

The Leader and Innovator in Automatic Orbital Welding



but

**Large Valve Seat Cladding Solution
M44**

Welding Around the World for 40 Years—American Built



- AMI, founded in 1976, is a Leading Global Supplier of Automated Orbital TIG/GTAW products, services and solutions
 - HQ in Pacoima, CA
 - Technical Center of Excellence at HQ supports global sales
 - All design and manufacturing and QC of products is done in California
 - 95 associates
- Channel:
 - 75% Direct
 - 25% Distributors and Authorized Service Centers
- Installed Base:
 - >25,000 units
 - 35 countries
- AMI has been acquired by ESAB, effective December 21st, 2016
- ESAB is owned by Colfax Corporation (NYSE: CFX)
- Founded over 100 years ago, ESAB serves a global market for welding and cutting equipment

DIVERSIFIED CUSTOMER BASE AND END MARKETS



Representative Blue Chip Customers

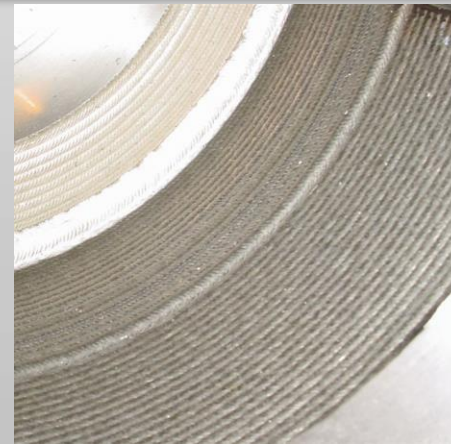
Power Generation	<p>20%</p>			<p>2%</p>	Food & Beverage
Oil & Gas	<p>8%</p>			<p>4%</p>	Pharmaceutical
Semiconductor	<p>13%</p>			<p>23%</p>	Industrial Construction
Aerospace & Defense	<p>6%</p>			<p>7%</p>	Marine Propulsion

Note: Percentages based on aggregate sales by industry from 2012 – YTD May 2016

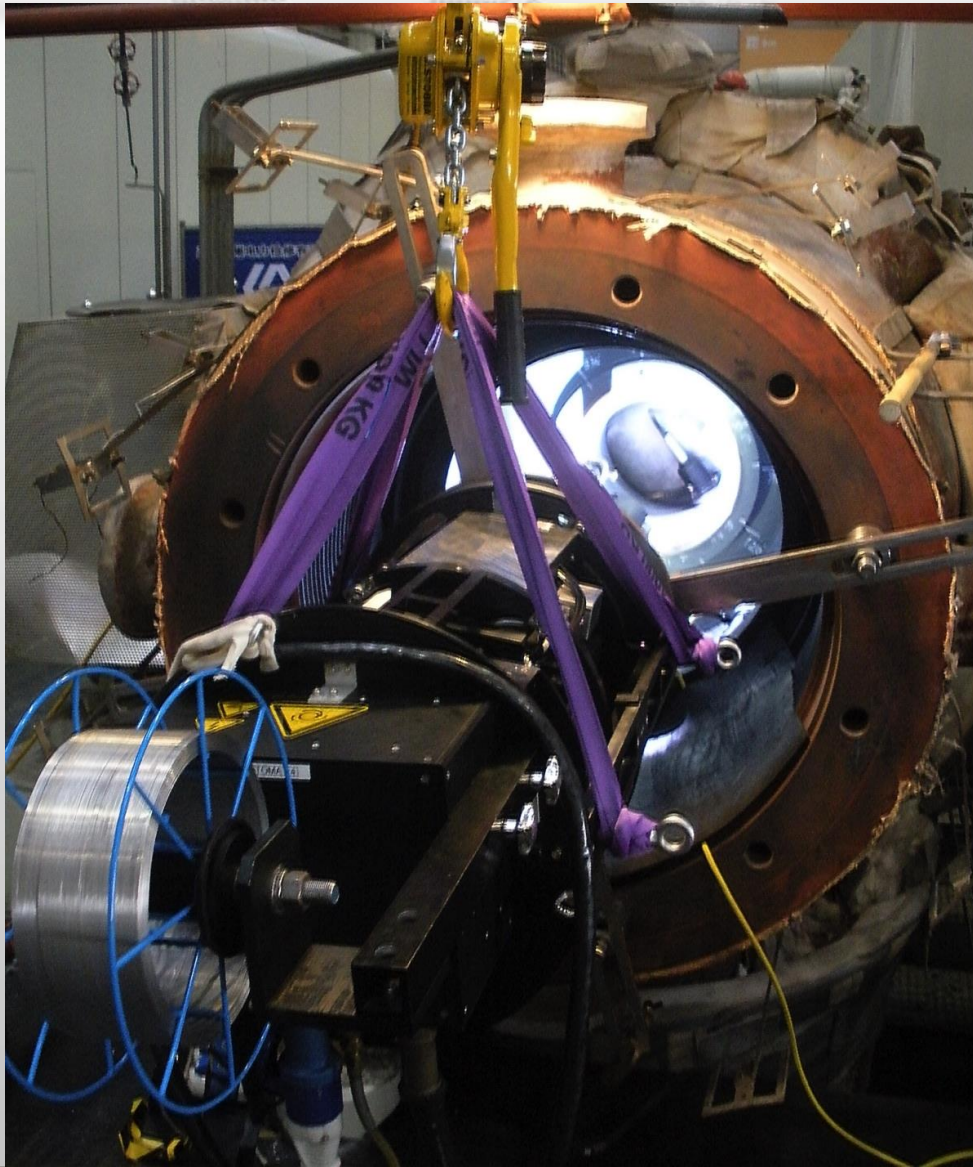
Overview of Valve Cladding



- Many power plants engage in costly valve replacements when in-situ cladding or repair solutions could be more cost effective
- Cutting-out the valve is not only costly, but it is time consuming and requires significant preparation to transport the valve to the right location in the power plant and the “collateral damage” i.e. cutting our out pipes and support structures also adds to the bill
- Replacement Valves in most cases have to be ordered many months or years in advance
- In-situ Valve cladding and/or Repair offers an attractive alternative to plant operators



Flexible On-site/In-Situ Cladding : Portable Model 44



Areas of Use:

- Nuclear, Fossil Power plant, maintenance
- Chemical plant component resurfacing
- Cladding of used valve surfaces
- Valve seat repairs and rebuilds
- ID Welding and cladding of nozzles

Benefits:

- Rugged, Portable and configurable
- Can be adapted to a wide range of valve designs
- Easy mounting to valve bodies via customizable face plate
- Articulated water-cooled torch options
- State-of-the-art arc vision system
- Continuous rotation or step-over mode

Technical Specifications: Portable MODEL 44



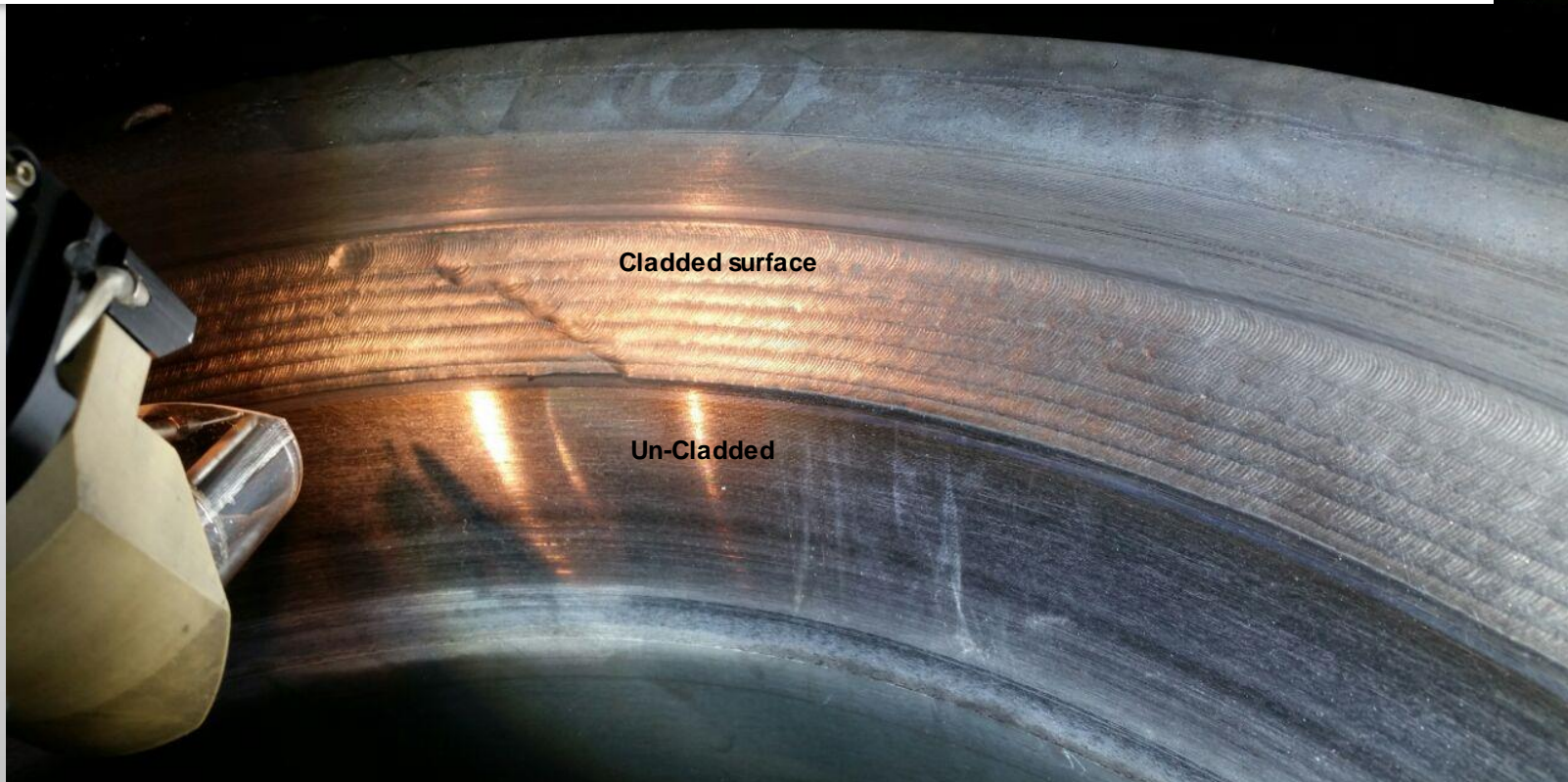
- Minimum ID (as welded): 2.17" (55mm)
- Maximum ID (before welded): 31.49" (800mm)
- Torch Reach:
 - Without torch extension: 44" (1117mm)
 - With torch extension: 95" (2413mm)
- AVC stroke: 3.94" (100mm)
- OSC stroke: 5.67" (144mm)
- Rotation speed: 0.02 to 0.77 RPM
- Torch Amps rating: 300 Apms 100% Duty Cycle
- Wire feeder: 5 to 200 IPM (127 to 2500 mm/min) of wire speed
- Wire spool size: 33 lbs. (15 kg)
 - Attached to the M44
 - or pay-off packs stand-alone

Cladding Solution : Portable MODEL 44



High Quality Cladding and Valve Seat repair made simple with AMI's M44

- Simple mounting on valve
- Light and portable
- Articulating torch can accommodate a wide diameter range
- Digital Camera can provide instantaneous feedback to operators
- Continuous spiral or step-over cladding



Advantages & Disadvantages of M44 Solution



Advantages of the M44

- Extends the lifespan of the valves
- A repair or rebuild is significantly less expensive than a replacement
- Less disruptive and shorter shut-down times of power plants
- Can be implemented relatively fast and eliminates lengthy valve lead times
- Power plant operators are in control of the situation and don't depend on contractors and suppliers
- Enables plant operators via the AMI M415 platform to engage in other automated welding or cladding applications

Disadvantages of the M44

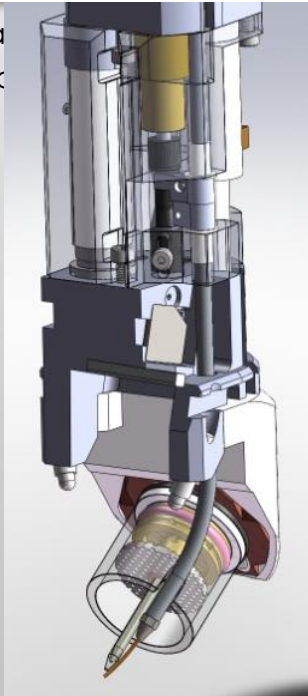
- Requires operator training
- Requires buy-in from maintenance personnel and management
- Responsibility is not "outsourced"
- May require post-welding machining operation

Column & Boom version: Custom MODEL 44

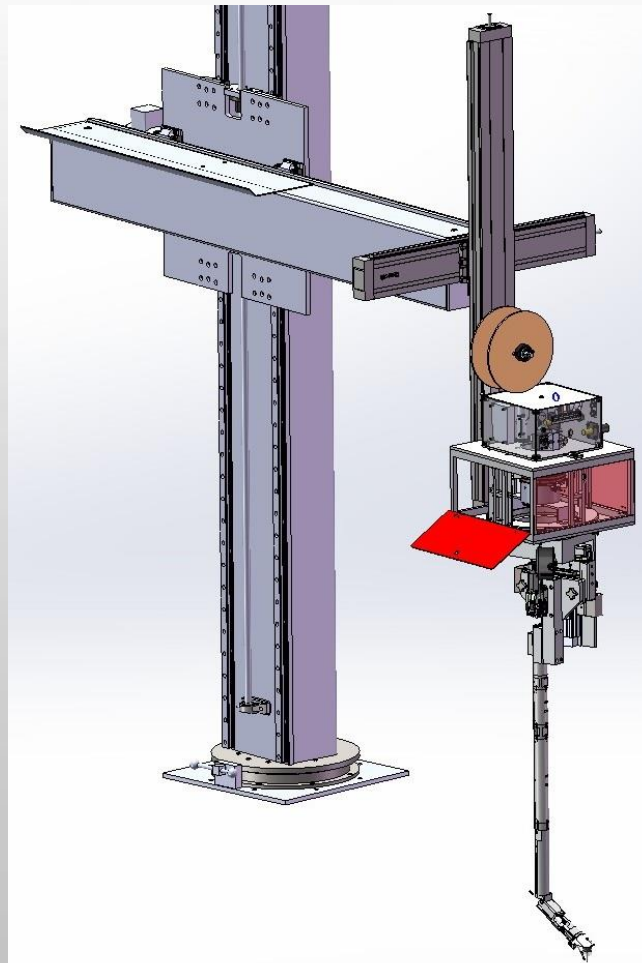
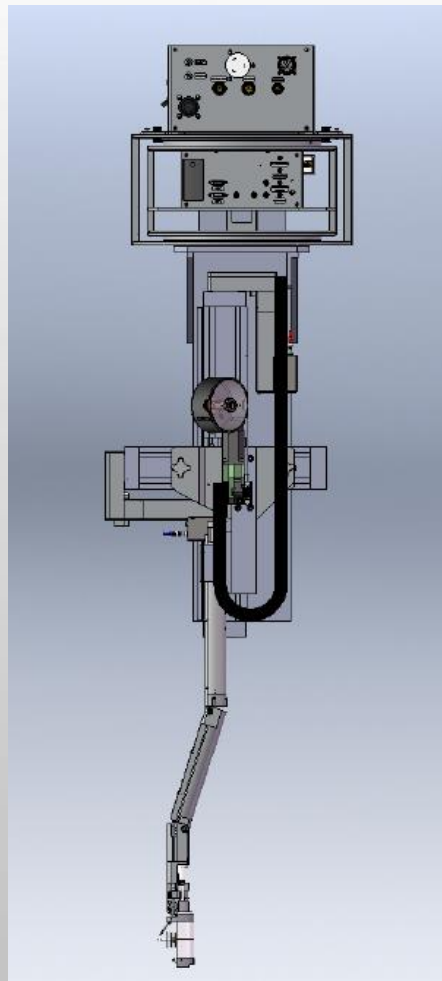


Features:

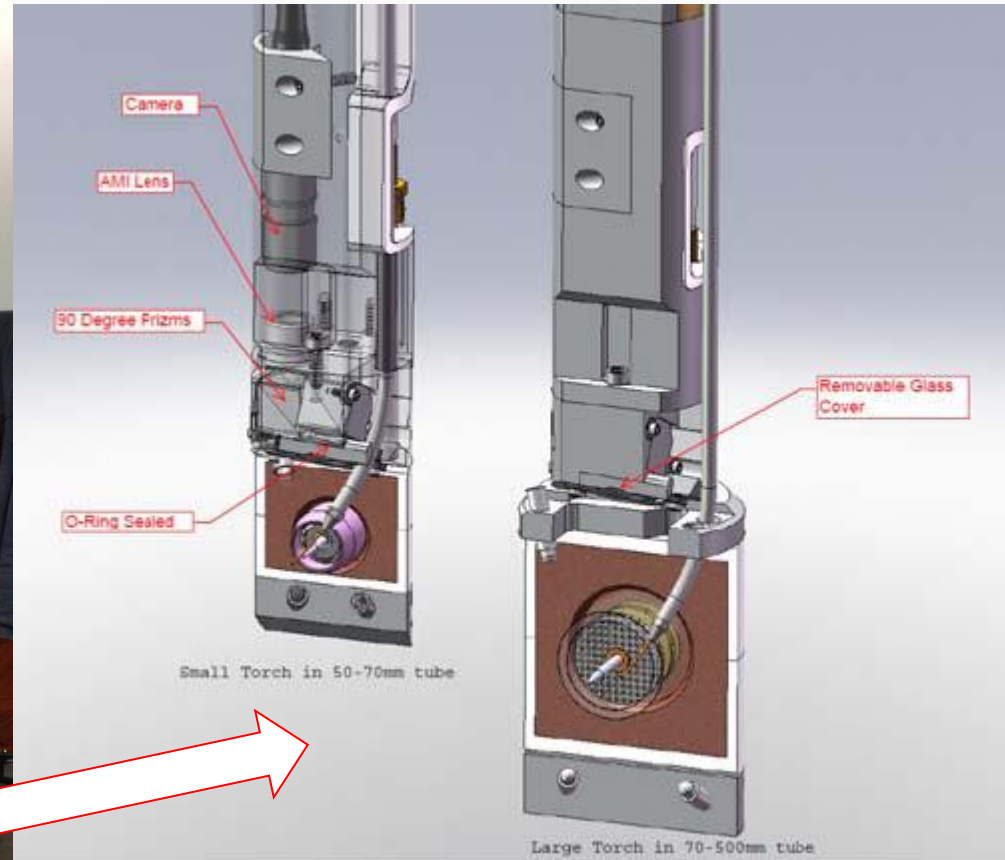
- C&B version for situations when valve is cladded in shop or for large work pieces
- Continuous rotation or step-over mode
- Camera equipped articulating Torches
- Torch available with multiple front-ends
- Two articulating boom
- AVC control



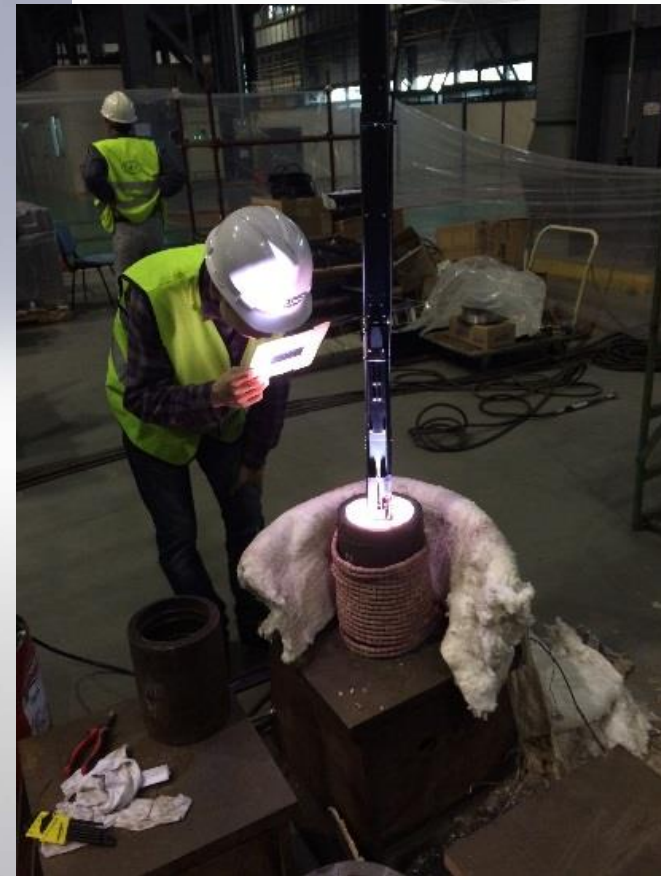
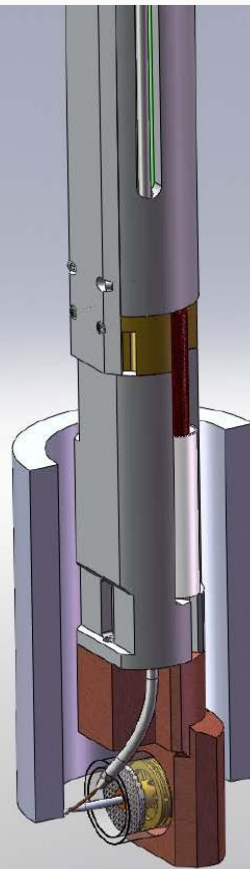
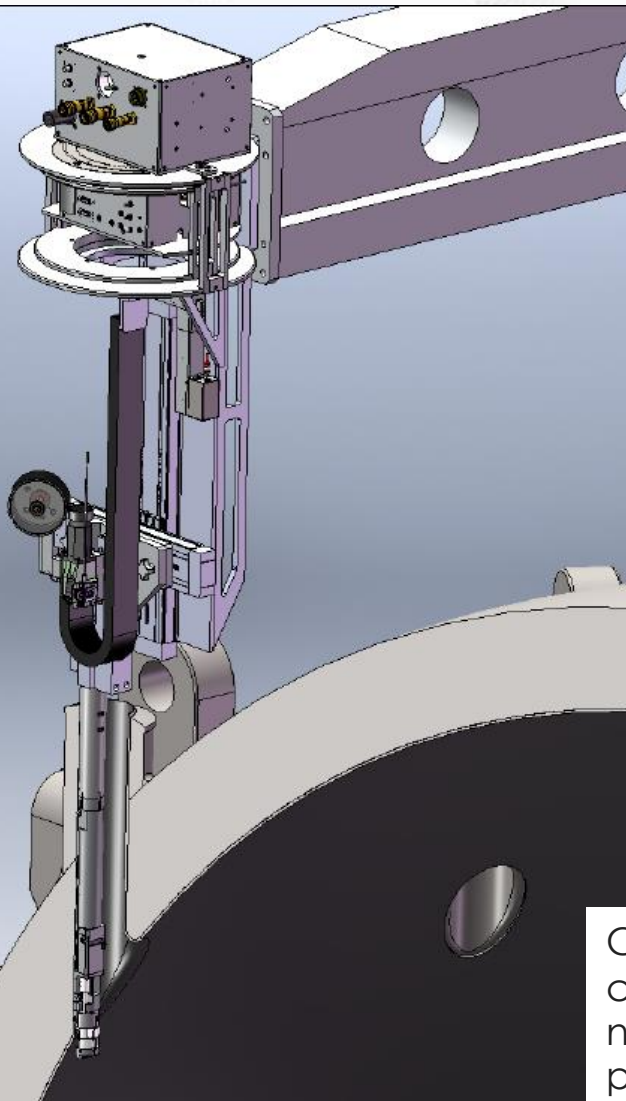
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Technical Features of Cladding Torch



Column & Boom mounted Custom M44



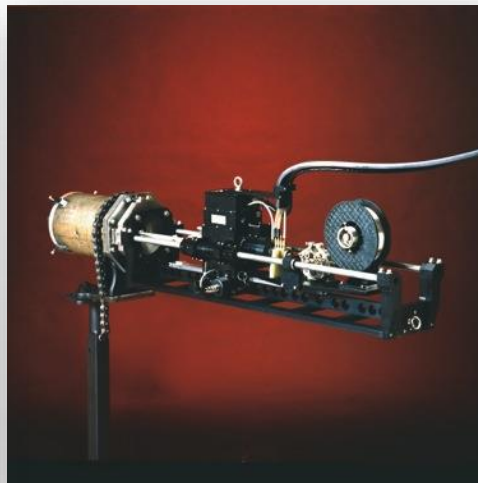
C&B mounted M44 for cladding nozzles on large work pieces- ex. Nuclear header

ID WELDING & CLADDING:

MODEL 94



(I.D. Spiral and Step Cladding)



Areas of Use:

- Spiral cladding and groove welding on the inside of small diameter pipes with cold wire feed
- Vessel-nozzles
- Stud hole restorations
- Ship building

Features:

- Water-cooled torches for 0.68" (17mm) post weld I.D. To 7" (180mm) pre-weld I.D.
- Manual travel clutch to allow rapid insertion and extraction of torch
- Servo-controlled rotation, AVC, and wire feed
- Axial position readout
- Pre-set function for H.F. Starts
- Continuous spiral cladding or step weld capability

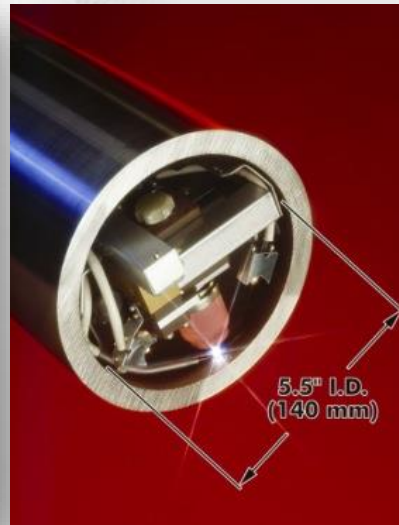
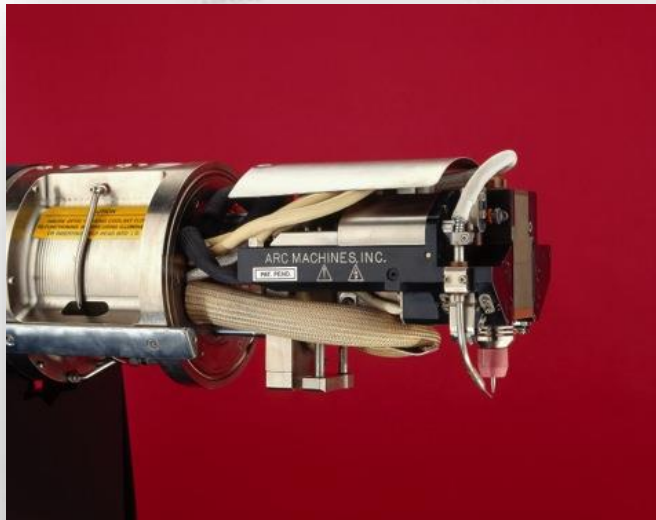
Benefits:

- Rugged, reliable, precise and repeatable platform for ID cladding or welding
- Stainless steel rack and gear drive for consistent travel speeds in all positions
- Unlimited torch rotation (no wire wrapping)
- Compatible with AMI model 415 power supply

ID WELDING & CLADDING :MODEL 43 & MODEL 73



(Cladding/Inside Diameter Weld Heads)



Areas of Use:

- Remote controlled ID cladding, welding, and repair of Pipes and Vessels
- Narrow gap ID welding
- Nuclear valve repairs
- Fossil-fuel power generation, and vessel manufacturing

Features:

- M43: Range from 6.75" ID to 24" ID with direct-view color camera (172mm to 609mm)
- M73: Range from 5.160" ID (140mm)
- Synchronized torch oscillation and pulsed wire feed
- Remote-control torch tilt ± 15 (M43)
- Remote controlled motorized wire nozzle adjustment

Benefits:

- Water cooled body and torch
- Pneumatically actuated feet
- Servo-controlled rotation, AVC, synchronized wire feed, torch oscillation
- Torch tilt option
- Vision and motorized wire manipulator capability
- Compatible with AMI model 415 power supply

DIGITAL VISION & DATA ACQUISITION



Real Time Welding Monitoring

Features:

- Used for Process Monitoring
- Data and Video Acquisition available
- Joint fit-up inspection and Post weld inspection
- Touch Screen and Data Graphing
- Various camera configurations are available
- Proprietary Digital Welding Vision Technology



DIGITAL VISION & DATA ACQUISITION



PLAYBACK

File Name: c:\AMI\M415-XXXXX-M15-Wedge005\M415-XXXXX-M15-Wedge005.xml

Table Data Graph Project Data and Event

Seek To 00:319

Amps

AVC

Home

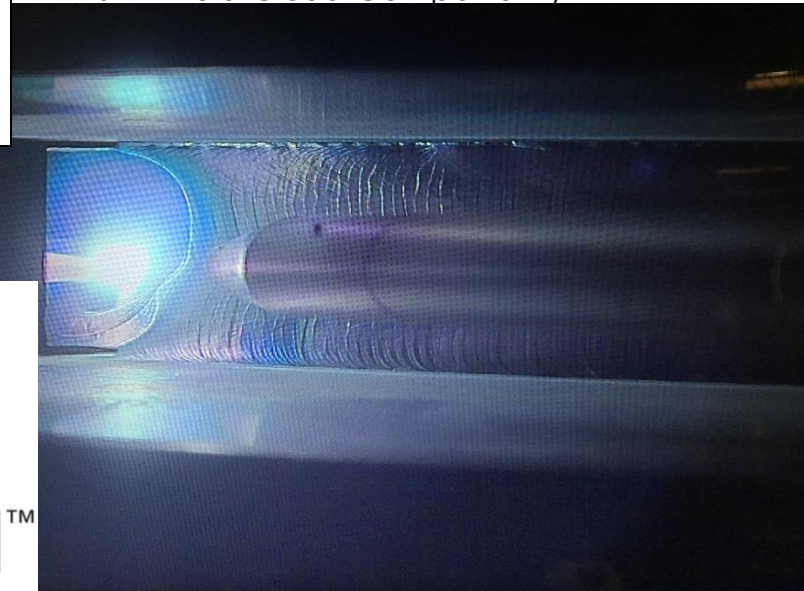
Play

Pause

Stop

Data Acquisition Features:

- Ability for setting limits for each monitored parameter
- Project Data Capture
- Fault Monitoring
- Recording synchronized digital video and data stream
- Ability to program and control the M415 power supply and controller remotely
- Data Download
- ESAB Weld Cloud Compatibility



www.arcmachines.com

WHY CHOOSE AMI?



- ✓ Widest Product Range in the Industry
- ✓ Large Engineering Group with Decades of Experience to Provide Complete Solutions for Welding Related Automation
- ✓ Global Sales and Support Network
- ✓ After-Sales Support in Training, Repair, and Maintenance
- ✓ Dedicated & Comprehensive Customer Service and Technical Support

AMI's SOLUTIONS OFFER

- ✓ State-of-the-Art Technology and Innovation
- ✓ Unparalleled Quality and Durability
- ✓ Reliable and Repeatable Performance





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