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CoArc Arc Spray System

TAFE's new "next-generation" twin-wire Arc Spray system is uniquely suited to meet the full range of arc spray process needs. The CoArc system improves the quality, repeatability, and versatility of arc spraying. This new system utilizes several new improvements in arc spray technology. A robust, user-friendly touch screen interface makes operation simple and intuitive. The CoArc system brings arc spraying to a whole new level through closed-loop control of the spray process. The system's programmable logic controller (PLC) monitors and automatically adjusts the power supply voltage, spray air pressure, and wire feed rate to match preset values. Atomization quality, spray rate, and particle size distribution are controlled as never before.

“The CoArc system brings arc spraying to a whole new level through close-loop control of the spray process”

TAFE has developed the new modular CoArc Spray system to operate a wide range of spray guns: the world renowned TAFE 8830 air driven gun, the 8835 DC motor driven gun, and the new advanced 9935 DC servo motor driven gun. This provides many benefits, most notably the ability to operate different spray guns with a single, configurable control platform to uniquely tailor the spray system to the application requirement.

As an optional feature of the new 9935 spray gun, arc voltage can be measured directly at the gun. The PLC then accurately controls proper operating voltage regardless of gun power cable length. The CoArc console has an improved air control system which allows better air flow characteristics to the gun and is closed-loop controlled.



CoArc Arc Spray System Representation

Another optional feature of the CoArc system is its ability to monitor the spray gun's head pressure. This capability provides the operator a tool to monitor the performance of the gun during the spray cycle. This capability, combined with automatic control of the power supply's amperage (spray rate), revolutionizes arc spraying by truly close-looping the spray process to ensure consistent, reproducible coating quality.

“Precisely controlled spray head air pressure, combined with automatically controlled spray rate, ensures consistent, repeatable coating quality”

The CoArc system also incorporates save current parameter and recipe storage capability which makes coating parameter selection easy and helps assure unparalleled coating repeatability.

The CoArc system has an optional push wire drive, located within the control enclosure that provides the capability to feed wire at distances as great as 15 meters (50 feet) from the wire reel to the spray gun. Such flexibility eliminates the need for a remote wire reel station in some applications.

The CoArc system's major components can be unbundled to provide greater flexibility in space-limited applications. A multitude of configurations allow it to conform to almost all needs and conditions such as a stand-alone hand spraying or integrated with other automated production equipment.

An optional data acquisition capability permits you to exercise exceptional quality control, shop management and cost control. An optional enhanced power supply reduces operating voltages which increases deposit efficiencies and thereby lowers part coating times and thus coating costs. The enhanced power supply, in conjunction with the improved air supply system of the CoArc console, greatly improves arc spray coating quality.

“The enhanced power supply with the improved air supply system greatly improves coating quality”

System Components

A complete CoArc system includes a control console, a power supply, wire reel holders, and one Arc Spray gun with interconnecting hoses and cables.

The wire reel holders have been specifically designed to facilitate wire reel stability, ease of hose and cable bundling, improved wire feed into an optional compact wire drive, and reduced wire friction (drag) in the wire conduits.

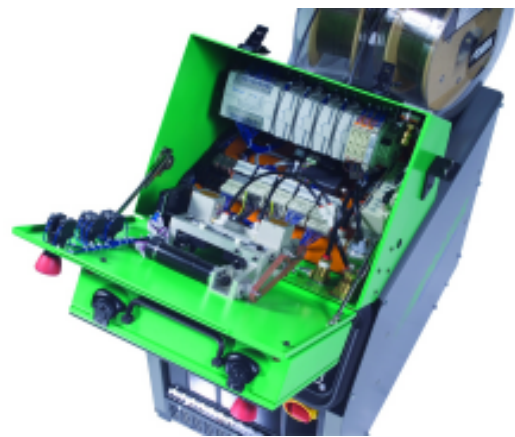
The CoArc system is configured as a base level system with optional features that add to its functionality. The system has the ability to run either the 8830, 8835 and 9935 Arc Spray guns. The system functions as a stand-alone unit or with options as an advanced, integrated spray system.

Options include:

- Push wire feed
- Recipe storage
- Remote operator panel mounting
- Unbundle capability
- Gun head pressure monitoring
- Voltage sensing at gun
- Line tracker
- Wire usage counter
- Wire “out” monitor
- Data acquisition
- 8830 capability
- Remote control interface capability
- 353ECV Enhanced power supply

CoArc Console

The CoArc control console includes a sophisticated operator interface terminal (OIT) pendant with touch-screen, a programmable logic controller (PLC) for process control, and state-of-the-art electronics and pneumatic plumbing. The CoArc console is designed to incorporate existing technologies such as the lubricator for the 8830 gun's air motor, the 8835 DC electric motor driver board, or the new 9935 gun motor's servo controller. The console can function as a stand-alone unit or be separated from the power supply and located remotely. The CoArc console's modular design makes upgrades, such as the optional push drive, easy to install. Most importantly, the CoArc console provides easy internal access, making routine maintenance and adding of upgrades simpler, which helps minimize downtime.



CoArc's Modular Design

The CoArc console's air supply system has been designed to reduce pressure drop and allow better flow and control of the air supply to the spray guns. In some cases, this allows lower supply

pressure to be used to produce existing coatings or with higher supply pressure, more airflow through the gun to produce denser coatings.

CoArc Console Specifications	
Dimensions	14" (35.6 cm) high x 18 1/8" (46 cm) wide x 15 3/8" (39 cm) deep
Weight (w/out Push Drive)	~40 lbs. (~18 kg)
(with Push Drive)	~50 lbs. (~23 kg)
Utility Requirements	
Electrical	220/400 VAC @ 50 Hz, 35/62 A 230/460/575 VAC @ 60 Hz, 24/30/60 A
Air	Up to 80 SCFM (38 l/sec) @ 100 psi (6.9 bar)

Operator Interface

The CoArc system OIT pendant is a rugged, industrial enclosure with a 7" (178 mm) color active matrix, touch-screen. The touch-screen programming is symbols-based, intuitive. This permits easy parameter set-up and monitoring that ensures consistent spray coating characteristics every time. It can operate up to 100 feet (30 meters) from the console. The OIT pendant communicates directly with a state-of-the-art PLC. The operator has the ability to view and control all parameters as well as access recipe development and maintenance scheduling directly from the OIT pendant. The program's display language can be changed by the operator.



Operator Interface Terminal

Power Supplies

TAFAs 353CV and 353ECV power supplies provide a relatively flat, constant potential volt/ampere characteristic with continuous control for setting the circuit voltage while operating. The

power supply characteristics have been developed exclusively for twin-wire Arc Spraying. These features hold noise emission during spraying to the lowest possible level by carefully matching capacitance, inductance and reaction time from control board.

The enhanced 353ECV power supply has the same dimensions as the standard unit but utilizes a sophisticated control board which minimizes the operating arc voltage. Lower operating voltage reduces the oxide levels within the coatings (improved particle size distribution) and increases deposit efficiency significantly (5–15%) depending on the material being sprayed. Importantly, the enhanced 353ECV power supply provides improved performance at lower voltages than conventional Arc Spray power supplies. These benefits offer the user maximum process reliability and flexibility, including a wider spray range.



353CV Power Supply

353CV and 353ECV Specifications	
Dimensions	26 1/4" (41 cm) high x 16 1/4" (41 cm) wide x 30 1/4" (77 cm) deep
Weight	346 lbs. (157 kg)
Utility Requirements	
Electrical	3 phase, 60 Hz or 50 Hz
Note	
Rugged casters on the power supply make the power supply portable	

Arc Spray Guns

The CoArc system can be configured to run the 8830, 8835 or the new 9935 Arc Spray guns. This choice of Arc Spray guns maximizes the flexibility

of the CoArc system by allowing the end user to customize their system to their application needs.

For more detailed information on a gun see the specific technical data bulletins.



New TAFE 9935 Arc Spray Gun

Remote Reel Holders

Specially designed remote reel holders, with or without casters, are available for mounting wire reels remote from the console. These units permit the spray gun to operate at any distance from the control console, for example, inside a tank or on scaffolding. The remote reel holders can either be pulled along by the operator as he sprays, or located on a boom.

Remote reel holders are also useful on installations where the gun is permanently mounted. In this case, wire reels can be located directly behind the gun, thereby eliminating the need for conduits.

Payoff Paks

Payoff Paks are available for some wires that are used out of bulk packages. Payoff Paks are sometimes used in permanent installations where large volumes of wire are sprayed. Purchase of wire in bulk form may also lead to some savings in wire cost.



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