Thermion®
The Original and Reliable

MADE IN THE USA

Arc Spray System

JET FORCE AVD456HD

Model 57456HD

Read about our new **High Density Coating System** technology that goes into the Jet Force AVD 456HD Arc Spray System.

Preset Spring Pressure allows a continuous and precise pressure on the wires at all times and does not change when new wires are loaded. More importantly the spring pressure adjustment is set to the correct amount not relying on operator experience.

Roller Bearing Inlet Guides is a Thermion exclusive feature that minimizes friction and drag on the wires as they enter the feeder. This is such an important performance upgrade that all Thermion's arc spray systems include this feature.

Wire Straighteners are also one of the important performance features that are included in all Thermion's arc spray systems. Most spray wires are packaged on spools and during the packaging process the wire develop a helix, spiral or kinks; these features can cause spraying malfunctions. Thermion removes the malfunction potential by using wire straighteners which are built to straighten solid or cored wires using the same unit so operators can switch wires without changing straightener parts.

Six Roll Wire Drive is another Thermion exclusive feature available on the High Density spray system. The six roll system adds performance value in providing an absolute non-slip wire feed at all times during operation while overcoming friction on the wires caused by dryness, dust or wire defects.

Center Wire Supports is a feature of the six roll drive and worth mentioning as a separate performance improvement item. On the last set of feed rolls, just before the wire enters the liners a smooth set of feed rolls iron the sires to knock down the knurls put on the wires by the four other feed rolls. Knurled feed rolls are necessary to provide a positive feed, however they add friction and wear to liners and tips. The wire ironing feature knocks down these knurls reducing friction and extending the life of liners and tips therefore enhancing spray performance.

Minimizing Power Connections improves current flow and reduces voltage loss. Thermion has minimized the number of electrical connections while maintaining a portable quick set up spray system. History has shown that poor lead connections can cause the equipment to malfunction in many different ways that is often hard to diagnose; thus minimizing connections reduces problem potential.

Operator Convenience

The Brain Module is an electronic unit that automatically controls the electrical features that enhances high density coatings. It assures the arc gap is precisely maintained by monitoring and correcting for voltage variations in power cables and other electrical components. It also controls all the operational features such as start-up, air flow, sire feed stability, and shut down in a manner to assure the next smooth start.

E-Switch is an emergency shutdown if a dangerous condition should be noticed by an observer and should be used as a shutdown while feeder or head is being serviced, or equipment is on standby.

Digital Volt Meter is an accurate reading of the spray voltage after voltage loss has occurred and is usually visible by the operator at all times.

Digital Amp Meter is an accurate reading of the amperage reading directly from the amperage flow to the spray head.

For more information, please contact us at +66 (0)81-912-3299 or +66 (0)89-132-2132
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Amperage Adjust dial is convenient for the operator and can be set before or during operations, setting during operation is more accurate.

Voltage Adjust dial is convenient for the operator and adjustable before or during spraying operations, setting during operation is more accurate.

Jog/Air the momentary jog switch allows for the wires to be fed through the liners without power so the operator is not exposed to electrical power during the operation. The other side of the switch is maintained on so the operator can turn the air on and do air cleaning of the spray area, air also turns on at the head for this purpose.

¼ Turn Disconnect is a quick connection of the front end leads, it is dust proof and the course ¼ turn threads resist dust interference and it is immune to thread galling. This quick attaché and release connection, along with all the other hand operated clamps make the system completely TOOL LESS for set up and operations. Tools are only needed when repairs are required, which is rare!

Specifications:

- Power Supply: (N/S) Conventional 450 Amp. Incoming power; 3 phase multi Voltage at 60 Hz
- Feeder with our 6 Roll Power Drive System: 55 Lbs.
- 12.5' Front End Leads with a Jet Force Head
- Power/ Control Lead
- Wire Capabilities: All Conductive Wires; ⅛ " (3.2mm), 3/32;" (2.3mm), 2mm or 1/16;" (1.6mm)
- Air Requirements: 80-100 PSI at 70 CFM. Air inlet no less than ½ " dia.

Available Options:

- Inverter Style Power Supply
- Pendant Control on/off Switch
- Change over kits for different wire sizes
- Tool Post Mount
- Angle Spray Nozzle
- Wire Dispenser for Payoff wire drum

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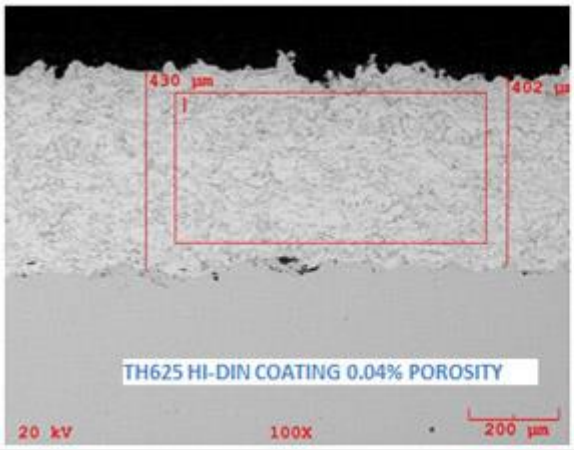
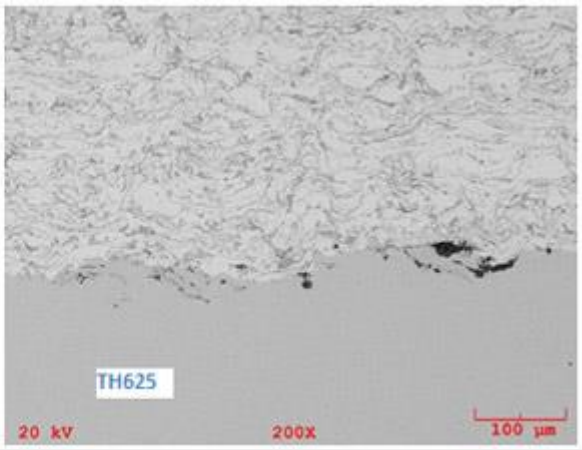
Twin Wire Arc Spray High Density Coating Process by Thermion

Thermion Inc. of Poulsbo, WA USA (thermioninc.com) introduces a new **Twin Wire Arc Spray** process that produced high density coatings of less than 0.3% porosity for 420SS, and 0.04% porosity for the coating of Inconel 625 which is shown in the below macros. **Move over Cold Spray and HVOF**, HighDensity™ twin wire arc spray produced coatings with porosity lower than 0.5%.





SAMPLE ID	POROSITY %	OXIDE %
TH625 (Inconel 625 Wire)	0.04	3.5
TH420	0.28	6
TH420/95-5 BOND	0.23	5.7

Thermion's new twin wire arc spray process utilizes the simplicity and economics of standard twin wire arc spray principles, the above coatings were sprayed using ordinary compressed air as the atomizing gas in open air with spray distances near six inches, the coupons were rotating on a fixture and the spray gun was mounted.

Process Concept:

In this process the high electric arc energy from the two consumable wires heats gas inside a small vessel which is pressurized due to both ionization and the hot expanding gas, a jet stream exits a small port in front of which the wires are positioned and then melted, atomized, and propelled to the substrate. Controlling the arc gap is another essential part of the process, Thermion has developed means to maintain an exact arc gap to allow Nano scale splats to develop during atomization, without this arc gap control the wires will actually interfere with the atomization process and cause a mix of large and small splats and therefore increase porosity.

Possibilities:

Thermion's high density coating systems offers coatings with high density with operational costs of a few dollars per hour and operator training takes a few hours as compared to weeks and months for other coating processes. The cost of the system is a fraction of HVOF, Detonation, Plasma Arc, or Cold Spray. **All material tested to date have yielded high density coatings of less than .5% porosity including both solid and cored wires allowing a wealth of material choices.**

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Availability:

The High Density Twin Wire Arc Spray System is available directly from Thermion Inc. and provisions can be made for providing sprayed samples for your personal evaluation, or to test your wires, or coat a component for service evaluation.

Check out our new Arc Spray System, **Jet Force AVD 456HD** with our new High Density Coating System.

What If:

Thermion has concentrated on developing the HighDensity™ coating system using common air as the atomization gas, the obvious economic value need no explanation, however if a more pure, lower oxide coatings are desired, a percentage of inert gas mixtures in the atomizing jet stream will surely drive the oxide level down.

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