotation Drive	AC brushless servo motor
Length of clamping workpiece	3,000 – 10,000mm
Center height	300 – 800mm
Tailstock moving drive device	VFD motor
Workpiece thermal expansion device	Optional
Turntable loading	300kg
Turntable rotation speed	300rpm max
Turntable position	Can be moved and taken off

8.3.6 Lathe + Gun Manipulator Solution

When using Lathe for thermal spray use, full consideration should be given to the design of dust collection. In traditional design, the long length of parts makes the air intake area larger, which is not conducive to the efficiency of dust collection. If the dust-intake (hood) area is designed too large for fitting the longer parts, it is inevitable to increase the total air volume and motor power, which making the cost high. Hillmat Coatings applies a novel dust in-take design for lathe working by synchronizing the suction hood movement with the spraying gun to ensure strong vacuum power around spraying area without having to increase the fan power and airflow. This air vacuum design for lathe spraying can ensure that dust is effectively removed during the spraying process, but it' s better to be designed and built in integration with the gun manipulator (robot on traverse solution by Hillmat Coatings as RoboGoLa or manipulator solution by Hillmet as U2linx-L), spray booth and dust collector of Hillmat Coatings and supplied as a package. See below pictures for reference.

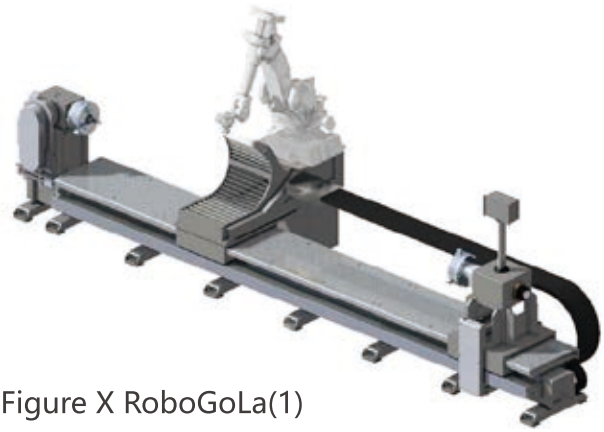


Figure X RoboGoLa(1)

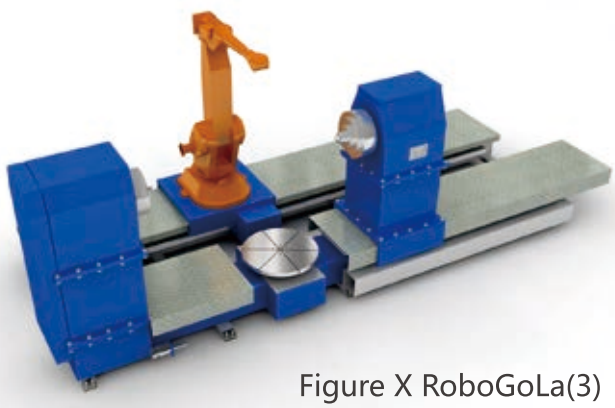


Figure X RoboGoLa(3)

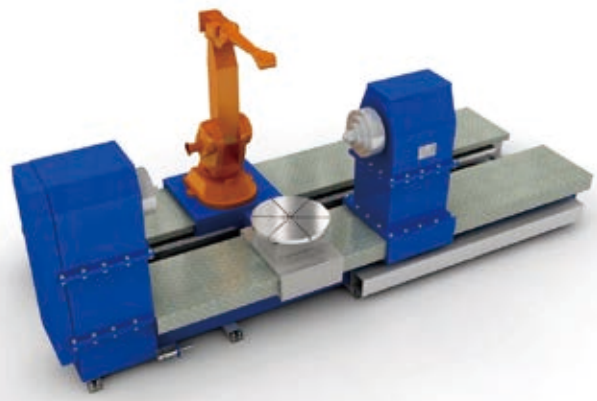


Figure X RoboGoLa(2)

Figure X U2linx-L

8.4 Booth

The high decibel noise of thermal spray in work makes the Acoustics Booth an indispensable peripheral device for thermal spraying operations in the wokshop. In addition to ensuring the noise is reduced to a certain level, reasonable ventilation design is required to ensure that dust produced during the spraying process is effectively collected by dust collector. Meanwhile, the reasonable layout of the spraying booth will have different results on the convenience of the actual spraying operation. Drawing on decades of experience, Hillmat Coatings is committed to providing customers with the best spray booth solutions based on their individual needs.

8.4.1 UB20 Booth

For small parts spraying, a 4 meter * 5 meter, or 5 meter * 6 meter booth is the standard size. The location of windows is arranged according to the user's onsite floor plan. We guarantee enough brightness, sound insulation effect and reasonable ventilation layout. Hillmat Coatings Company can provide manual double open doors, or automatic door. All booths are carefully reviewed by CAD and 3D drawings with customers before production.

8.4.2 UB50a Booth

For parts like longer rollers and shafts to be sprayed, a longer spray booth like 5 meter * 8 meter or even longer is required, and the internal ventilation structure should be more particular. The location of windows is arranged according to the user's onsite floor plan. We guarantee enough brightness and sound insulation effect. The spray booth door is large, and use L shape solution, so it is electrical motioned. All booths are carefully reviewed by CAD and 3D drawings with customers before production.

8.5 Dust Collector

Dust collectors are used to collect dust produced during the spraying process. The key to successful collection efficiency lies in the overall design of the spray booth and dust collector, as well as the selection of some key components. However, experience tells us that many small details also have an irreplaceable impact on the dust removal effect, as well as the spraying effect and safety. Hillmat Coating's mission is to create the best dust collection system with optimal performance and safety for customers.

8.5.1 Cartridge Dust Collector

Hillmat Coating's Cartridge Dust Collectors are tailor built for thermal spray applications. The dust collector works by drawing dust particles into its housing, where they are trapped on the surface of the filter element due to its nanostructure. Compressed air is then used to blow the dust off the filter at regular intervals and into a bottom powder storage bucket for collection and disposal. The material types of filter elements can be selected in order to achieve better cost advantage while ensuring basic filtration effect. Four product modes are available from Hillmat Coatings including 12 filters, 24 filters, 36 filters and 48 filters collectors.

Hillmat Coatings dust collectors are equipped with duct airspeed meter to sense whether the suction airspeed is normal, and the sensor is connected to the spraying system to ensure that the system runs with normal dust removal function. In addition, the Hillmat Coatings dust collectors are equipped with safety devices such as explosion-proof valves and spark catchers.

8.5.2 Water Curtain Dust Collector

For cold spray and metal material thermal spray coating cells, you need to use a water curtain dust collector. This type of dust collector can eliminate the risk of explosion caused by the diffusion of metal dust from your spray job. Hillmat Coatings can customize a water curtain dust collector with a strong air intake that fits your spraying booth size and layout.

Type	Spray Booth
External Size	2.5*1.2*2m/3*1.2*2m/4*1.2*2m
Model number	UWC-2.5
	UWC-3
	UWC-4
Lighting System	LED
Power	2.2 – 4kW
Voltage	380/460V

Automation Solutions

The working environment of thermal spray is usually harsh, filled with noise, dust, high temperature and harmful light, so it is necessary to adopt some automated solutions to complete the spraying process. The coordination of robot and turntable, as well as robot and lathe, are the most used automation methods in today's job shop operation. In addition, in order to meet the demand for large-scale spraying task, some tailor designed and built automated production lines are applied. These automation solutions not only improve the efficiency of spraying, but also ensure the uniformity of the coating.

Hillmat Coatings not only provides core and peripheral systems for thermal spray, but also particularly emphasize our ability to build automated spraying systems, including automation lines, which benefits from our being a professional thermal spray company by integrating systems production, coating service and process development under one roof.

9.1 Linear Manipulator (U2lin) and Turntable Solution

If a two-axis linear torch manipulator (U2lin) can be used to spray a square or round plane, then a turntable (UT300) can be used to coordinate with U2lin to spray a circular or a ring part, which can save time, cost less, and able to spray plane, circular and even 3D parts. Please refer to the picture below:

For spraying a long shaft-type component, the solution of U2linx two-axis linear torch manipulator integrated with a lathe by Hillmat Coatings can be used. Please refer to the picture below:

Product	Axes	Max length	Control	Application
U2lin	2 axes *	0-2m	PLC	ring, square part spray, 3D parts with turntable
U2linx	2 axes *	2-5m**	PLC	long shaft, roller

* 3rd axis available on request

** longer spraying range available on request

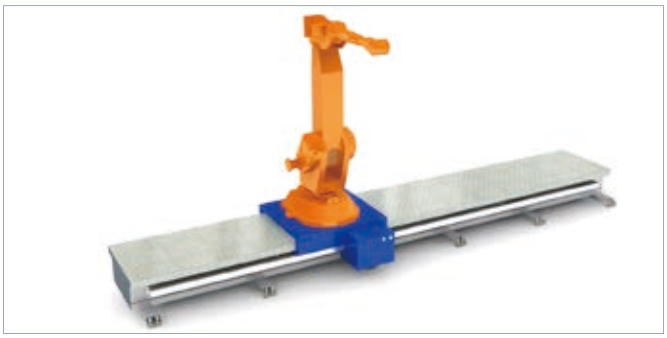
9.2 Robot and External Axes Solutions

6 axes robot and turntable combination is a common solution for spraying parts like rings or short cylindrical parts. The turntable holds the parts rotating at appointed rpm speed, while the robot holds the spray gun to complete the coating deposition on the part' s surface. The faceplate of the turntable can be tilted to different angles in order to coordinate with the robot's movements and provide a consistent and even coating for the parts with complex profile. Besides, the turntable can rotate to a specific position or indexingly to enable the robot apply coating to individual components in sequence. Usually, the rotating and tilting motions of the turntable can serve as the external axes of a six-axis robot, to complete the spraying process of complex surface parts through coordinated action. For larger part, the robot can traverse on a rail which as 3rd external axis of robot and expanding its arm span over a larger spraying area. **As the external axes of a robot, Hillmat Coatings can provide below solutions of automations:**

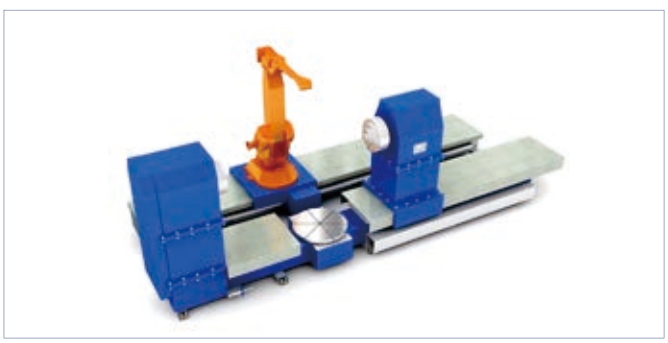
9.2.1 Robex-2 (work with turntable)

9.2.2 Robex-3 (work with turntable on traverse rail)

9.2.3 RoboGo (Robot on traverse rail)



9.2.4 RoboGoLa (Robot on traverse rail work with lathe)



9.2.5 RoboAir (Suspended Robot on Overhead Rail)

9.2.6 RoboDex (work with indexing rotation turntable with a number of spindles)

9.2.7 RoboCar (work with a carousel turntable for automated production line)

9.3 Gun Rotation Devices

Rotorch Technic developed by UCT China and distributed by Hillmat Coatings can be used for rotating plasma ID guns, arc spray ID guns and some other guns for overlaying coatings on internal surface of cylinder blocks or similar parts. It is specially developed for batch spraying of the inner wall of deeper than 100mm inner bore parts. This device can be mounted on a robotic arm as well as an XY linear traverse manipulator. The minimum inner hole diameter applicable to it is 68mm. The max rotation speed is 600rpm.

9.4 Guns Exchange by Robot

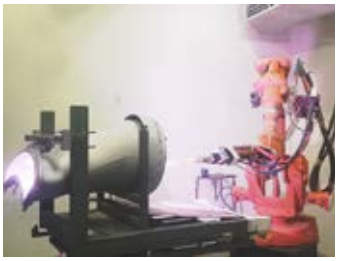
Hillmat Coatings Company has developed a technology called TorchEx for mechanically exchanging spray guns by robot. With Hillmat Coating's TorchEx technique and UC1000's multi-process control system, it enables the seamless application of both bond and top coat spraying in one booth, making it possible to maximize efficiency and productivity when spraying ceramic coating.

RollPlaz RollArc

9.5 Robot Off-line Programming

Hillmat Coating's off-line programming technique developed based on ABB RobotStudio makes it very easy to work out a perfect robot spraying path over the part' s complex profile, like gas turbines' combustion chamber, TPs, and blades...dedicating the coating' s homogeneity.



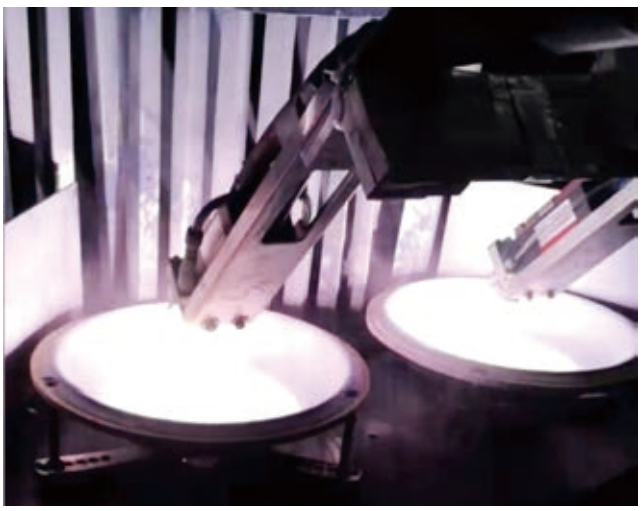



9.6 Automated Production Lines

Hillmat Coatings can provide a complete automated production line and turnkey solution for the following thermal spray applications: synchronizing rings, ball valves, gas turbine TPs and combustion chambers, cookware, anilox rolls, chambers, capacitors, lightning protector insulators, current insulation bearings, hydraulic rods, cylinder rods, TIMs, hydro runners, aircraft surface conductivity, ice melting coating, nickel mesh for hydrogen production machine, sputtering targets, etc.







Calibration and after sale services

Hillmat Coatings offers calibration services for thermal spray systems all over the world, both for the systems of Hillmat Coatings own brand and for other brands.
We highly value after-sales service, as it represents our commitment and responsibility to our customers. Please contact our system sales division or send an email to info@Hillmat Coatings.com. Our sales and after-sales personnel will contact you promptly.

Spare parts and consumables

At Hillmat Coatings, we are dedicated to keeping our customers' operations running smoothly by providing timely service and a comprehensive selection of spare parts and consumables. Customers can easily order parts from us based on the parts list provided in the system Manual or contact us at info@Hillmat Coatings.com for assistance.

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