

Bore Cladding Systems

BC Series

AMET Bore Cladding Product Information

Introduction

Bore Cladding Systems are used to hard surface or overlay Carbon Steel components, with higher strength and corrosion resistance alloys, such as Inconel.

Hot-Wire GTAW, pulsed, is the preferred process. Hot-Wire refers to the resistance heating of the incoming filler metal, to near it's melting point. This allows for both increased filler metal deposition rates, and reduced GTAW primary current.

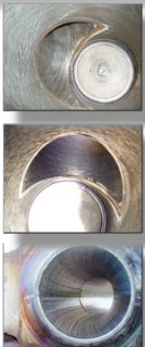
Bore Cladding is common in the Oil and Gas Industry, for hard-surfacing the inner surfaces of Pipe, Flange, Valve, and various Sub-Sea and Effluent components.



These components present complex geometries, with Pipe to Pipe intersections, called Bore's. The intersection of these Bores, require numerous stop points, preventing a continuous spiral or step clad. Therefore Bore Cladding requires a User Interface allowing the programming of a main bore diameter, and multiple intersecting bore diameter's, height, and angle. Thus continuous welding, with the torch automatically stopping at each Bore, traversing around the bore, then restarting and continuing with the welding.



AMET Advantage



- Advanced programming for weld current pulsation and slope in/out for ideal pool control with minimal dilution.
- Precision Hot Wire supply with remote voltage sensing to control at the contact tip.
- Advanced Touch Start or High Frequency Arc Starting.
- Custom and Table-less Systems.
- Tapered Bores and Optional Off-Axis and Off-Centered Bore Capability.
- Weld restart features.

AMET provides completely integrated Bore Cladding Systems including manipulators, turn tables, and Hot Wire GTAW systems with the following major components:



AMET

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Applications

- Overlay and hard surfacing projects.
- Precision valve body and bore cladding.
- Critical property and high production requirements for Sub-C Oil and Gas welding applications.



AMET Standard Bore Cladder

Precision X, Z Weld Head configured for Bore Torch and Bore Cladding applications.

- Software supports any number of intersecting bores.
- Precision AVC for smooth, accurate arc length control.
- Coordinated motion for seal welds, non-circular welds and "Vectored" AVC.
- Precision Harmonic Drive Turntables and Ball-screw slides and manipulators for accurate, repeatable position and velocity control.



Rotating Torch Bore Cladder

A precision rotating bore torch, eliminates the need for a turn-table, and therefore any part alignment with the center of a turn-table. Parts are placed on the deck, within the operating window of the Manipulator. An automated sequence will locate the centerline of the part by touching four corners, and then locate the start position.



- Continuous Rotating Head.
- Clads 4" to 8' Diameter Bores.
- Circular, oval, and "Race-Track" Bores.
- Virtual Centering automatically senses part and determines the part center.
- Precision Multi-Axis AVC.
- 4 axis coordinated motion.
- Completely Integrated System.
 - Power Supply.
 - Hot Wire Supply.
 - Servo-controlled Motion Axes.
 - Video Camera Systems.
 - Temperature and Position Sensors.
- Data Acquisition / Tolerance Monitoring.

Bore Cladding – Graphical Programming

NGTS Series

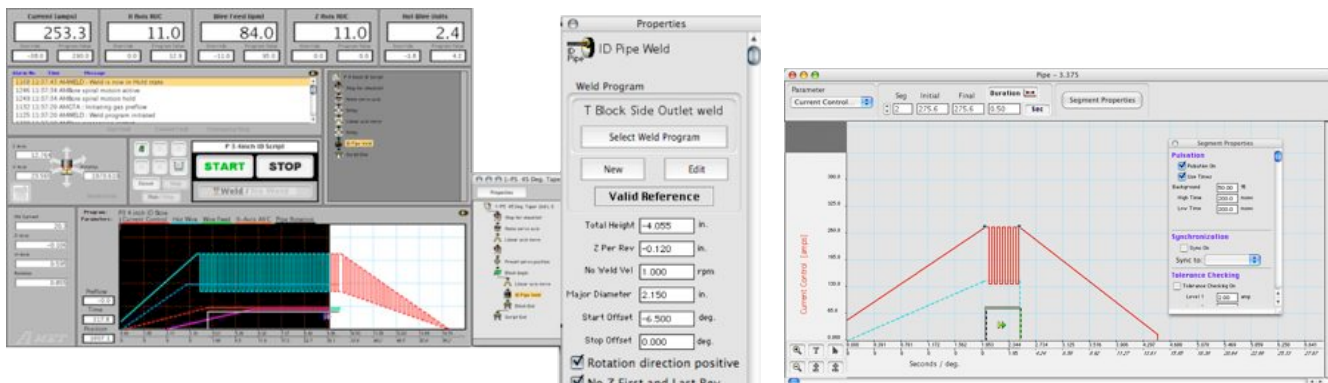

Menu Based Programming

Menu based programming provides a simple, user interface, for programming complex part geometry, and weld parameters.

Scripts: A Flow, or sequence of events, containing pre and post weld events, and the weld programs. Scripts are created by selecting toolbar functions from the list above, and inserting them in the script sequence by way of drag and drop using the mouse. Scripts may contain multiple weld programs, repeat loops, checklists, programmed torch or part motion, and more.

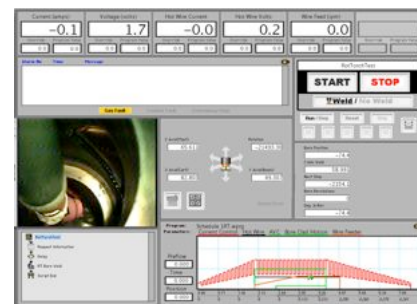
Bore Cladding Script Functions: Standard Bore Cladding script events allow the selection of weld parameters, definition of Main Bore, intersecting bores, and rotation and index parameters.

Weld Programs: Contain all welding parameter definitions. Current, Voltage, Wire Feed, Rotation Speed (IPM or RPM), Hot Wire Voltage.



Bore Programming Advantages

- Graphical menu based weld programming.
- Supports Tapered Bore's.
- Start and Stop Offset, for precise weld terminations around bore.
- Tapered Bore support.
- Automated Weld Restart.



Bore Cladding – Bore Torches

Standard, AMET offers bore torches in 2 models, **BC-TORCH-L** and **BC-TORCH-S**, a large and small. Each model requires water cooling and shield gas. Our torches include an isolated, separate conduit tube, to insure that hot wire voltage, arc voltage and current are not transferred to other parts of the torch, piece part or equipment.

One very unique design feature is that AMET designed their bore torches around standard GTAW torch consumables. Many of the torch parts the operator will need to keep the torch in production can be found at most welding distributors.

BC-TORCH-S Compact Bore Torch

The BC-TORCH-S is our compact version of the GTAW bore torch. This torch is designed to enter into small bores, yet still deliver wire into the weld puddle.

Torch Specifications:

Minimum Bore:

For Hot Wire Feed: 2.125" (54 mm)

For Cold Wire Feed: 2.0" (50 mm)

Max. Hot Wire current: 70 amps

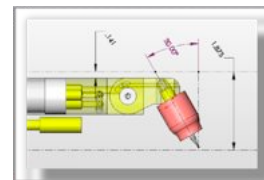
Max. Weld Current: 200 amps

Duty Cycle rating: 100%

Max. Standard Reach: 36" (900 mm)

Cooling Requirements: 1.1 gpm @ 50 psi

Note: Other lengths are available per special order.



BC-TORCH-L Compact Bore Torch

The BC-TORCH-L is our standard version of the GTAW bore torch. This torch is designed to enter into medium-sized bores, yet still deliver wire into the weld puddle with more power capability.

Torch Specifications:

Minimum Bore:

For Hot Wire Feed: 3.5" (89 mm)

For Cold Wire Feed: 3.0" (76 mm)

Max. Hot Wire current: 70 amps

Max. Weld Current: 350 amps

Duty Cycle rating: 100%

Max. Standard Reach: 48" (1220 mm)

Cooling Requirements: 1.1 gpm @ 50 psi

Note: Other lengths are available per special order.



General Dimensions

