GLOBAL
SURFACE
TECHNOLOGIES

THERMAL SPRAY SYSTEMS

BLASTING SYSTEMS

About company

Global surface technologies was founded by former experienced team from world known surface solutions market leaders. We are starting our journey with intention to provide our customers with better engineered “turn key” surface treatment and thermal spray solutions.

One of our core competencies is software development for our robotics engineered systems. It gives us a capability to provide our customers well designed engineered systems for reasonable price. We help our customers think on production process and return on investment.

Our vision is to be a recognized novel leader in innovative, sustainable, engineered, and customer-focused solutions for performance-critical applications in the oil and gas, power generation, aerospace, automotive and other industries (Thermal spray equipment, welding and laser cladding equipment, metal treatment equipment).

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Content

THERMAL SPRAY SYSTEMS

Thermal spray technology are coating processes in which melted or heated materials are sprayed onto a surface. The feedstock or powder are heated by electrical plasma/arc or combustion flame. This technological process forming a protective or functional layer to enhance wear resistance, corrosion protection, thermal insulation, or to repair components.

Advantages of the technology

Versatility

Ability to work with metals, ceramics, composites, and carbides

Precision

Controlled coating thickness (from 50 µm up to millimeters) and minimal substrate deformation.

Cost-effectiveness

Refurbishment of parts instead of replacement, reducing production costs

Environmental friendliness

Emission filtration and noise reduction up to 80 dB with sound proof spray booth

Plasma Spray Systems

MP 3000 Atmospheric Plasma Spray System

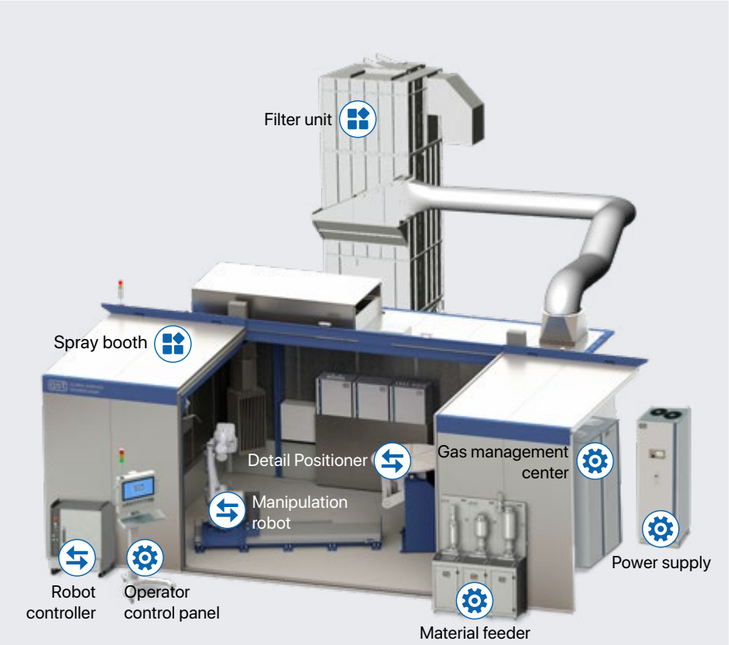
System consists of main spray coating equipment, manipulators for positioning workpiece and plasma gun during the spraying process, as well as peripheral components to ensure comfortable and safe working conditions.

Complete Spray System

Main Equipment

- Process control center: Control cabinet + HMI operator panel
- Gas management center
- Plasma power source
- Powder feeder
- Refrigeration unit
- Plasma guns

The main equipment is required to control the spraying process parameters. When selecting components of main equipment, it is necessary to take into account the various characteristics of these components, the sprayed material properties, the required characteristics of resulting coating, as well as the workpiece geometry.



Manipulators

- Positioners
- Manipulation robots

Manipulators are required to move and position the plasma gun and workpiece during the spraying process. When selecting manipulators, it is necessary to take into account the workpiece geometry. Reasonably selected characteristics of manipulators ensure high process performance and high-quality resulting coatings.

Peripheral Components

- Sound proof chamber
- Exhaust filter unit

Plasma spraying process produces large amounts of dust and plasma jet-generated heat, and is also characterized by high noise levels (115 dB). Sound proof chambers and exhaust filter units are used to ensure an acceptable noise level in the workplace, as well as to remove hot and dusty air from the work area.

MP 3000 Process Control Center

MP3000 Versatile platform for thermal spraying

This system is a new generation complete thermal spraying unit. It integrates perfectly into modern automated or robotic spray coating systems and provides unchallenged process control, flexibility and highly repeatable spray performance.

Single platform for 4 types of spraying processes: plasma spraying, HVOF spraying, flame spraying and electric arc spraying. Modular architecture allows the system to be configured in accordance with customer's requirements, while integrating multiple spray technologies into a single unit.

Software for Thermal Spraying

GST MCoat™:

This professional-grade software provides control of multiple spraying processes on one modular software platform. With a reliable, versatile and unrivaled process control system, productivity can be significantly increased.

Main Functions of Software

- Options for saving and recalling control programs
- Servicing planning and control options
- Monitoring and control of external modules, such as a robot, exhaust filter unit (EFU), refrigeration unit, etc.
- On-line monitoring and recording of current process parameters
- Resource consumption per piece/total resource consumption accounting
- Multi-level access control system with "Operator", "Process Engineer" and "Service Engineer" access levels

Powder Feeders: Flexibility and Intelligent Control

A powder feeder is a critical component of thermal spray systems, designed to deliver a measured and consistent flow of powder material to the spray zone. It ensures a uniform powder flow into the plasma torch, which directly impacts the quality and uniformity of the resulting protective coating.

Scalability and multitasking

- Up to 4 powder lines with the ability to: operate independently for different processes, use simultaneously for complex coatings
- Full control via the MP3000 control system interface: all control parameters are integrated in the MP3000 control system
- Versatility for any process: Flames Spray, APS, HVOF, Laser Cladding

Applicable Plasma Guns

Machine can operate with one or more plasma guns depending on current task. Control system stores preset operating parameters for each plasma gun, which helps prevent its premature failure due to improper operation.

TP210 Plasma Gun

Specialized plasma gun with multi-section anode, ensuring the implementation of cascade arc technology. Provides high productivity and process stability.

F4XL/F490XL Plasma Gun

The most widely used plasma gun in the world, suitable for most applications involving plasma spraying. Available in two spray angle versions: 180° and 90°.

SG100 Plasma Gun

This plasma gun provides high quality coating. Can operate at power up to 80 kW. Plasma formation occurs inside the plasma gun, which ensures more efficient heat transfer.

Plasma Spray Systems

Vacuum Plasma Spraying System VPS 3000

The vacuum plasma spraying (VPS) system is designed for applying functional coatings to the surface of parts in a controlled argon atmosphere. This equipment ensures high adhesion, minimal porosity, and superior coating quality, making it indispensable in the aerospace, medical, energy, and automotive industries.

VPS works by injecting metal or ceramic powders into a hot gas plasma, which melts the powders. These molten droplets are then projected onto a substrate to form a coating. During the coating process, the VPS spray chamber is filled with an inert gas and maintained at low pressure, ensuring no oxidation takes place.

General Specifications of VPS 3000

Vacuum Chamber

- Material: Stainless Steel
- Volume: 6 m^3 (other volumes optional available)

Vacuum Pumps

- Provides vacuum up to 10-3 mbar

Industrial Robot

- 6-Axis Industrial Robot
- Positioning Accuracy: ±0.05 mm

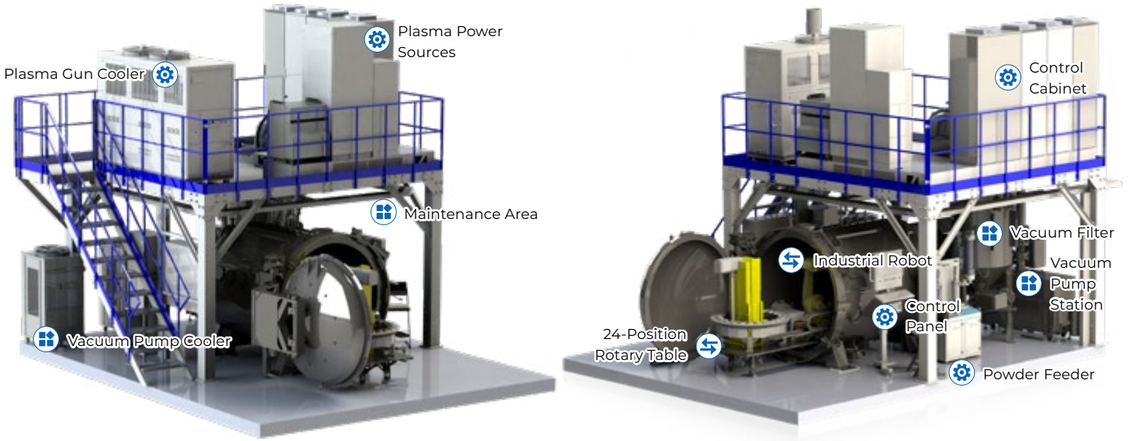
Control System

- PLC controlled
- Interface: 22″ Touchscreen

Positioner

- Number of Part Positions: 24
- Positioning Accuracy: ±0.1°

VPS 3000 System Components

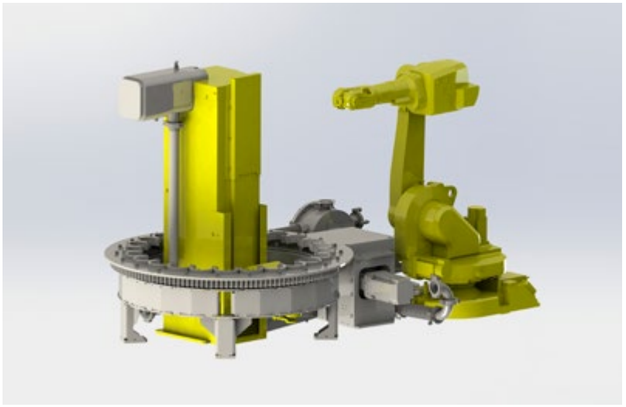


Spraying Process Equipment

Manipulators and Positioners

Auxiliary Equipment

Industrial robot integrated with a 24-position rotary table



A 6-axis robot with an integrated multi-position table ensures continuous part processing. Controlled by a PLC system, the robot performs positioning with high-precision repeatability up to ±0.05 mm.

The table's 24 loading stations allow for the simultaneous clamping, processing, and unloading of parts, significantly increasing the productivity of the spraying process.

Key Features

- Synchronization: the robot and table are controlled by a single program, minimizing downtime
- Productivity: 24 stations enable high-volume processing (up to 120 parts/hour)
- Flexibility: quickly reconfigures for different types of workpieces (from microimplants to large industrial components)
- Functionality: the table can be customized to meet customer needs

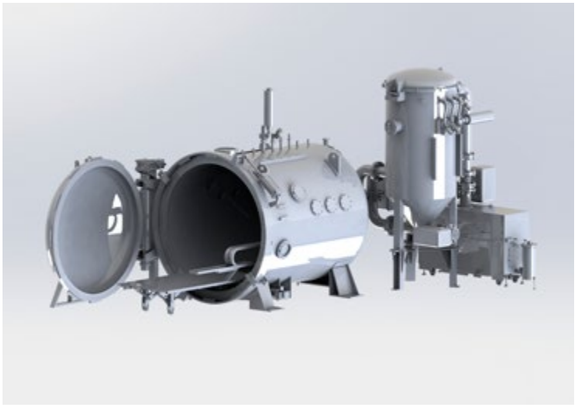
Robot Specifications

- Type: 6-axis robot with servo drives
- Load Capacity: 10 kg (maximum manipulator hand load)
- Reach: 1450 mm
- Positioning Accuracy: ±0.05 mm (repeatability)
- Movement speed:
  - Maximum linear speed: 2.2 m/s
  - Angular velocity of axis 1 (base): 180°/s
- Protection rating: IP67 (dust- and moisture-proof, resistant to aggressive environments)
- Vacuum compatibility: adapted for operation in dynamic vacuum conditions (up to 10^{-3} mbar)

Main technical specifications of the multi-position table:

- Number of positions: 24 stations (uniformly distributed around the circumference)
- Load capacity: maximum load per station: 30 kg; total load: 1200 kg
- Positioning accuracy: ±0.1°
- Rotation speed:
  - Adjustable: 2–300 rpm
  - Position change time: 2–5 sec (depending on the angle)
- Drive:
  - Servo motor with direct drive
  - Torque: 250 Nm
- Materials: Stainless steel (vacuum-compatible)
- Vacuum compatibility: Adapted for operation in dynamic vacuum conditions (up to 10^{-3} mbar)

Vacuum chamber for vacuum plasma spraying



The stainless steel chamber ensures operation in a dynamic vacuum (up to 10^{-3} mbar). Equipped with a liquid cooling system and compatible with robotic manipulators. Ideal for depositing coatings without oxidation, with high adhesion and process cleanliness.

Key features:

- Material: corrosion-resistant steel with vacuum seals
- Integration: ports for sensors, plasma torch, robot
- Reliability: service life of at least 50,000 cycles
- Dimensions: Ø1800 × 2800 m

Vacuum Plasma Spraying Applications

Vacuum plasma spraying technology opens new horizons for the creation of wear-resistant, thermal barrier, and functional coatings critical in high-tech industries. Based on unique combination of a dynamic vacuum environment, precise parameter control, and robotic automation, the VPS system delivers superior quality and repeatability unattainable with traditional methods.

Why Choose VPS?

Versatility

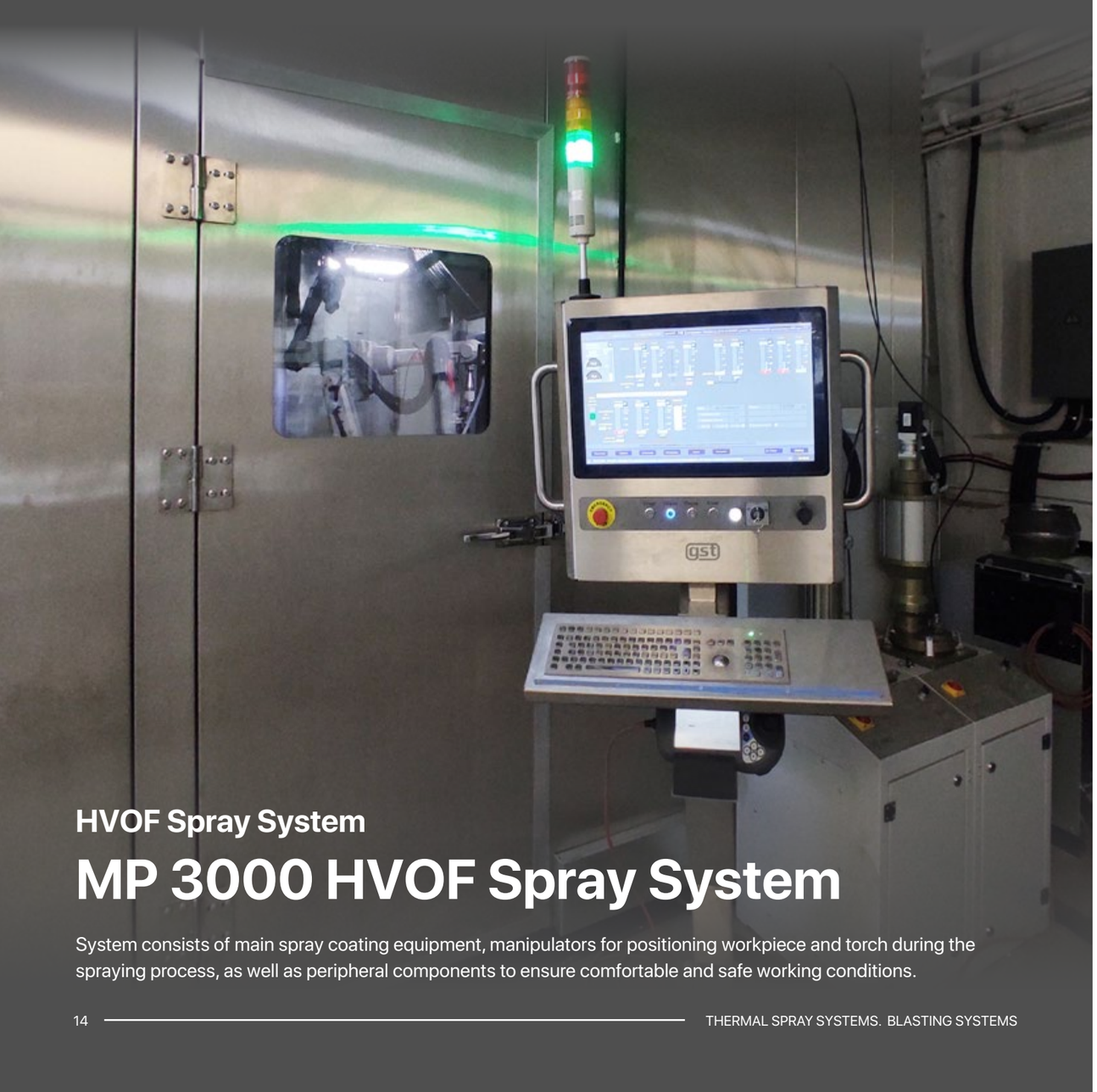
Processing metals, ceramics, composites, and oxidation-sensitive materials in a controlled environment

Precision

Robotized coating deposition starting from microns to millimeters with precise structure control

Environmentally Friendly

The vacuum system eliminates the emission of toxic products into the atmosphere



HVOF Spray System

MP 3000 HVOF Spray System

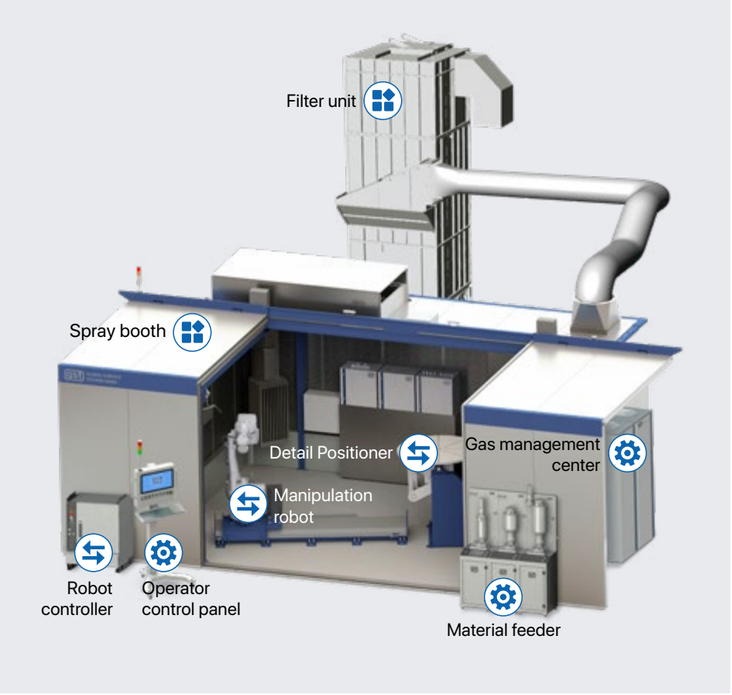
System consists of main spray coating equipment, manipulators for positioning workpiece and torch during the spraying process, as well as peripheral components to ensure comfortable and safe working conditions.

Complete Spray System

Main Equipment

- Process control center: Control cabinet + HMI operator panel
- Gas management center
- Switching module
- Powder feeder
- Refrigeration unit
- Liquid fuel storage tank
- Spray torch

The main equipment is required to control the spraying process parameters. When selecting components of main equipment, it is necessary to take into account the various characteristics of these components, the sprayed material properties, the required characteristics of resulting coating, as well as the workpiece geometry.



Manipulators

- Positioners
- Manipulation robots

Manipulators are required to move and position the torch and workpiece during the spraying process. When selecting manipulators, it is necessary to take into account the workpiece geometry. Reasonably selected characteristics of manipulators ensure high process performance and high-quality resulting coatings.

Peripheral Components

- Sound proof chamber
- Exhaust filter unit

High-velocity oxy-fuel (HVOF) spraying process produces large amounts of dust and flame-generated heat, and is also characterized by high noise levels (130 dB). Sound proof chambers and exhaust filter units are used to ensure an acceptable noise level in the workplace, as well as to remove hot and dusty air from the work area.

MP 3000 Process Control Center

MP3000 Versatile platform for thermal spraying

Single platform for 4 types of spraying processes: plasma spraying, HVOF spraying, flame spraying and electric arc spraying. Modular architecture allows the system to be configured in accordance with customer's requirements, while integrating multiple spray technologies into a single unit.

For more information about the unified spraying platform and software, see page 8.

Applicable Spray Guns

Machine can operate with spray guns using both liquid and gaseous fuel. Control system stores preset operating parameters for each spray gun, which helps prevent its premature failure due to improper operation.

DJ 2600 (HVOF-GF) Spray Gun

DJ2600 HVOF spray gun is designed to produce high-strength coatings from metals, alloys and carbides. Coatings sprayed using DJ2600 are characterized by high density, low oxide content, good microhardness and high adhesion strength. Process uses oxygen, hydrogen and air to create high pressure flame.

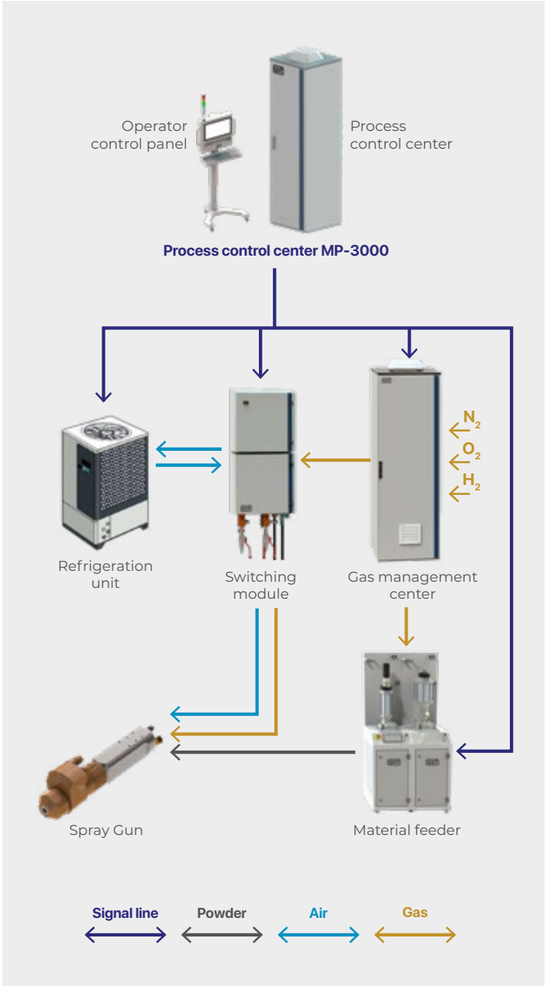
Applicable fuel gases	H_2, O_2
Sprayable powders	metal, carbides

JP5000 (HVOF-LF) Spray Gun

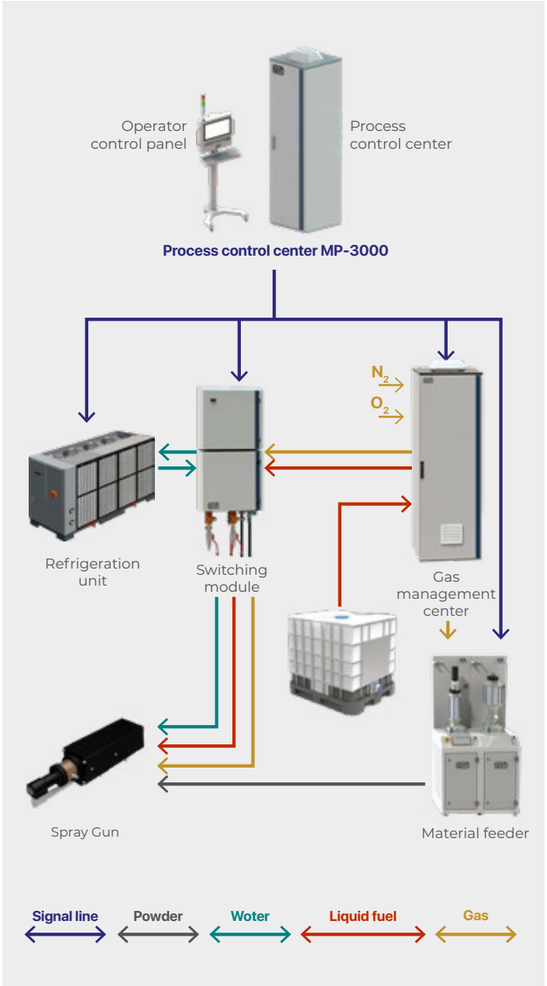
JP5000 HVOF spray gun is designed for liquid-fueled high velocity oxy-fuel thermal spray process. This spray gun has become the most widespread in the world, as it is considered the standard for this type of spraying. Reliable and durable components used in spray gun design ensure long spray cycles and low maintenance requirements. Kerosene mixed with oxygen is used as fuel.

Applicable fuel gases	kerosene, O_2
Sprayable powders	metal, carbides

Main equipment connection scheme for MP-3000 HVOF-GF System



Main equipment connection scheme for MP-3000 HVOF-LF System



Flame spray systems

MP 3000 Flame Spray System

This system is a new generation complete thermal spraying unit. It integrates perfectly into modern automated or robotic spray coating systems and provides unchallenged process control, flexibility and highly repeatable spray performance.

Complete Spray System

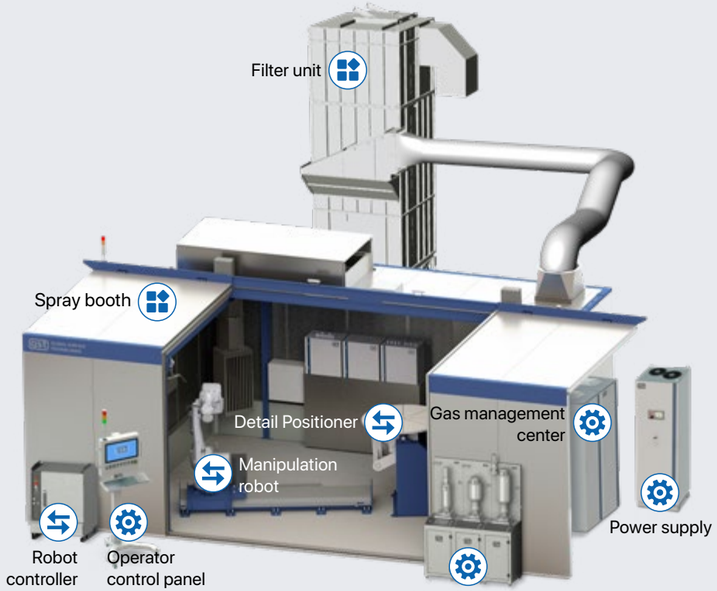
Complete spraying system includes the main coating equipment based on AR 200 machine, as well as all the necessary peripheral components, such as sound proof chamber, industrial robot, positioners, exhaust filter unit, etc. Final configuration of each spray system depends on the specific process task and the customer's requirements.

Our company has extensive experience in design and implementation of ready-made industrial spray systems.

We have our own production facilities, several design bureaus, and automated control system department.

For over 10 years we have been developing complex thermal spray systems, offering our customers the best solutions that meet the latest requirements of modern industrial production.

- Core components
- Handling components
- Peripheral components



MP 3000 Process Control Center

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Single platform for 4 types of spraying processes: plasma spraying, HVOF spraying, flame spraying and electric arc spraying. Modular architecture allows the system to be configured in accordance with customer's requirements, while integrating multiple spray technologies into a single unit.

Software for Thermal Spraying

GST MCoat™:

This professional-grade software provides control of multiple spraying processes on one modular software platform. With a reliable, versatile and unrivaled process control system, productivity can be significantly increased.

Main Functions of Software

- Options for saving and recalling control programs
- Servicing planning and control options
- Monitoring and control of external modules, such as a robot, exhaust filter unit (EFU), refrigeration unit, etc.
- On-line monitoring and recording of current process parameters
- Resource consumption per piece/total resource consumption accounting
- Multi-level access control system with "Operator", "Process Engineer" and "Service Engineer" access levels

Applicable Spray Guns

5K Wire Spray Gun

5K model is a heavy duty wire spray gun designed for large scale production.

Spray Gun Features

- Available for automated systems only
- Used with both hard and soft wires
- Heavy duty system ensures smooth and constant wire feed
- Speed transmitter automatically adjusts the wire feed speed
- High spray rate with low gas consumption

General Characteristics

Acetylene	1.4 bar / 30 Nl/min
Oxygen	4 bar, 100 Nl/min
Compressed air	6 bar, 0.7 m^3/min
Material utilization	up to 0.9
Wire diameter	0.8–4.76 mm
Plasma gun spray rate	60–1400 g/min

Powderjet 86A

General Characteristics

Acetylene	1.4 bar / 35 Nl/min
Oxygen	3 bar, 50 Nl/min
Compressed air	6 bar, 1 m^3/min
Material utilization	up to 0.9
Plasma gun spray rate	20–150 g/min

Positioners

The part positioner is a high-precision device that secures and controls the movement of the sprayed part. Its purpose is to synchronize with the industrial robot to achieve the optimal coating application angle and uniform material distribution.

Our engineers will develop a custom manipulator configuration to suit your needs: rotary tables, tailstock positioners, and unique solutions for multi-station machining in a single cabin.

Our goal is to provide cost-effective and high-speed processing of products with maximum flexibility.

TO THE CONTENT

Advantages:

Flexible protective coating application
Multi-axis rotation eliminates dead spots

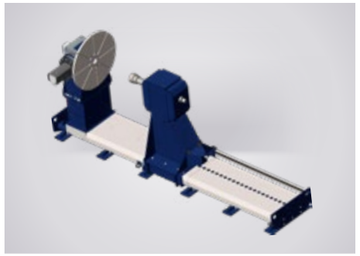
Versatility
Works with parts weighing from 1 kg to 3 tons and up to 4 meters in size

Reduced changeover time
Modular design allows for quick tooling changes

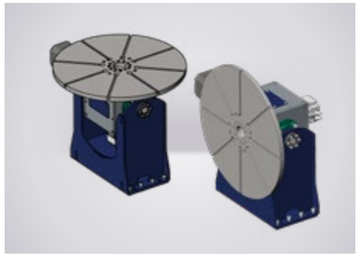
Design and Main Components

- **Rotary Table:** Aluminum or stainless steel faceplate with T-slots for mounting accessories
- **Drives:** Servo motors with gearboxes
- **Feedback System:** Encoders with resolution up to 0.001°
- **Frame:** Welded steel structure with vibration dampers

Standard models of positioners used



- Max. load capacity (center) — 1000 kg
- Number of axes — 2
- Faceplate diameter — 600/800/1200 mm
- Max. rotation speed — 300 rpm
- Positioning accuracy — ±0.1°
- Faceplate tilt angle — 90°...+90°
- Tilt positioning accuracy — ±0.1°
- Number of T-slots — 8
- Maximum component length using a tailstock — 2000 mm
- Tailstock movement — manual with position lock



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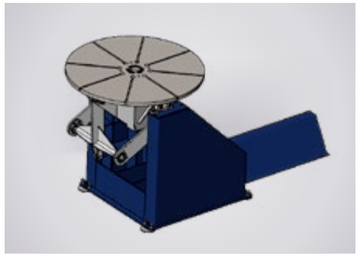
- Number of T-slots — 8



- Load capacity (center) — 3000 kg (vertical rotation axis)
- Load capacity (center) — 1200 kg (horizontal axis of rotation)
- Number of axes — 2
- Faceplate diameter — 1200 mm
- Max. rotation speed — 300 rpm
- Positioning accuracy — ±0.1°
- Faceplate tilt angle — 45...+90°
- Tilt positioning accuracy — ±0.1°
- Number of T-slots — 8

Sound proof spray booth

A Sound proof spray booth is the foundation of safety and comfort when working with thermal spraying processes. Its main purpose is to reduce noise levels from 130 dB to well below 80 dB.

Spray booth not only ensures safety but also allows for consistent coating quality due to its stable conditions. The design can be adapted to your needs, from small component repairs to mass production.

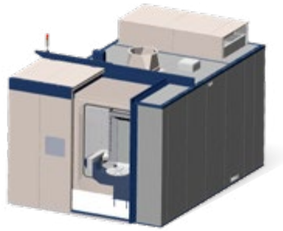
TO THE CONTENT

Sound proof spray booth

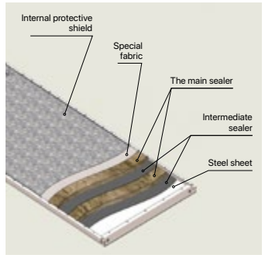
Operator protection from fine powder particles, sparks, and thermal radiation

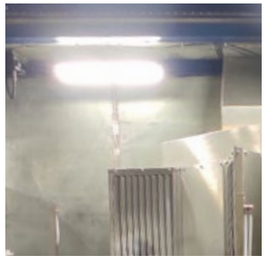
Environmentally friendly, powder particles are captured and extracted through a filter and ventilation unit to the dust collector

Process repeatability due to isolation from external influences (draft, temperature and humidity fluctuation)



Design Features





Materials:

- Multilayer sandwich panels with fire-resistant core and steel sheets
- Soundproofing: combined use of absorbing and reflective (vibration-damping membranes) materials.
- Sound absorption coefficient: 30–35 dB.
- Viewing windows made of laminated tempered glass with UV protection and fogging.

Access System:

- Swing and sliding doors with electromechanical locks and emergency release.
- Parts feeding hatches: optional.
- Sealed cable entries for equipment connections.

Lighting:

- Built-in IP67-rated LED floodlights (brightness adjustable via the HMI panel).

Ventilation:

- The spray booth is designed for use with a ventilation unit and dust collector; air intakes with pre-filtration of coarse particles (class G4) are installed in the upper section.
- Contaminated air is removed through an exhaust hood installed in the spraying area.

Ventilation system with filter unit

The ventilation system with filter is a critical component of the thermal spray system, ensuring operator safety and ensuring the process complies with environmental regulations. Its primary function is to remove hazardous particles (dust, vapors, and toxic gases) from the spray booth and maintain stable air exchange.

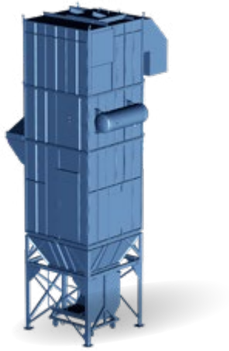
TO THE CONTENT

Advantages:

Protects personnel health
Captures up to 99.99% of particles 10 µm and larger, including metal dust and oxides

Maintains coating quality
Minimizes the risk of contamination of parts with suspended particles

Energy efficiency
Adjustable fan speed reduces energy consumption by 20–30% of the nominal value



Design and Operating Principle

Filtration System

- **Filter Cartridges**
  Retain particles (>10 µm) such as dust, scale, and powder particles. The most frequently replaced element (service life: 1–3 months). Efficiency: 99.95–99.99%

Ventilation System

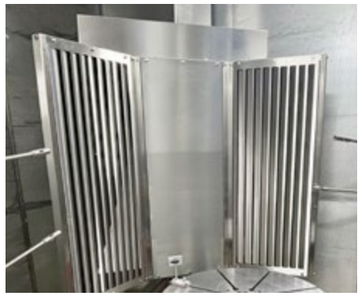
- Centrifugal Fans with adjustable speed (up to 20,000 m^3/h)
- Anti-Vibration Mounts for noise reduction (≤75 dB)

Pulse cleaning system

- Automatic filter shaking to extend service life

Explosion-proof design

- Suitable for handling flammable materials



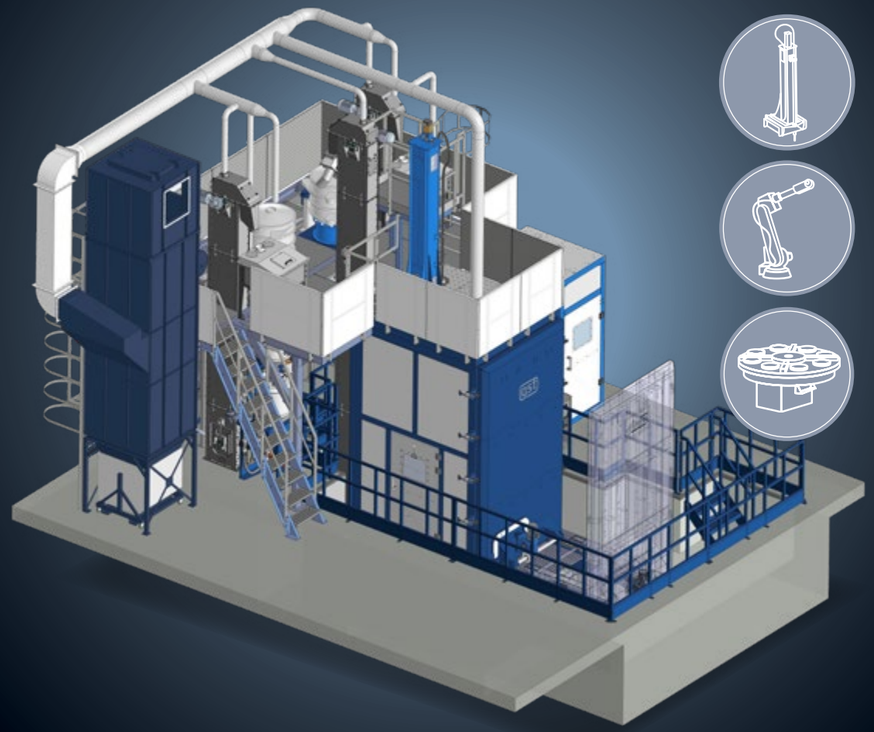
Control and monitoring

- Pressure sensors: monitor filter clogging. If the pressure exceeds 20%, the MP 3000 panel signals the need for consumables replacement.
- Operating modes: Automatic — PLC integration — activated when the spraying process starts; Manual — for maintenance or testing

Integration with the central control system

- Automatic synchronization with the robot: the ventilation system starts when the manipulator begins moving
- Emergency scenarios — if the fans stop, the MP 3000 system immediately interrupts the spraying process

SHOT PEENING SYSTEMS



GST SPR 8X2500 Robotic Shot Peening Machine

Shot peening of gas turbine blades, shafts, disks

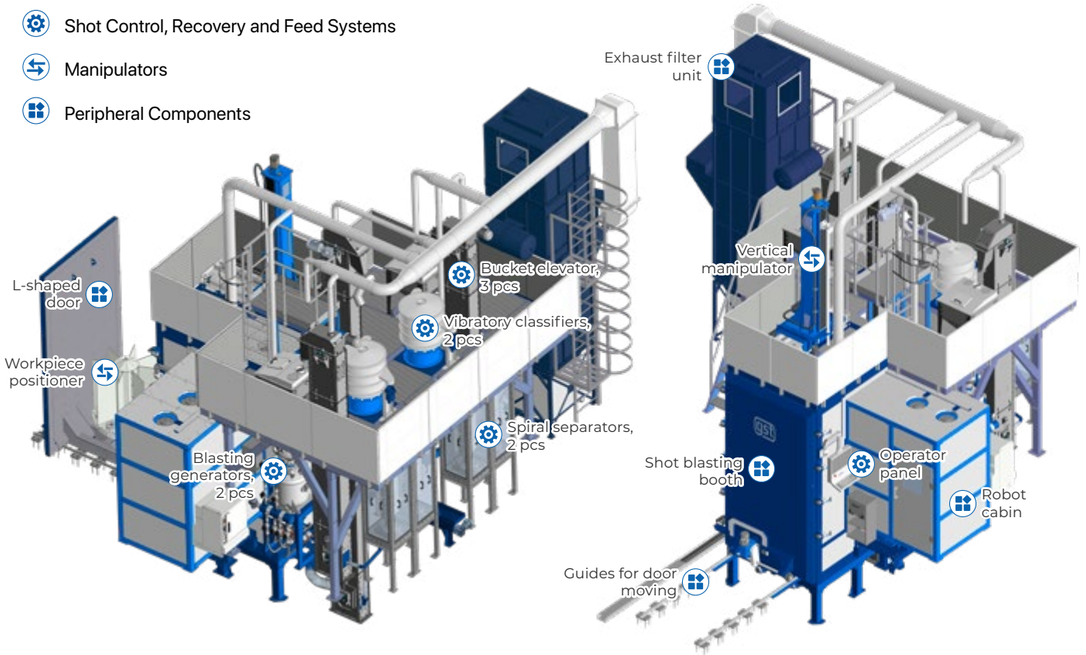
This machine is designed for shot peening of components with complex geometric shape of hardened surface. Machine is equipped with industrial robot, vertical manipulator, and carousel-type rotary table, which makes it extremely versatile and allows it to be used for shot-peening of both small components such as gears and gas turbine blades, and large components such as shafts, disks, and drums.

General technical characteristics of IRS RSP 8x2500

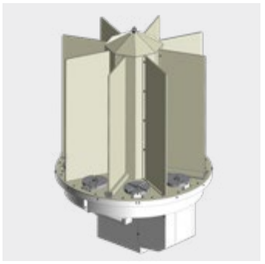
- Max. workpiece length/height: 2500 mm
- Max. workpiece width/diameter: 1200 mm
- Max. positioner load capacity: 250 kg
- Number of satellites on multi-station turntable plate: 8 pcs
- Satellite plate diameter: 200 mm
- One satellite load capacity: 20 kg
- Simultaneous use of different shot types: standard feature

SPR 8X2500 Machine Components

- Shot Control, Recovery and Feed Systems
- Manipulators
- Peripheral Components



SPR 8X2500 Machine Features



Positioner has a central axis of rotation, as well as additional satellites installed around the perimeter and capable of independent rotation around its own axis. During processing the workpieces mounted on satellites are sequentially moved into the working area when main table is rotated at a given angle.

- Satellite number: 8 pcs
- Turntable diameter: 1200 mm
- Satellite diameter: 200 mm
- Total turntable load capacity: 250 kg
- One satellite load capacity: 20 kg
- Axes control by robot servo drive

Industrial robot ensures precise and smooth movement of shot blasting nozzles relative to the workpiece surface being processed, which guarantees stable and high quality shot blasting.

- Robot load capacity: 20 kg
- Working area radius: 1650 mm
- Positioning accuracy: ±0.04 mm
- Protective cover for shot blasting

Manipulator is mounted on roof of shot blasting booth and provides vertical and horizontal movement of lance for processing the internal surfaces of shaft-like components. Specialized shot blasting nozzle with peening angle of 45° is installed at the end of lance.

- Manipulator vertical stroke: 2100 mm
- Manipulator horizontal stroke: 200 mm
- Movement accuracy: ±0.1°

Blast generator supplies shot to the shot blasting nozzles. Machine is equipped with two double blast generators, each of which is used for specific shot type. This solution provides increased productivity by reducing the time required to prepare system for operation.

- 2 blast generators for working with two shot types
- Double working vessel in each pressure generator to ensure continuous operation
- Specialized valves with feedback for shot flow regulation and control
- High precision valves for air pressure regulation

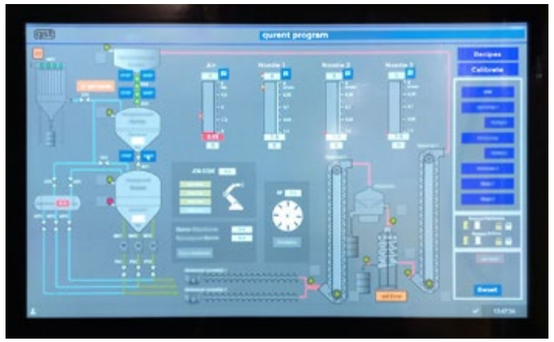
Shot Control

Operator Control Panel

Single panel for controlling the entire shot peening machine. This panel is used to call, run and edit control programs, as well as display all parameters of shot peening process, state of machine components and errors that occur during operation.

- Operator colour touchscreen display
- Diagonal screen size up to 22''
- Two versions available: pendant mounted and mounted on a separate portable stand
- Emergency stop buttons

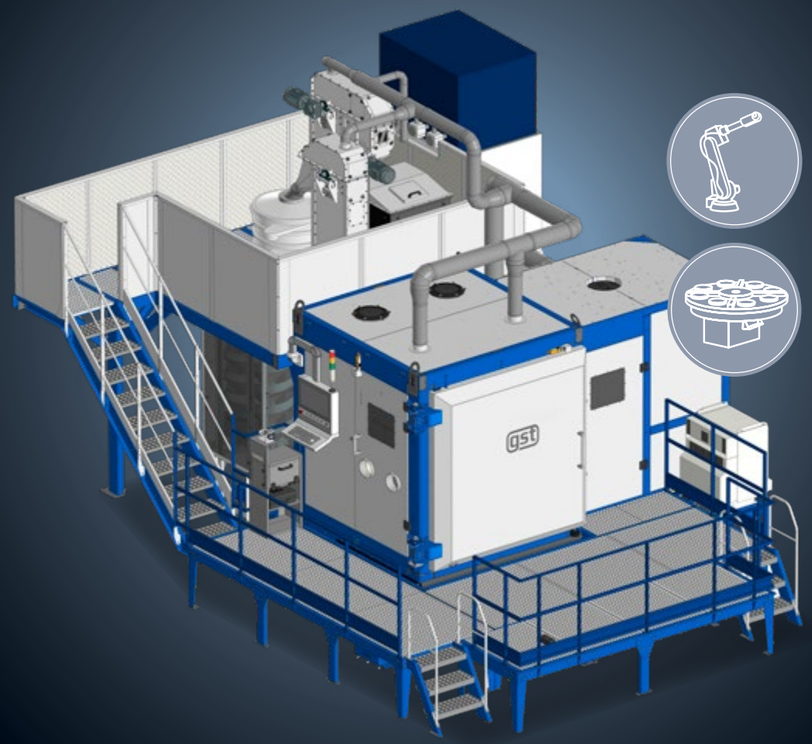
GST BlastIT™ Software



Professional-grade software for shot blasting process. Provides engineers and operators with the most advanced, flexible and cost-effective process controller, enabling closed-loop process control, monitoring and recording of all key parameters.

Main functions of software

- Graphical operator interface with process parameter visualization function
- Monitoring and control of external modules, such as a robot, exhaust filter unit (EFU), etc.
- VPN connection for remote system diagnostics
- Options for saving and recalling control programs
- Servicing planning and control options
- Multi-level access control system with “Operator”, “Process Engineer” and “Service Engineer” access levels



GST SPR C8 Robotic Shot Peening Machine

Shot peening of various gears, shafts and gas turbine components

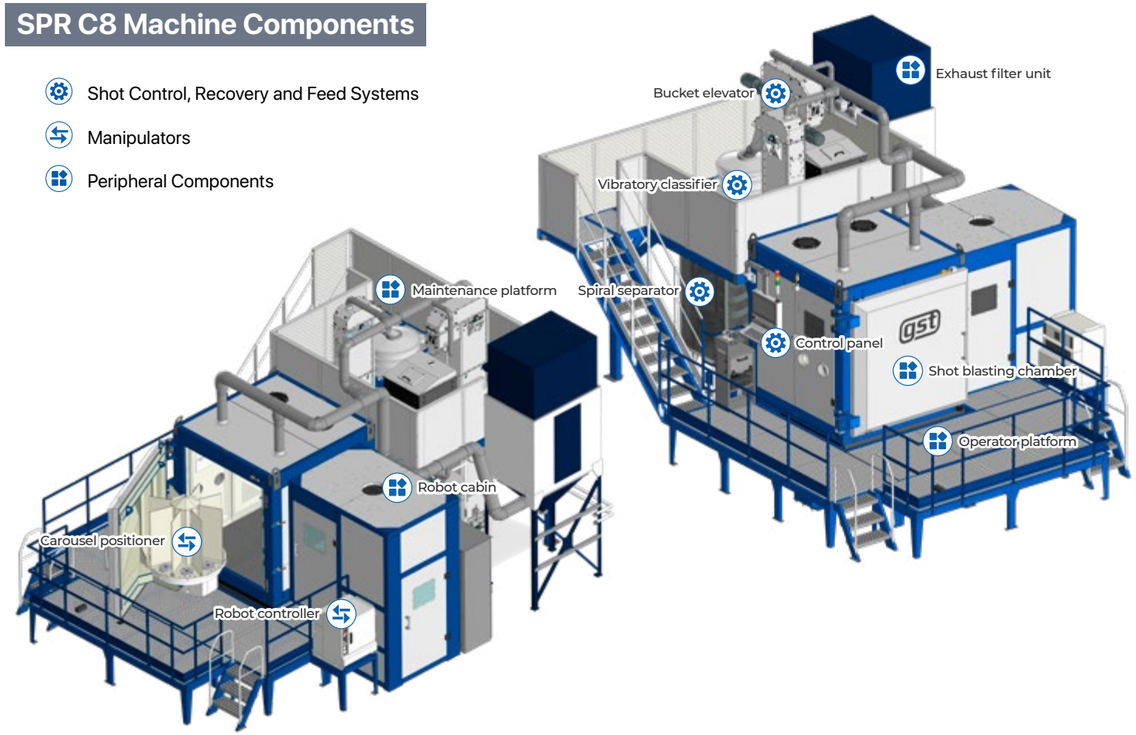
This system developed based on the requirements for the need to organize a universal and flexible operating process. It can operate in fully automatic mode, ensuring high precision and repeatability of shot peening results on workpiece. Control programs for various workpieces can be stored in the system memory, which ensures ease of searching and starting the operating process.

General technical characteristics

- Max. workpiece height: 1200 mm
- Positioner plate diameter: Ø1200 mm
- Satellite plate diameter: Ø200 mm
- Satellite number: 8 pcs
- Total turntable load capacity: 500 kg
- One satellite load capacity: 40 kg
- Applicable shot type/size: on request

SPR C8 Machine Components

- Shot Control, Recovery and Feed Systems
- Manipulators
- Peripheral Components



Особенности установки IRS RSP C8

Positioner has a central axis of rotation, as well as additional satellites installed around the perimeter and capable of independent rotation around its own axis. During processing the workpieces mounted on satellites are sequentially moved into the working area when main table is rotated at a given angle.

- Satellite number: 8 pcs
- Turntable diameter: 1200 mm
- Satellite diameter: 200 mm
- Total turntable load capacity: 500 kg
- One satellite load capacity: 40 kg
- Axes control by robot servo drive

Industrial robot ensures precise and smooth movement of shot blasting nozzles relative to the workpiece surface being processed, which guarantees stable and high quality shot blasting.

- Robot load capacity: 20 kg
- Working area radius: 1650 mm
- Positioning accuracy: ±0.04 mm
- Protective cover for shot blasting

Blast generator supplies shot to the shot blasting nozzles. It is equipped with two chambers for storing and feeding shot to ensure continuous operation. All necessary valves are provided at the working chamber outlet for regulating the air pressure, as well as regulating and controlling shot flow.

- 2 vessels for continuous operation
- Specialized valves with feedback for shot flow regulation and control
- High precision valves for air pressure regulation

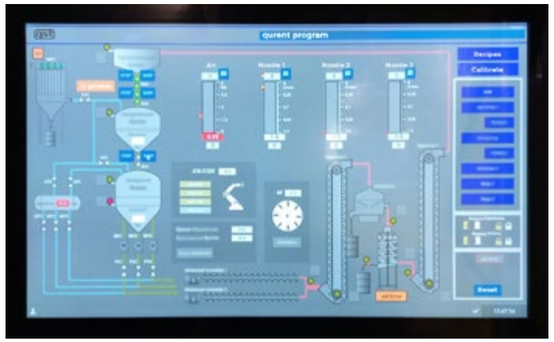
Shot Control

Operator Control Panel

Single panel for controlling the entire shot peening machine. This panel is used to call, run and edit control programs, as well as display all parameters of shot peening process, state of machine components and errors that occur during operation.

- Operator colour touchscreen display
- Diagonal screen size up to 22''
- Two versions available: pendant mounted and mounted on a separate portable stand
- Emergency stop buttons

GST BlastIT™ Software



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Main functions of software

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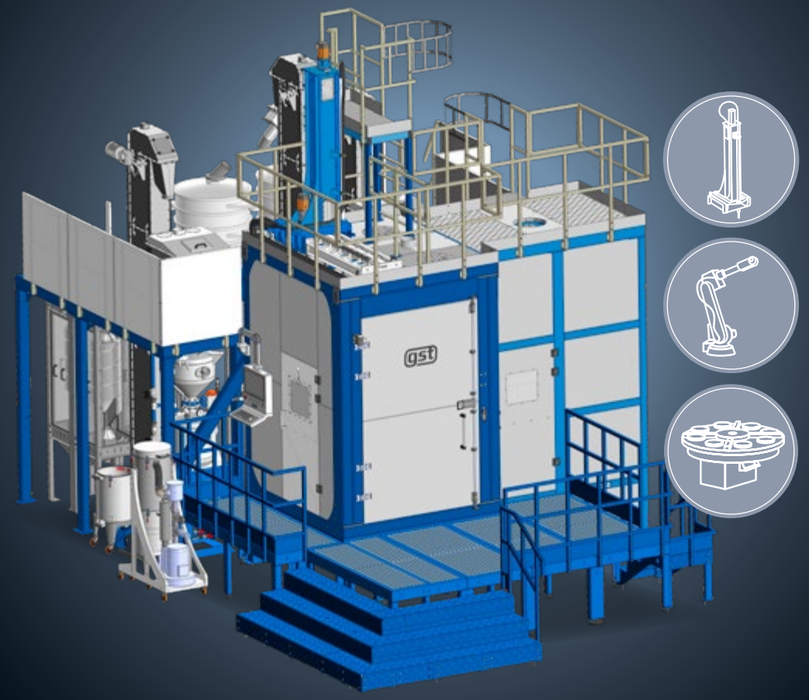


GST SPR 10X2000 Robotic Shot Peening Machine

Shot peening of various aircraft engine components with spherical or steel cut wire shot

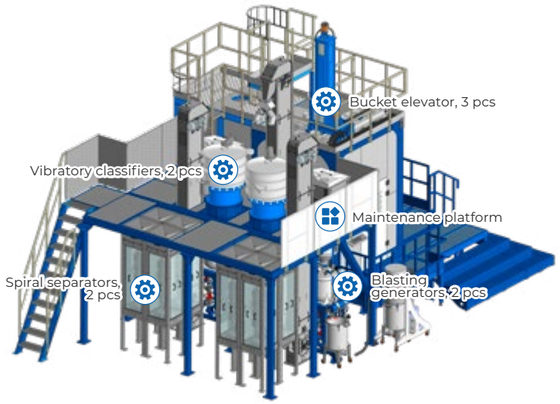
This robotic machine is designed for shot peening of various components of aircraft engines during repair and maintenance. Machine can operate with glass or steel shot depending on current task and required shot peening intensity. High machine versatility is achieved through the use of industrial robot in combination with additional vertical manipulator and carousel-type turntable.

TO THE CONTENT

GENERAL TECHNICAL CHARACTERISTICS OF IRS RSP 10X2000

- Max. workpiece length/height: 1500 mm
- Max. workpiece width/diameter: 1200 mm
- Max. positioner load capacity: 600 kg
- Number of satellites on multi-station turntable plate: 8 pcs
- Satellite plate diameter: 200 mm
- One satellite load capacity: 40 kg
- Simultaneous use of different shot types: standard feature

SPR 10X2000 Machine Components



- Shot Control, Recovery and Feed Systems
- Manipulators
- Peripheral Components

SPR 10X2000 Machine Features

Industrial Robot

Ensures precise and smooth movement of shot blasting nozzles relative to the workpiece surface being processed, which guarantees stable and high quality shot blasting. Robot arm is equipped with special quick-release mount for quickly replacing straight shot blasting nozzles for external processing with specialized rotating nozzle for processing the internal surfaces of holes.

- Robot working area radius: 1650 mm
- Load capacity: 20 kg
- Axes number: 6 pcs
- Positioning repeatability: 0.05 mm
- Protective cover: standard feature
- Mounting bracket with quick-release connection for shot blasting nozzles: standard feature

Positioner

Positioner has a central axis of rotation, as well as additional satellites installed around the perimeter and capable of independent rotation around its own axis. During processing the workpieces mounted on satellites are sequentially moved into the working area when main table is rotated at a given angle. Positioner is located on movable mounting bracket with the ability to slide out of chamber for convenient workpiece loading/unloading.

- Satellite number: 8 pcs
- Turntable diameter: 1200 mm
- Turntable plate positioning accuracy: ±0.1°
- Turntable plate speed: 0-30 rpm
- Total turntable load capacity: 600 kg
- Satellite diameter: 200 mm
- Satellite plate positioning accuracy: ±0.2°

Vertical Manipulator

Provides movement of specialized lance nozzle for processing the inner surface of workpiece. Design of manipulator includes high-precision gearboxes in combination with ABB servo drives controlled by the robot controller.

- Controlled axes number: 2 pcs
- Vertical stroke: 1300 mm
- Vertical movement speed: 0-100 mm/s
- Horizontal stroke: 1100 mm
- Horizontal movement speed: 0-100 mm/s
- Positioning accuracy: ±0.1°
- Movement speed control accuracy: 2%
- Limit position sensors: standard feature

Lance nozzle for holes and slots processing

This nozzle is mounted on robot arm and is used to process the inner surfaces of holes, slots, grooves, etc. The robot arm is equipped with specialized quick-release mount for convenient and quick installation of accessories.

- Nozzle outer diameter: 6/8 mm
- Nozzle length: 250 mm
- Peening angle: 45°
- Nozzle rotation angle: 360° × N
- Nozzle rotation speed adjusting: standard feature
- Nozzle material: boron carbide / tungsten carbide

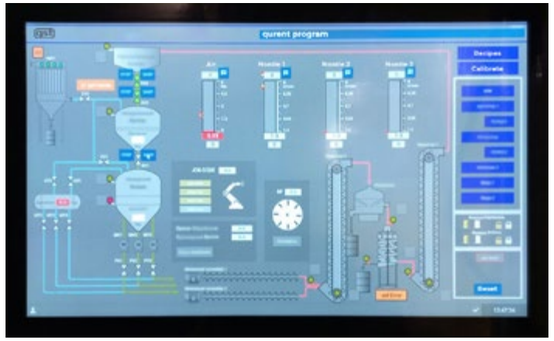
Shot Control

Operator Control Panel

Single panel for controlling the entire shot peening machine. This panel is used to call, run and edit control programs, as well as display all parameters of shot peening process, state of machine components and errors that occur during operation.

- Operator colour touchscreen display
- Diagonal screen size up to 22″
- Two versions available: pendant mounted and mounted on a separate portable stand
- Emergency stop buttons

GST BlastIT™ Software



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Main functions of software

- Graphical operator interface with process parameter visualization function
- Monitoring and control of external modules, such as a robot, exhaust filter unit (EFU), etc.
- VPN connection for remote system diagnostics
- Options for saving and recalling control programs
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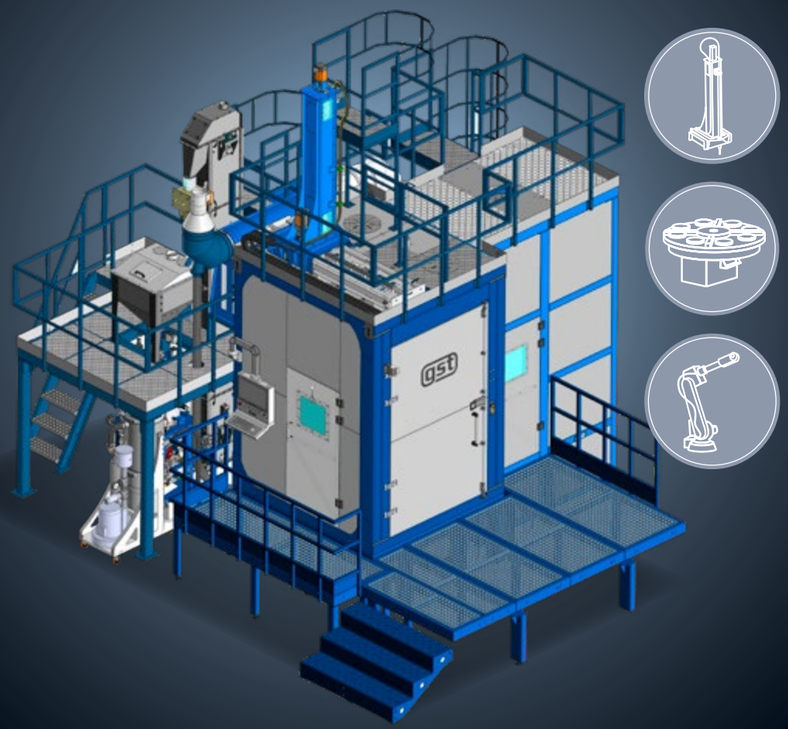
- Multi-level access control system with “Operator”, “Process Engineer” and “Service Engineer” access levels

BLASTING SYSTEMS



GST RB 1X10 Robotic Blasting Machine

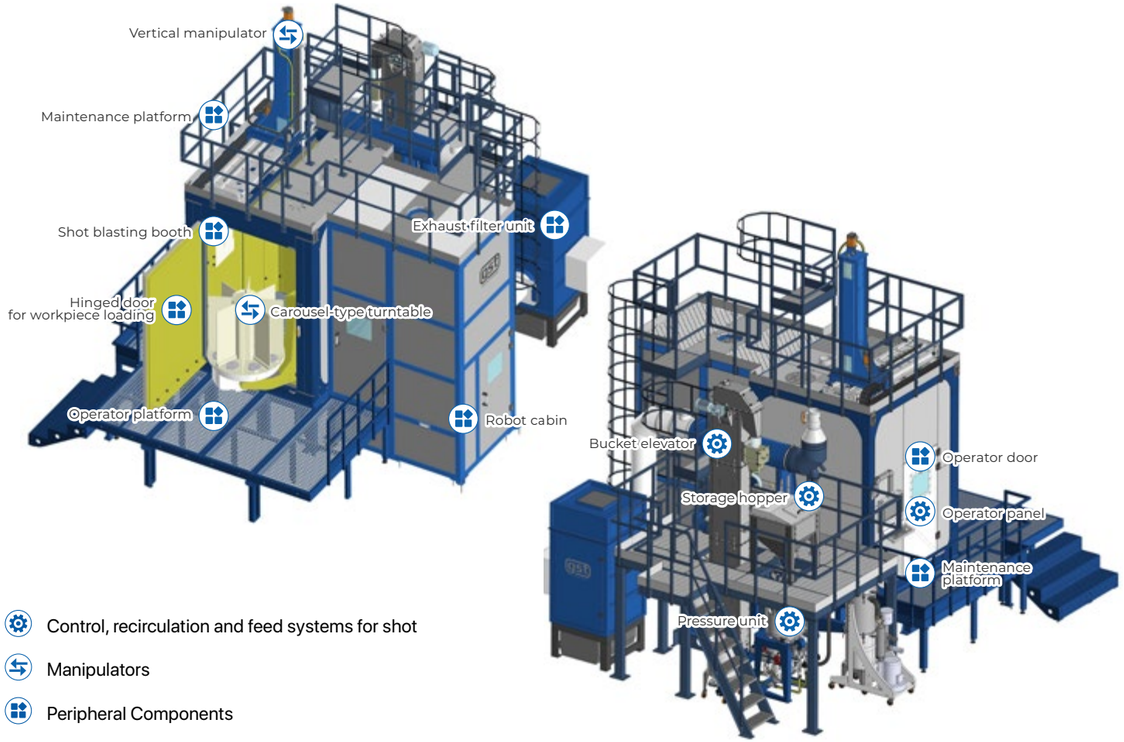
Automatic solution for blasting process, combining simple and reliable technologies with advanced control system

GST RB 1X10 robotic blasting machine is complete solution for surface preparation (coatings and rust removal and surface preparation for different types of coatings). GST RB 1X10 machine controls blasting process with advanced software that can be used to create and store multiple blasting programs. These programs provide consistent and repeatable results for every workpiece, improving process quality and efficiency.

General technical characteristics of GST RB 1x10

- Max. workpiece height: 1800 mm
- Max. workpiece diameter: 1200 mm
- Max. workpiece weight: 600 kg
- Blasting material type: electrocorundum

GST RB 1X10 machine components



- Control, recirculation and feed systems for shot
- Manipulators
- Peripheral Components

Equipment features

Industrial Robot

Ensures precise and smooth movement of blasting nozzles relative to the workpiece, which guarantees stable and repeatable process. Robot arm is equipped with special quick-release mount for quick blasting nozzles replacement and specialized rotating nozzle for processing the workpiece internal surfaces

- Robot working area radius: 1650 mm
- Load capacity: 20 kg
- Axes number: 6 pcs
- Positioning repeatability: 0.05 mm
- Protective cover: standard feature
- Mounting bracket with quick-release connection for shot blasting nozzles: standard feature

Automatic Vertical Manipulator

Provides movement of specialized blasting nozzle for processing the inner surface of workpiece. Design of manipulator includes high-precision gearboxes in combination with servo drives controlled by the robot controller.

- Controlled axes number: 2 pcs
- Vertical movement: 1500 mm
- Vertical movement speed: 0-100 mm/s
- Horizontal movement: 1100 mm
- Horizontal movement speed: 0-100 mm/s
- Positioning accuracy: ±0.1°
- Movement speed control accuracy: 2%
- Critical position sensors: standard feature

Blasting material Control, Recovery and Feed Systems

Blasting system ensures shot circulation within the machine, control of shot size/shape and bombardment of workpiece surface with shot. Equipment also includes material separation system for non-blasting material separation and removal.

- Control panel
- Blast generator
- Vibratory classifier
- Spiral separator
- Bucket elevators
- Blasting material flow calibration module

Blasting material flow rate adjustment

Blasting system has high accuracy programmed modules for blasting material mass control during process. This module provides programmable control of material consumption, adjusting it and maintaining it at the required level with precision 0,5-5% depending on blasting material type.

Shot Control trol Panel

Operator Control Panel

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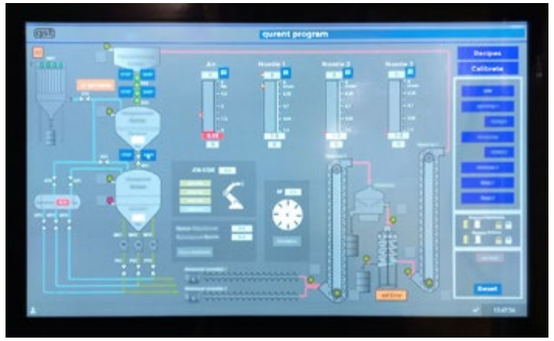

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BLASTING SYSTEMS

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