Cold Spray Action Team Webinar

Cold Spray Field Equipment and Applications
VRC Metal Systems

September 2026

Kyle Johnson – VRC Metal Systems

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About VRC Metal Systems, LLC

- **US Veteran Owned Small Business – All equipment is proudly designed and assembled in the USA.**
- Manufacturing and technology company with a focus on high pressure cold spray and related processes
- Founded in 2013 to commercialize high pressure hand operated cold spray w/ ARL-SDSM&T
- Headquartered in Box Elder, SD, with several locations across the US

Aerospace & Defense Review Top 10 FAA Repair Stations 2024

Lockheed Martin Missiles and Fire Control
Exceptional Small Business Award 2023

Quality in Aerospace AS9100D NSAI Certified

Best University Startups 2017

TechConnect Defense Innovation Award 2023

Elevate Rapid City
Large Business of the year 2023

Inc. 500 America's Fastest-Growing Private Companies

TechConnect Innovation Award 2018

Small Business Exporter of the year

Working with our Government partners

U.S. Army · U.S. Air Force · Naval Air Systems Command · NAVSEA Naval Sea Systems Command · Marine Corps Systems Command · United States Space Force · NASA · Department of Energy

Working with our Commercial partners

Airbus · Rolls-Royce · Blue Origin · Westinghouse · Dominion Engineering, Inc. · Voith · Boeing · Siemens · framatome · Constellation · Lockheed Martin · Raytheon Technologies · CAT · orano · OglethorpePower · H2C Hanford Tank Waste Operations & Closure · Northrop Grumman

Working with our Research partners

DEVCOM Army Research Laboratory · U.S. Naval Research Laboratory · Northeastern University · Penn State · UConn · University of Kentucky · Canadian Nuclear Laboratories · UMass · University of Nevada, Reno · Connecticut Center for Advanced Technology, Inc. · EPRI Electric Power Research Institute · AFRL Air Force Research Laboratory · University of Dayton Research Institute · South Dakota Mines · WPI · Rowan University · Pacific Northwest National Laboratory · INL

VRC Locations

Mid-America Aero:
West Fargo, ND
Process Development
Limited Production
Full Production

VRC HQ:
Box Elder, SD
Engineering
System Production
Process Development
Limited Production

★ VRC Owned and Operated
★ Gov. Owned VRC Operated
★ Cust. Owned VRC Operated

VRC San Diego (NPUC):
National City, CA
Process Development
Limited Production
Full Production

VRC Webster:
Webster, MA
Materials Research
Cold Spray & Wire-DED
Process Development
Limited Production

VRC Chesapeake:
Chesapeake, VA
Process Development
Limited Production
Full Production

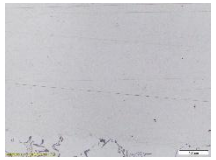
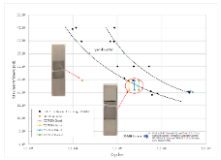
MADE IN U. S. A.
★ WITH DOMESTIC & GLOBAL PARTS ★

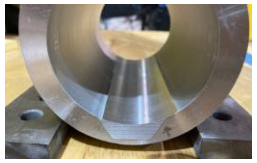
VRC – Full Service Cold Spray Provider

System Engineering & Manufacturing

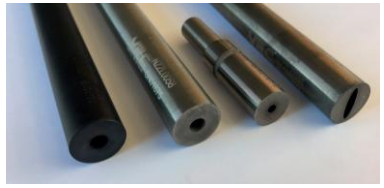


Cold Spray R&D/ Applications Development

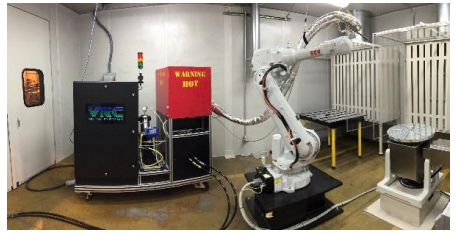
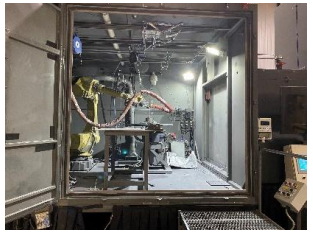





Consumables Sales and Prototypes

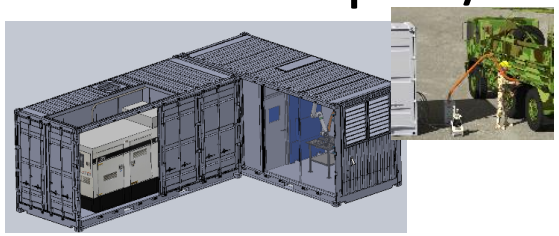



Automation/Booth Integration

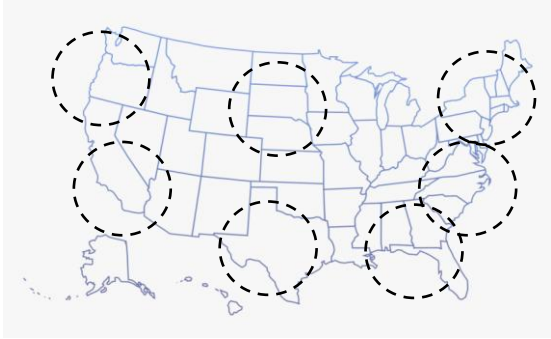




Fee for Service Work


On-site Repair/Modification

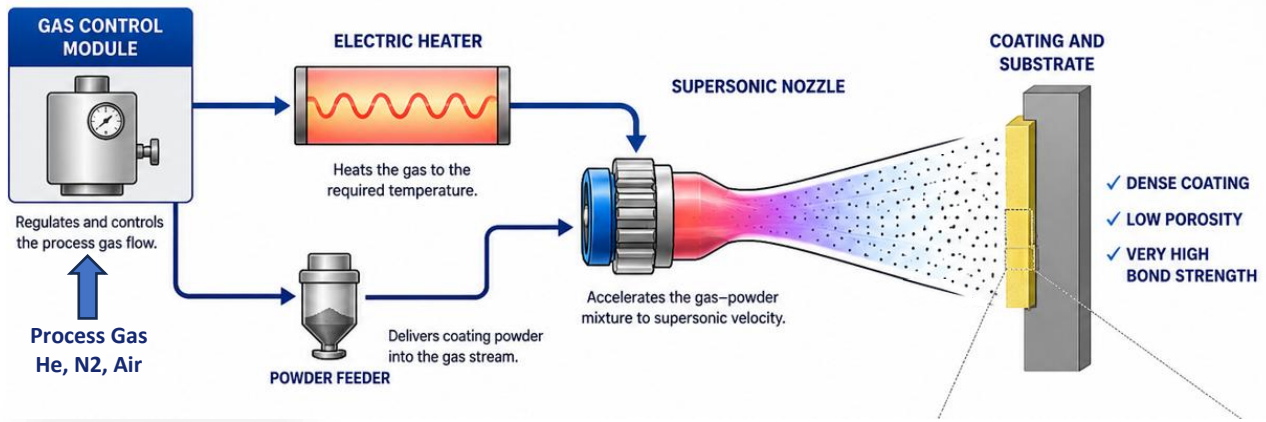


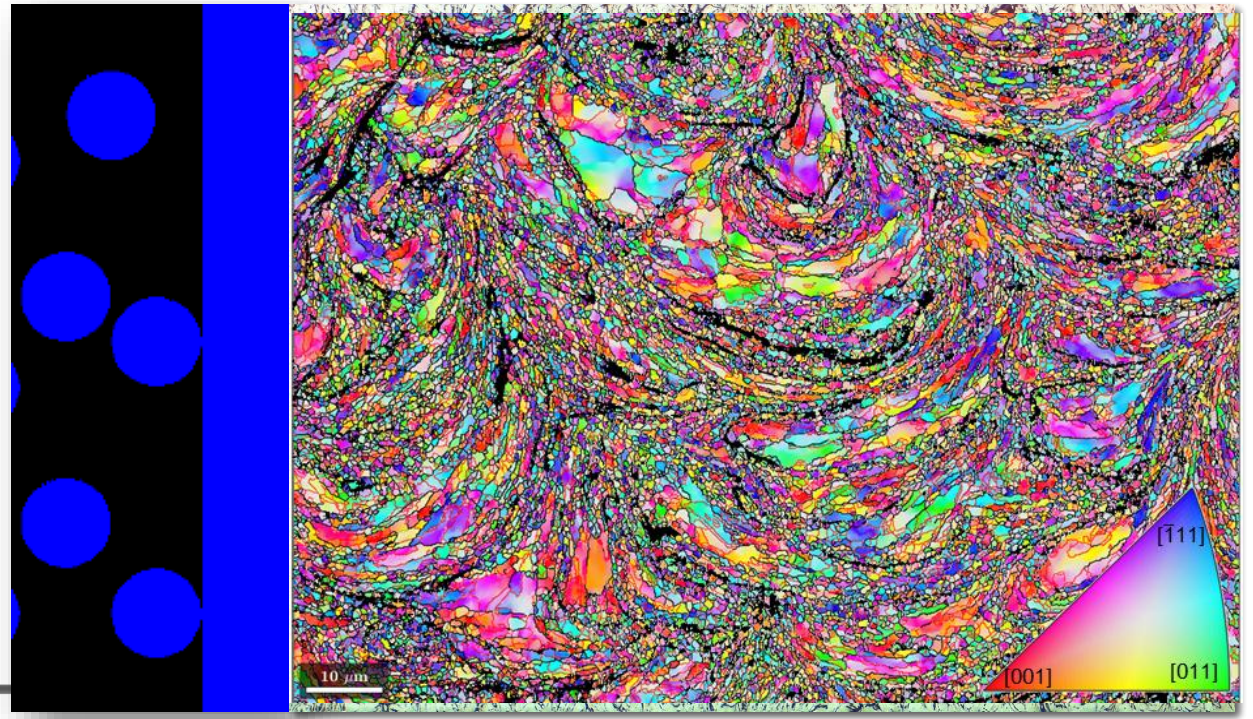

Cold Spray Operations or Regional Support

Cold Spray Overview

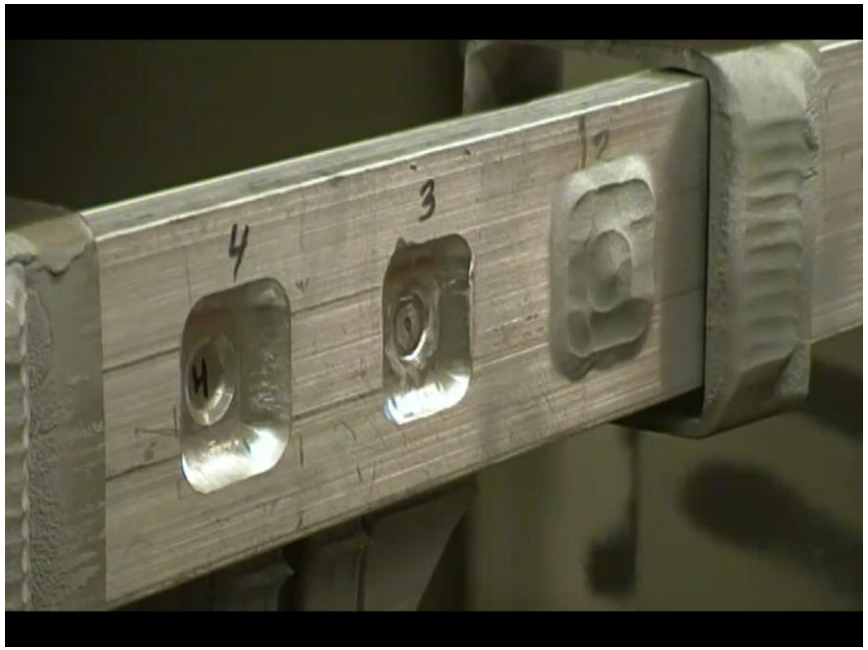
- Low Temperature, Solid State Process
  - No Heat Affected Zone
- Dense Coatings, High Adhesion
  - Less than 1% porosity and greater than 10ksi adhesion typical
- Can be applied with Compressed Air
  - Low Cost & Confined Spaces
- Etching Reveals Coating Microstructure
  - Severe Plastic Deformation & Particle Flattening
- EBSD Inverse Pole Maps
  - Highly Deformed, interlocked, sub-micron structures at Particle Boundaries
- Misorientation within grains
  - High compressive residual stress
- High Density of LAGBs
  - Crystal Structure Fracturing -> Dynamic Recrystallization -> Metallic Bonding



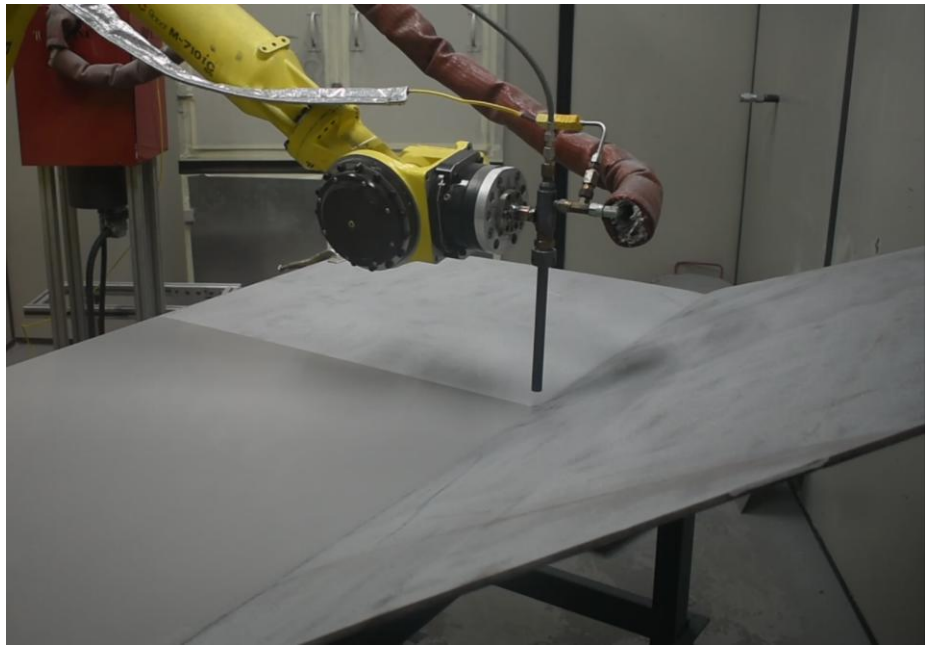


The Cold Spray Process

Titanium Spray



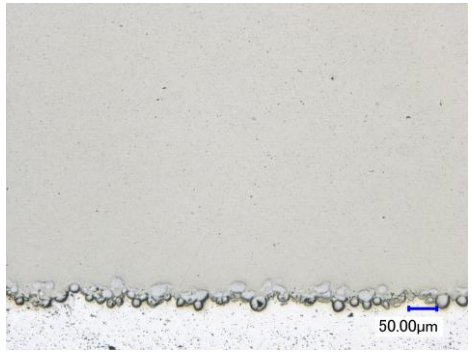
Aluminum Spray



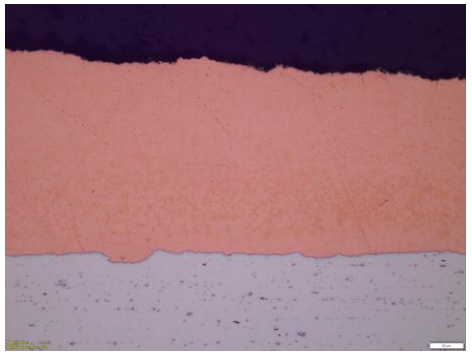
Stainless Steel Spray

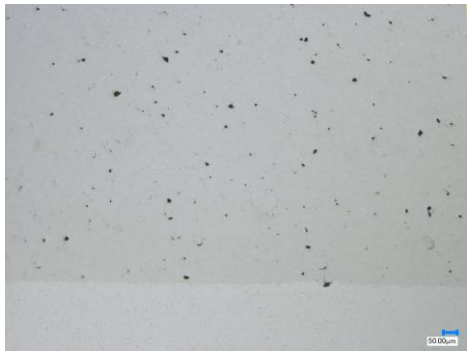
Example VRC Cold Spray Materials

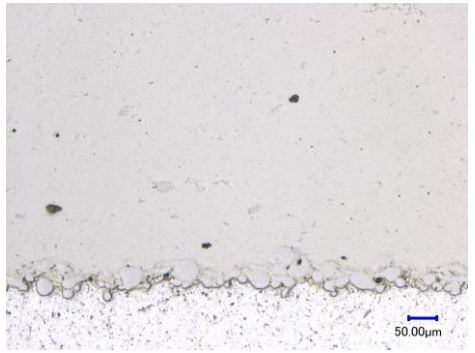
Unblended N2 Sprayed Powders



Pure Nickel


Pure Copper

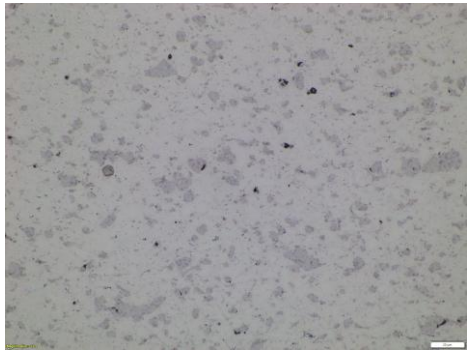

F357 Aluminum

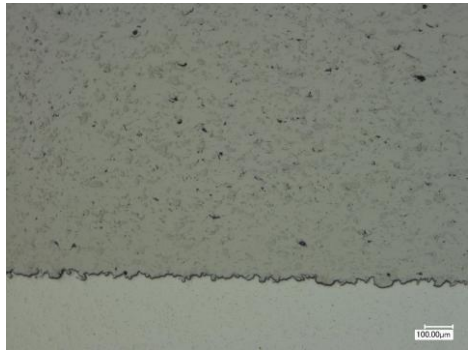


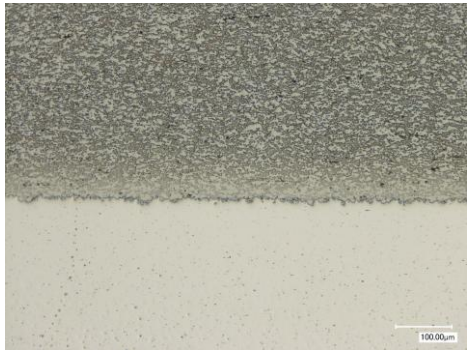
Stellite 6

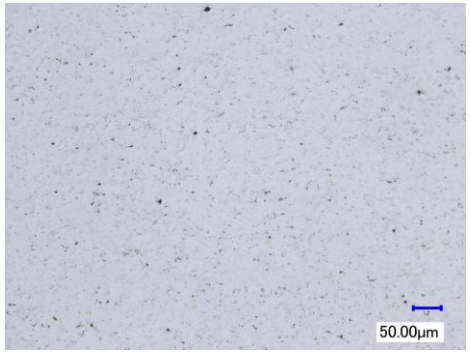

Inconel 625

Blended N2 Sprayed Powders

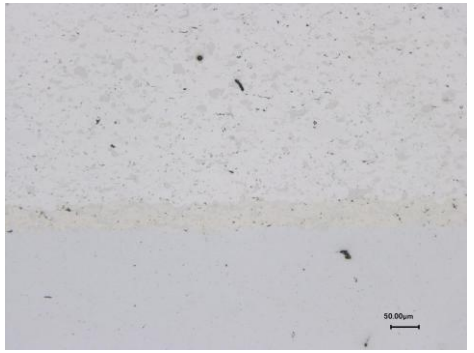

Ni-Chrome Carbide


316SS Blend


Tungsten Carbide-Ni

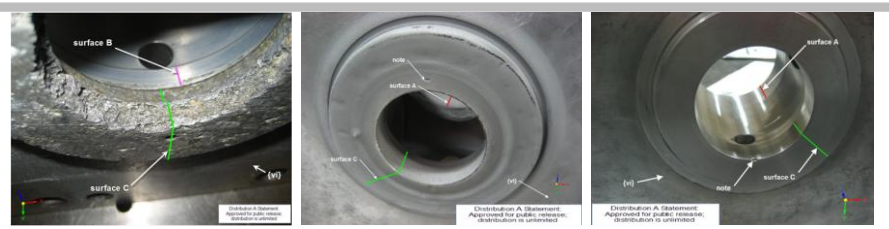


Stellite 21-Tribaloy T400

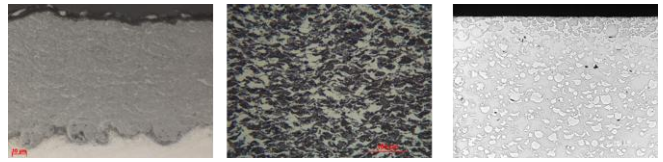

Specialized Bondcoats

Typical Cold Spray Applications

- Corrosion repair and mitigation



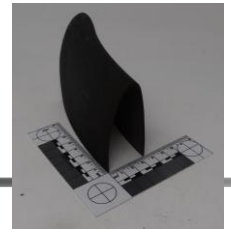
- Wear repair and mitigation

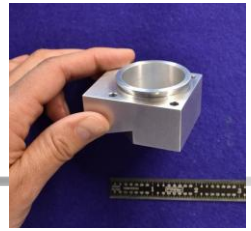


- Other surface enhancements
  - Appearance, Conductivity, Anti-microbial, extreme temps

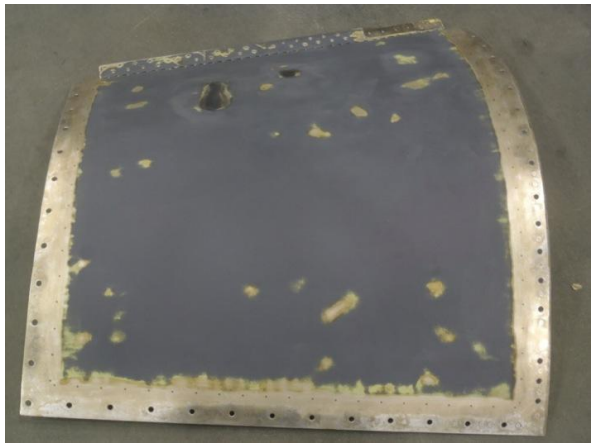
- Feature addition for damaged parts

- Additive manufacturing of new parts

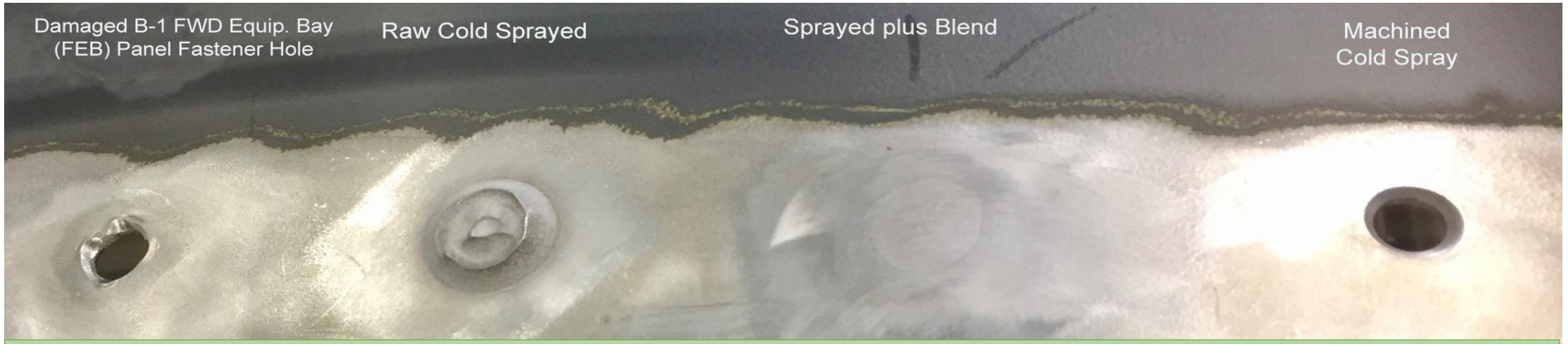




US DoD Applications - USAF



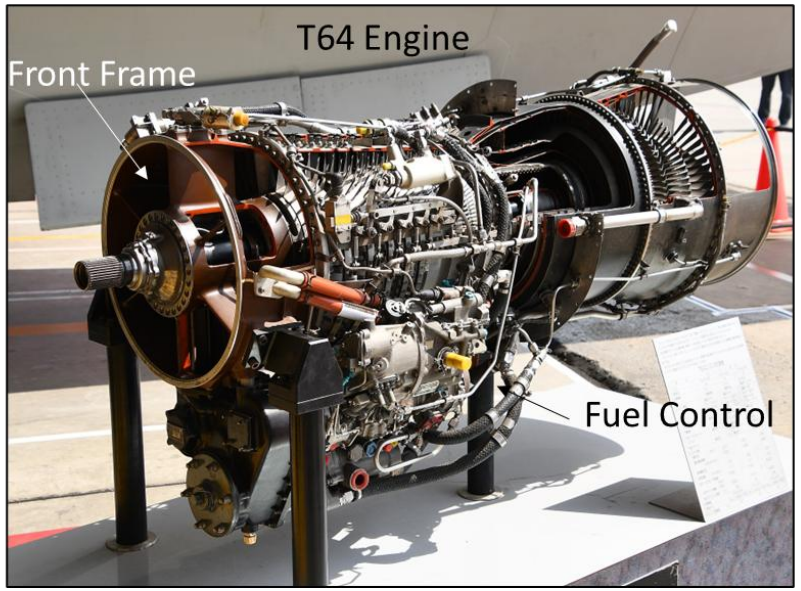
B1-B Forward Equipment Bay Panel fastener holes. Each plane has eight such panels that are removed between every flight for equipment inspection. Fastener holes become worn beyond spec. The panels have polymer composite stiffeners on the back. Their temperature sensitivity prevent melt-based metal repair methods.
Initially each replacement panel cost $225K and had a 12-18 month lead time.
Repair cost is an order of magnitude less with a turnaround time of less than a month.



FEB panel temperatures did not exceed 100°C during cold spray process.

US DoD Applications - NAVAIR

T64 Engine Components for NAVAIR



- Cast aluminum housing repairs
- VRC developed helium and nitrogen solutions that exceeded baseline performance in fatigue
- Helium Sprays selected by NAVAIR to ensure optimum fatigue performance

US DoD Applications - NAVSEA

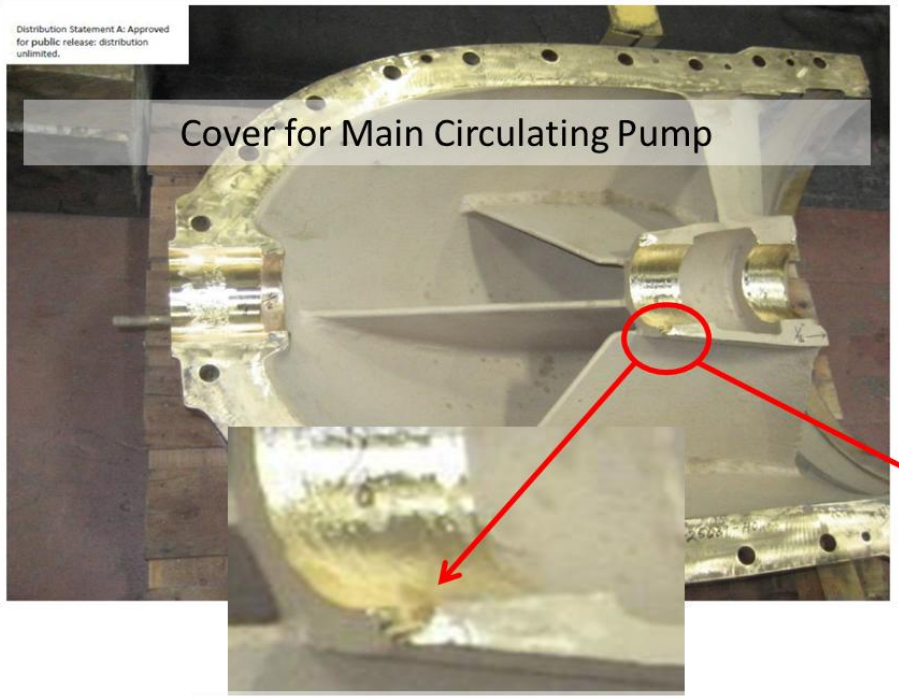
Bronze Repair of Nimitz Class Carrier Main Circulating Pump

Corrosion and pitting damage

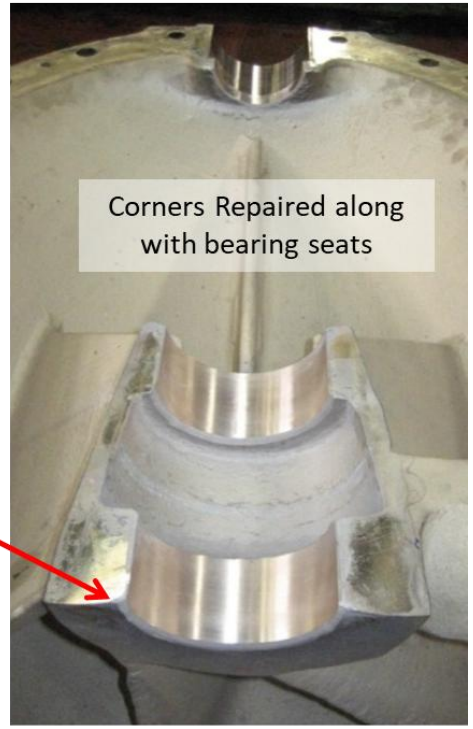
- 2 week turnaround on repair
- 30 lbs of material applied
- $500K and 1 year lead time for new part saved

As Received for Repair

After Repair



Corners have been chiseled to remove samples for metallurgical testing



Military Applications of Cold Spray

Bell AH-1W, AH-1Z, UH-1Y, or 214ST
- Support Assy, Bearing-Combining Gearbox
- Skid Tube

Bell V-22
- Case Set Assy - LH Proprotor Gearbox

Boeing AH-64
- Main Rotor Support Mast
- Tail Rotor Gearbox
- Intermediate Gear Support
- Main Gearbox Housing

Boeing AV-8B
- Molds for Composite Components

Boeing B-1
- FEB Panel

Boeing B-52
- Mechanical Output Housing

Boeing E-3A
- Input Housing

Boeing F-15
- Mechanical Drive A/D Housing
- Mechanical Drive Housing

Boeing KC-135F
- Electrical Housing

General Dynamics Electric Boat Ohio Class Submarine
- MCW Throttling Valve Body
- MCW Throttling Valve Tailpiece

General Dynamics Electric Boat Seawolf Class Submarine
- TD-63 Actuator

General Electric T-700 Engine
- Front Frame Particle Separator

Leonardo HC-27J
- Cuff Assembly

Lockheed Martin C-130
- Rear Half Barrel - 54H60 Propeller

Raytheon Patriot Missile System
- Pedestal
- Door

Sikorsky H-53
- Nose Gearbox Center Housing
- Tail Gearbox Center Housing
- Main Gearbox Housing

Sikorsky H-60
- Main Transmission Sump Housing
- Main Gearbox Housing

Commercial Applications of Cold Spray

Airbus A300/A330/A340
- Body Assembly
- Valve Body – Turbine Case Cooling Valve
- Flapper Assembly – LP Check Valve

Airbus Helicopter SA-366G1 (MH-65)
- Central Tube Assy

AgustaWestland AW139
- Pitch Control Lever
- Upper Scissor Lever

Bell 412
- Top Case Assy - Transmission

Bell 429
- Top Case Cover
- Cover Assy - Tail Rotor Drive Transmission

Bell 525
- Case Assy - Main Transmission Gearbox

Boeing 737 NG
- MLG Orifice Support Tube – Shock Strut

Boeing 747-8
- Inboard and Outboard Main Wheel Flange

Boeing 757
- Check Valve Body

Boeing 777-200/300
- APU Valve
- Valve Body – Turbine Case Cooling Valve

Boeing MD-11 or MD-10
- Inboard and Outboard Main Wheel Flats

Bombardier Challenger 300
- Upper Drag Brace

Bombardier Challenger 601/604
- Upper Link - Drag Brace Assembly

Columbia Helicopters Model 234 (Boeing CH-47D)
- Aft Transmission Accessory Cover
- Center Hook
- Heat & Vent Fan Rotor
- Heat & Vent Fan Casing
- Transmission Cooling Vane Axial Fan

Erickson (Sikorsky) S-64
- IGB Center Housing
- MGB Oil Cooler Blower Case
- MGB Oil Filter Support
- Rotor Brake Seal Housing

Rolls-Royce RB211
- Valve Body – Pressure Regulating and Shutoff Valve

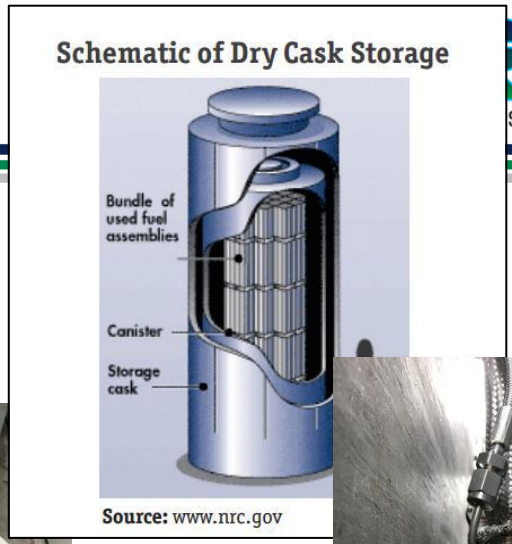
Sikorsky H-61
- Sump Upper Housing Assy

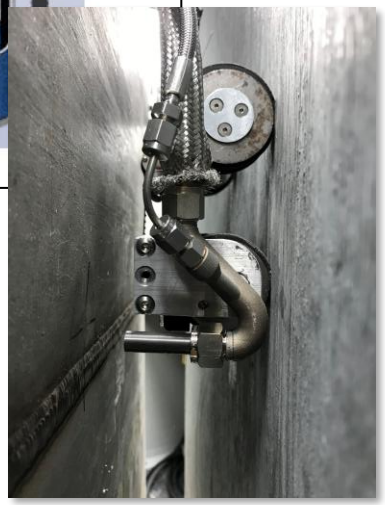
Sikorsky S-76
- Retraction Brace
- Lower Bifilar Support
- Input Bevel Gear Housing Assy
- Center Housing Assy
- Cylinder Assy (Main Landing Gear)
- Axle Fitting (Main Landing Gear)
- Fork (Nose Landing Gear)

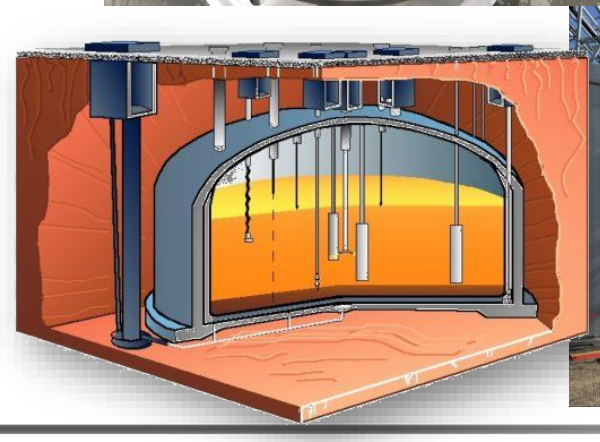
Sikorsky S-92
- #3 Backup Hydraulic Pump Housing
- Hub Assembly - Tail Rotor
- Main Gearbox Housing
- Oil Sump Housing
- Generator Cover Assy
- Droop Stop Pilot Assy
- Trunnion Assy (NLG Shock Strut Assy)

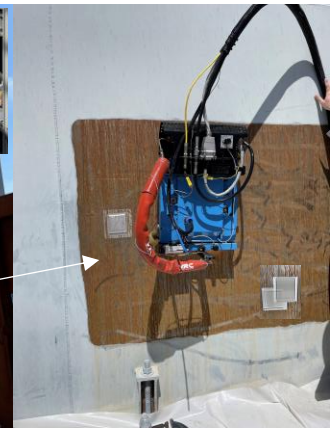
Nuclear Energy

- Corrosion Repair and Mitigation
  - Out-Of-Plant Repairs
  - Seawater Check Valve
  - Seawater Flow Element
- Commercial SNF DSC repair and mitigation
  - Concerns arise over stress corrosion cracking in the welds.
  - VRC has developed a cold spray solution that seals existing cracking (up to 75 micron) and prevents further cracking.
  - ASME Code Case in progress.
  - Deployed to and active ISFSI.
- Federal Nuclear Waste Tank Repair
  - Wall thinning in DSTs containing liquid waste
  - Developed cold spray solution and deployed in Hanford AN-farm.
- Secondary System Repair
  - Flow assisted Corrosion Repair
  - Must be completed in-plant









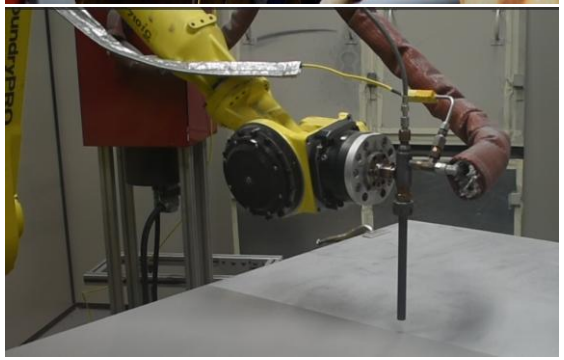
Portable Systems

VRC™ METAL SYSTEMS

VRC Cold Spray Systems

Gen IV – Stationary system with highest spray conditions, multiple feeders, advanced data acquisition and analysis

FireFly – Most compact and portable medium pressure system



All systems support robotic or handheld operation

Raptor – Stationary or portable system with full high-pressure capability

Dragonfly – compact portable system with full high-pressure capability

MADE IN U. S. A.
★ WITH DOMESTIC & GLOBAL PARTS ★

VRC Portable Cold Spray Systems

Dragonfly

- Modular, Hatchable Cold Spray system
- Ruggedized, shock-proof, NEMA 4X enclosures
- Capable of operation with the Applicator Heater (900 °C Capable)

Common Specifications

- 1000 psi (69 bar)
- 900°c at the applicator (700°C with Flex Hose)
- Hand Operated or robotically controlled
- Air, Nitrogen Primary, Helium capable
- Heater Weight: < 17 kg (37 lb)

Conventional Spray Booth

Handheld Operation

Portable Robotics

Raptor

- Ruggedized, Transportable, MIL-SPEC design.
- NEMA 4X enclosure and integrated lift and tie points.
- Precision control system, flexible HMI pendant interface, datalogging and alarms

MADE IN U. S. A.
★ WITH DOMESTIC & GLOBAL PARTS ★

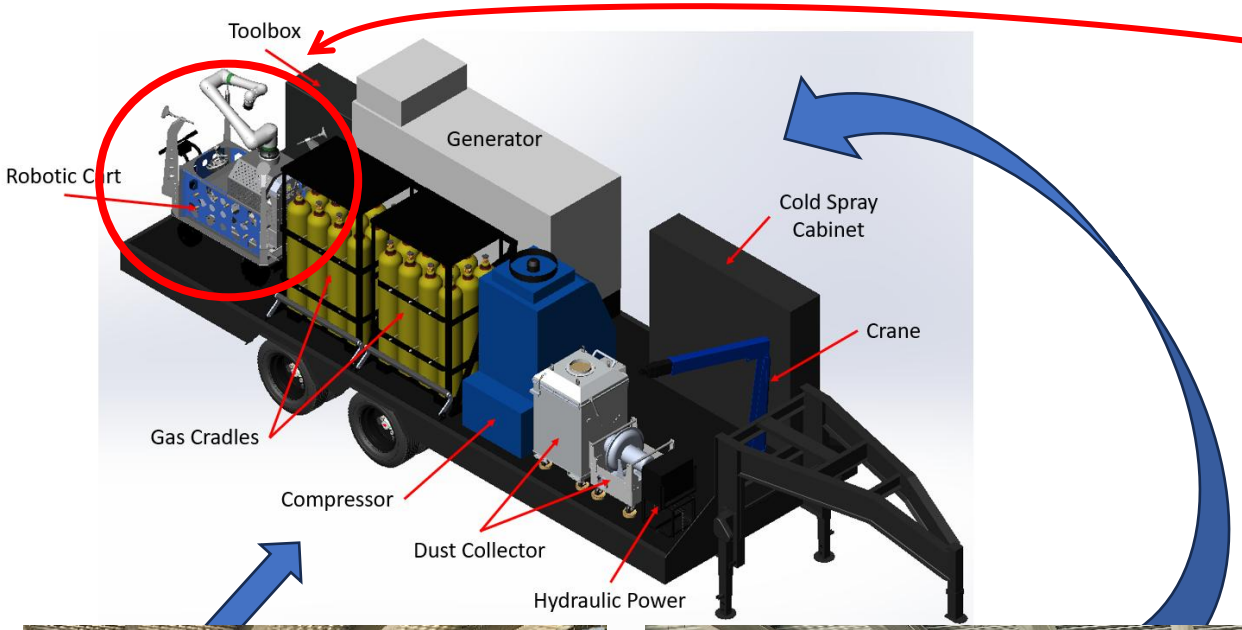
VRC Cold Spray Systems

VRC FireFly – Lightweight and Highly Portable Medium Pressure-High Temperature System

- 100 - 500 (6.9-35 bar) psi pressure
- 700°c temperature capable
- Air, Nitrogen Primary, Helium capable
- Cool-Touch applicator body <40°c
  - Multiple nozzle/applicator options
- Advanced powder feeder design
  - Feeding of very fine powders (down to 1-5 micron)
  - Simple cleaning
  - Reduced PF carrier gas (down to 25 SLPM)
- Operates on single phase 220/240V-30 Amp
- Hand or Robotic Operation (10 lb applicator)
- Special line of powders enabling deposition of advanced materials

MADE IN U. S. A.
★ WITH DOMESTIC & GLOBAL PARTS ★

Brolga-2 Expeditionary CS System



Mobile Robotic Cold Spray Cart

Fanuc CRX Collaborative Robot

20 kg payload, 1m/s speed

Ruggedized, self-propelled cart

MADE IN U. S. A.

★ WITH DOMESTIC & GLOBAL PARTS ★

CAMP Site Expeditionary CS Facility

Cold Spray
Advanced
Manufacturing
Portable
SITE™

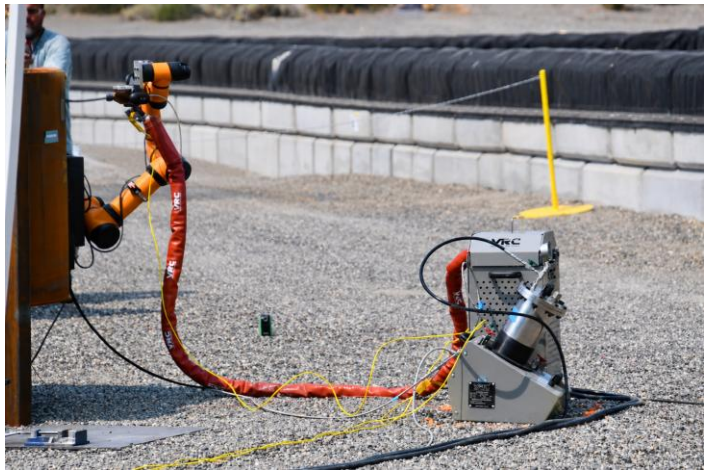
C.A.M.P. SITE™

MADE IN U. S. A.
★ WITH DOMESTIC & GLOBAL PARTS ★

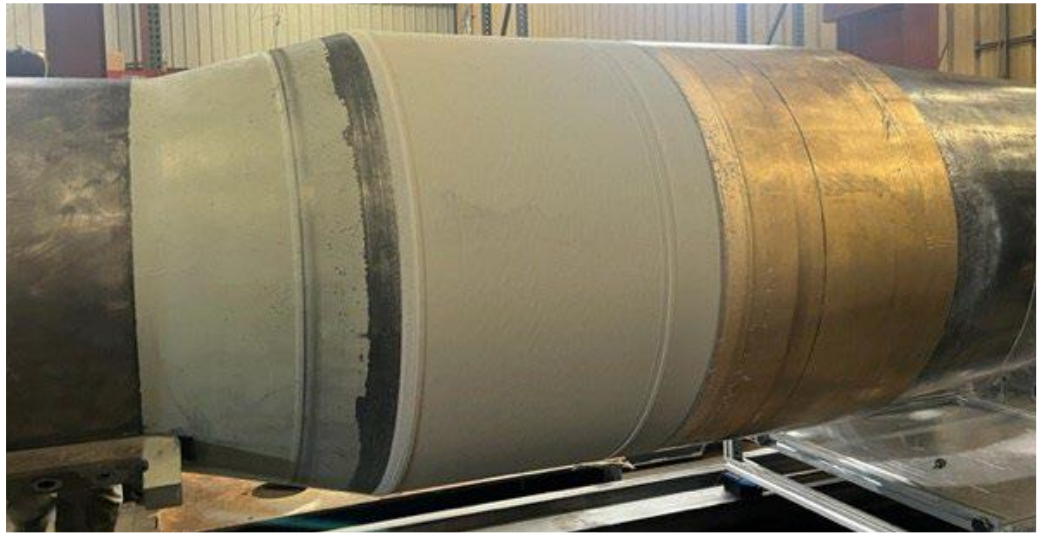
Point of Need Repair

VRC™
METAL SYSTEMS

Point of Need Cold Spray



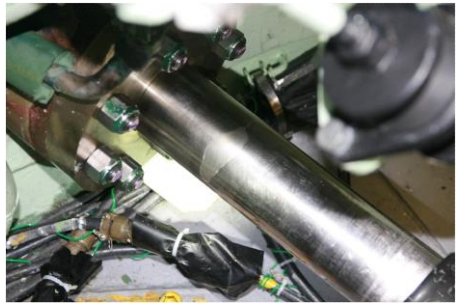
VRC has industry-leading field experience, delivering cold spray repairs to the point of need



Point of Need Repairs - DOD

On-Ship Shaft Repair

- Corrosion damage repaired in place on submarine with Ni based repair material
- Saved **5 months** in drydock
- Hardware used
  - Dragonfly™ cold spray system
  - Vark™ Portable wet dust collector



Point of Need Rudder Shaft Repair

- First repair performed in customer facility spraying 126 kg of CuNi based powder in 28 hours to avoid additional **6 months** of drydock time
- VRC hardware used
  - Raptor™ portable cold spray system
  - Vark™ Portable dust collector
- Second rudder repaired on ship 1 year later after failure noted during deployment

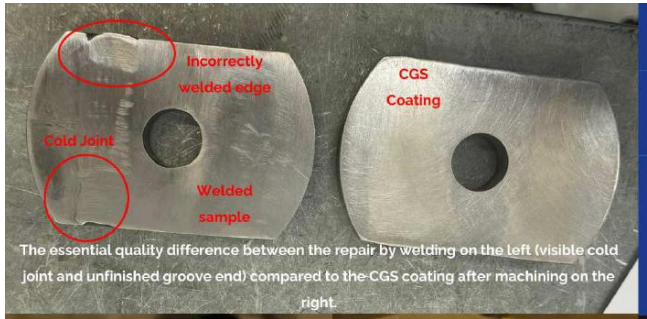
Onsite Mobilization and Training

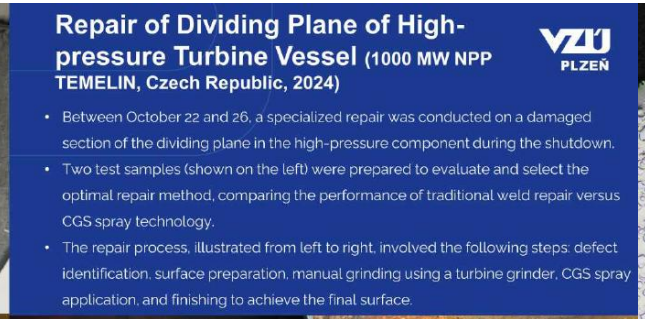
Navy Training at Port Hueneme, CA - SDTS

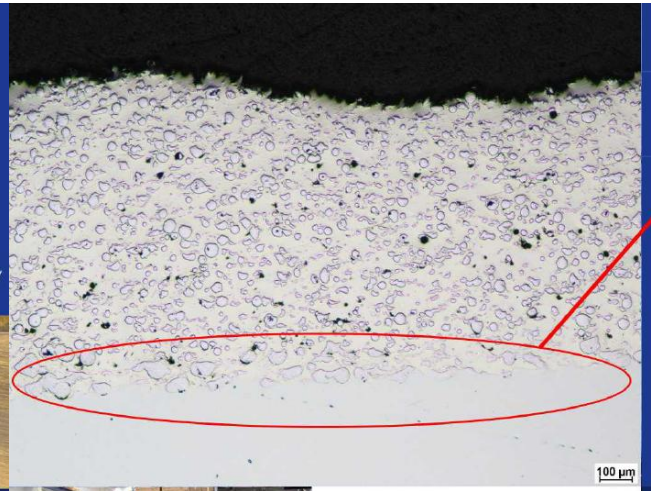
- Brought CAMP Site Pierside and demonstrated on site part repair
- Collaborated with other technology providers and university partners
- Taught hand operation of cold spray equipment
- Demonstrated robotic and hand repair in-dock and at-sea
- Took part in demonstrations devised on the spot to address ship needs

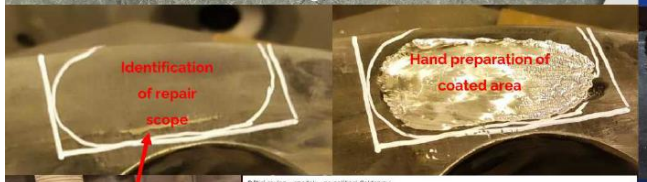
Point of Need Repairs - Nuclear

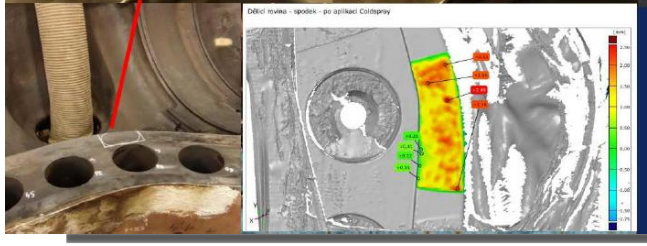
- Worked with VZU in Pilsen Czeck Republic to repair steam lancing in a steam turbine parting face
- Multiple challenges overcome and CS was successfully qualified
- CS repair performed with VRC and VZU at Temelin power plant

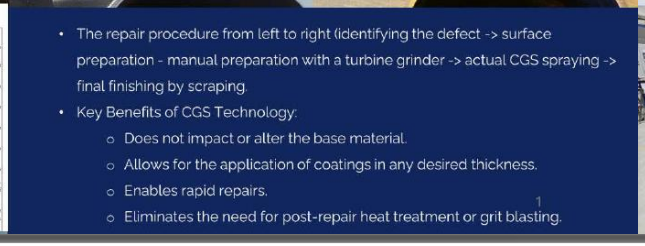


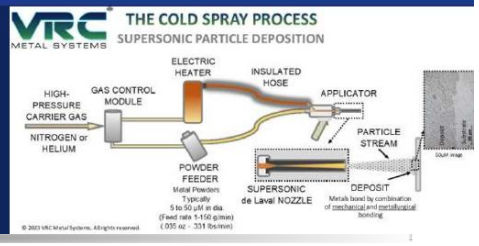






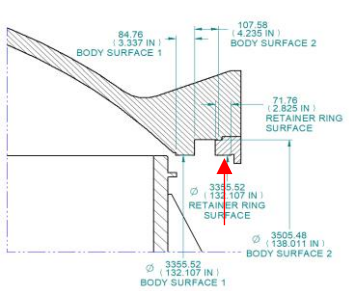


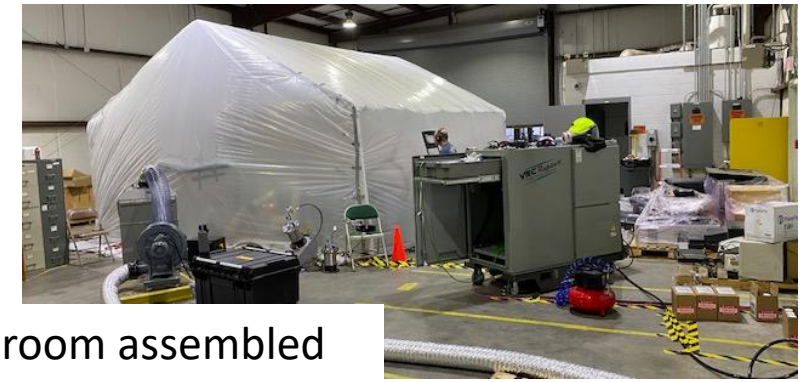




Point of Need Repair - Hydro

- Worked with PNNL and Voith Hydro Inc. to repair sealing surface for retainer ring with bronze material VRC CU03





Temporary spray room assembled

Before machining prep

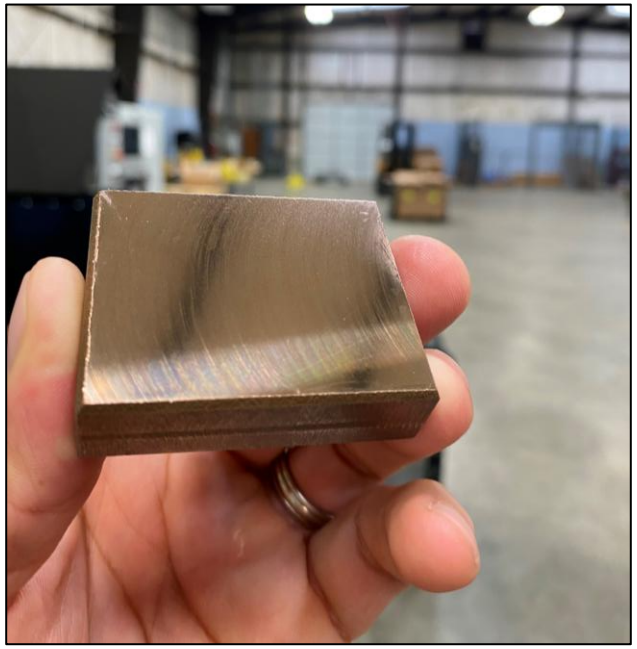
Machined in prep for spray

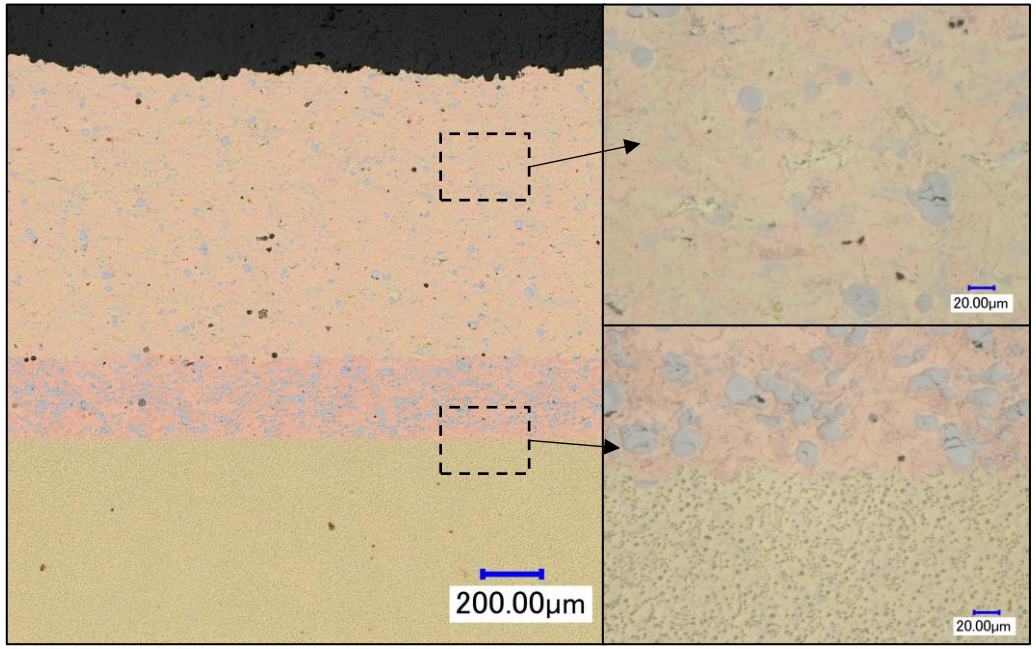
Robotic spraying to achieve .13 inches buildup

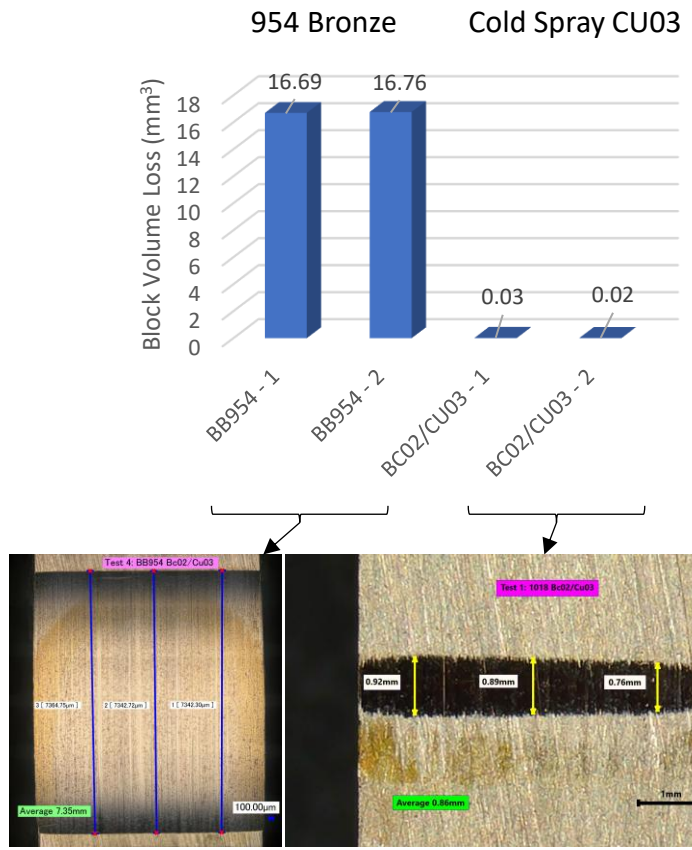
After spraying

Point of Need Repair - Hydro

- CU03 Bronze Cold Spray - Qualification Results Summary
  - 11,912 psi Adhesion
  - 0.42 % Porosity
  - Ra = 16 µin
  - 251.3 ± 11.9 HV
  - Wear – >99% reduction vs. 954 Bearing Bronze







The cold sprayed CU03 met all acceptance criteria for application on 1018 Carbon Steel and 954 Bearing Bronze.

Point of Need Repair Case Study

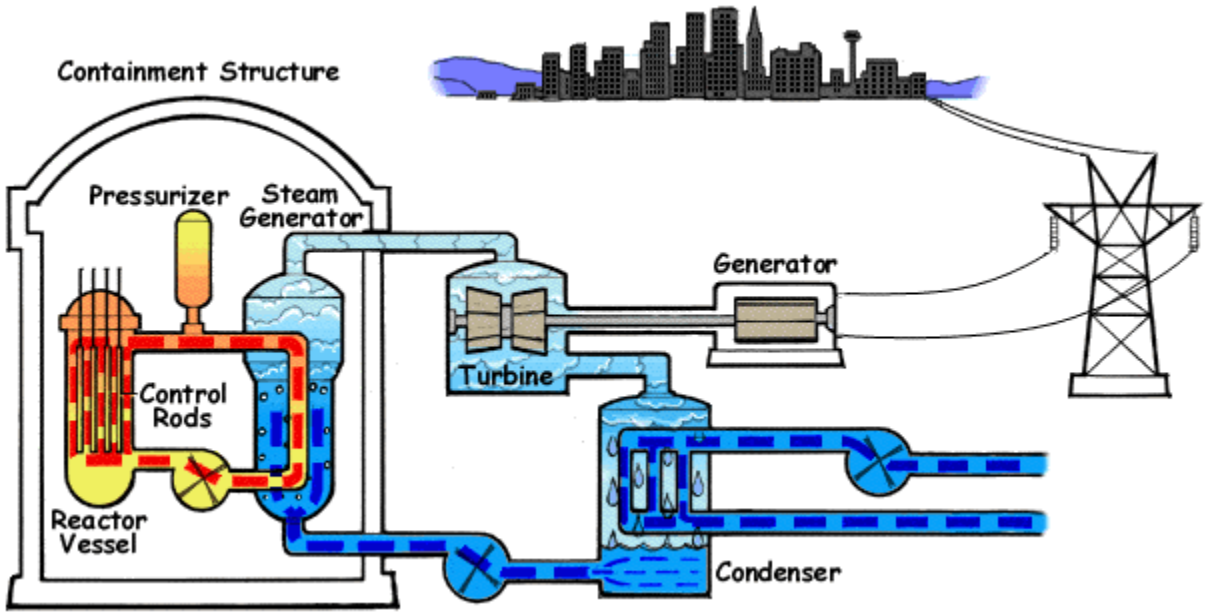
VRC™ METAL SYSTEMS

Constellation®

framatome

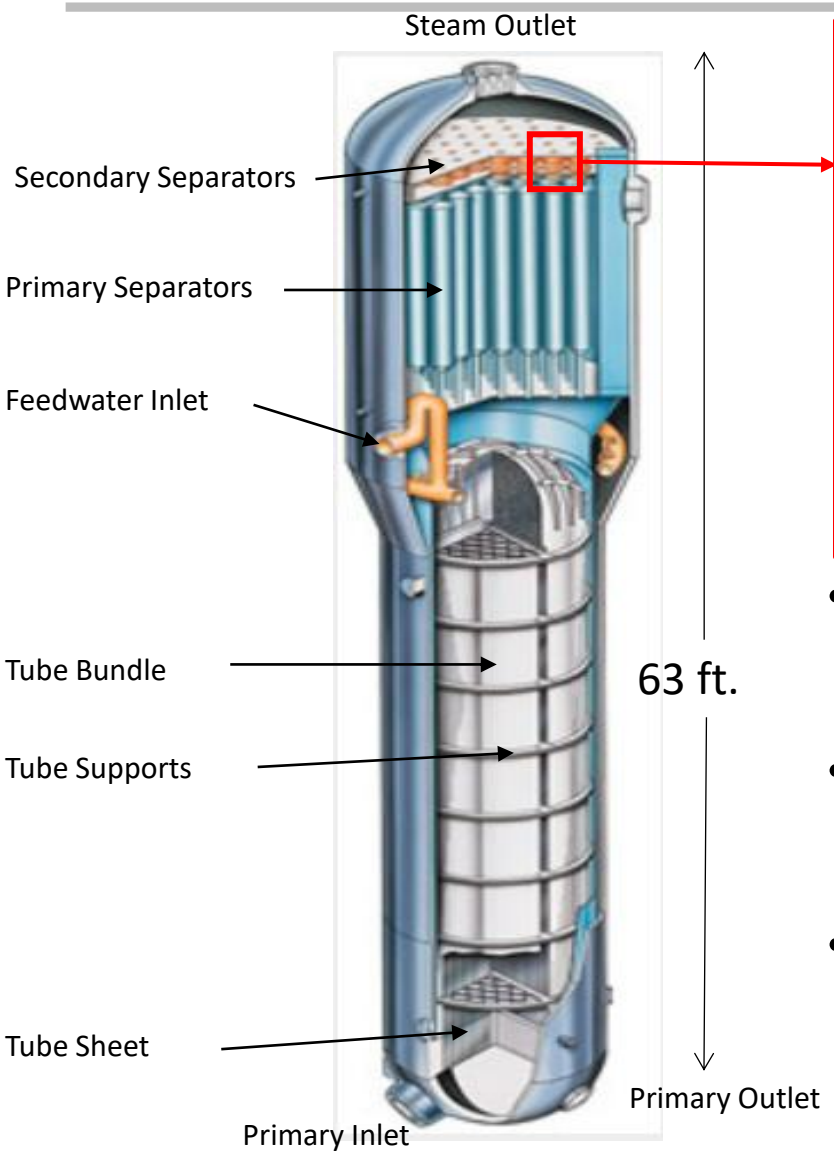
Background

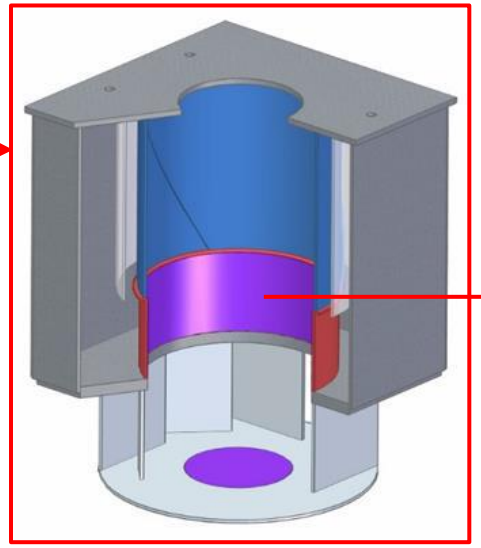
- Pressurized Water Reactors
  - Most Common Reactor Configuration
  - Pressurized primary water contacts the fuel
  - Primary water is contaminated.
  - Heat is transferred to the secondary water in the Steam Generator
  - Secondary water is clean, pure, and contains no radioactive contamination.
  - This allows the remainder of the plant to remain clean
- Steam generators are tube bundle heat exchangers designed to boil the secondary water.
  - Internal structures are included to divert water droplets to increase steam quality
  - Generator structure and tube integrity are imperative to plant operation.
  - Leaks in the tube bundle can contaminate the secondary system, contaminating the plant.
  - Moisture carry-over can damage downstream components such as piping, valves and turbines.

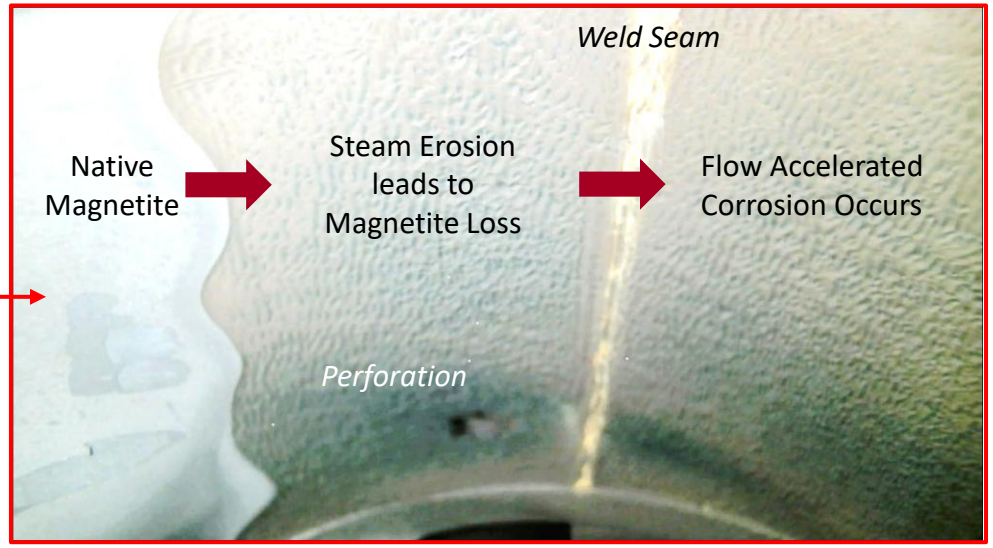


https://www.nrc.gov/reading-rm/basic-ref/students/animated-pwr

Problem Overview







- Babcock & Wilcox Steam Generator
  - Assembly contains 85 separators per Generator, 2 generators per unit.
  - SA36 and A36 Plate, A569 Piping / Tubing, Chromium content <0.01%
- Environment
  - Pure water, Very low oxygen levels, Contaminants in ppb levels (Na, Cl, SO_4)
  - ~300 °C Operating Temperature, mixed phase flow
- Problem after *40 years of operation*
  1. Liquid Droplet Impingement fractures and wears away native magnetite layer
  2. Exposed Steel suffers FAC from liquid layer on surface
  3. Corrosion produces perforations and liberates FOD, increasing moisture carry-over and tubing wear risk

Problem Overview

- Secondary moisture Separator Degradation
  - Baseplate degradation >90% through wall expected by 2026
  - Sidewall perforations in over 35% of secondary separator sidewalls
  - Currently no repair for sidewall degradation exists
- Risk to Plant Operation
  - Liberation of small pieces of moisture separator components
  - Pieces are most likely to fall into SG tube bundle
  - Pieces removed from SG during 2023 inspection are large enough to cause significant tube wear
  - Potential for SG tube leak
  - Continued increase in moisture carryover
    - Plant Data: Average MCO (Loop A & B) – 1.9% + 0.9%
    - Typ. SG Moisture Carryover Design Spec <0.1%

Figure 5: Pieces from PMS / SMS

Solution – Cold Spray

- Solution has been under development since 2020
- Qualification Plan developed with and approved by customer
- The overall solution was reviewed and approved by external nuclear engineering group / evaluation.

Deposition Efficiency	40 – 49%
Hardness	250 HV
Porosity	0.5 – 1.5%
Adhesion	8.5 ksi glue failure
Glueless Adhesion	17.08 ksi
Deposition Rate	0.004 per layer
Single SMS Coating Time	10 minutes
Cold Spray Gas	Compressed Air

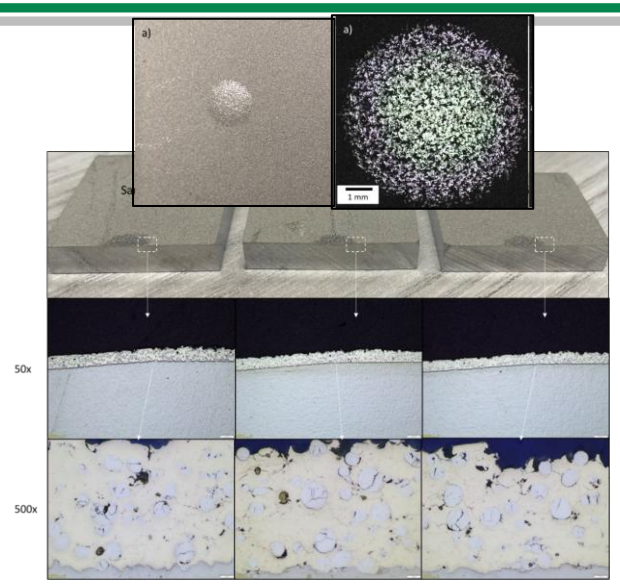
✓ Adhesion, Porosity, Hardness

✓ Interfacial Shear Strength

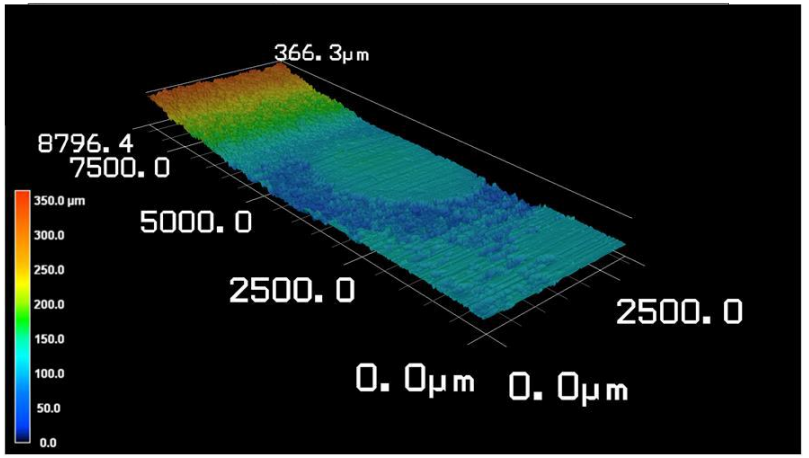
Solution – Cold Spray

- Additional Qual testing
  - Impact and Thermal Shock
    - 10 J impact with steel ball
    - Thermal shock testing from 287 °C to Room Temp using water quench
    - 100 cycles
  - Steam Erosion
    - 177 °C , 130 psi saturated steam (approx. 30% quality) jet impingement
    - 0.0625 DIA, 20-25 ft/s velocity
    - 20 day test time
  - Electrochemical FAC
    - 40 °C , 25 m/s jet impingement
    - Low dissolved oxygen and slightly acidic conditions using carbonic and acetic acid.
    - Simulates FAC in secondary system

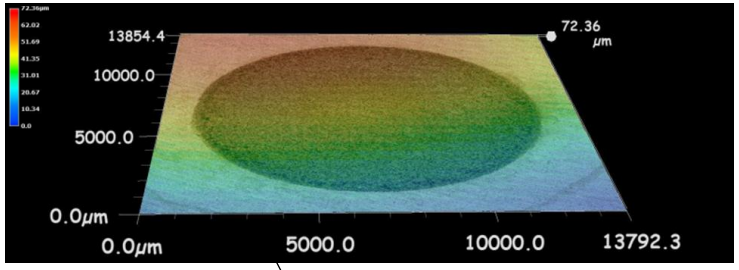
✓Coating met Acceptance Criteria

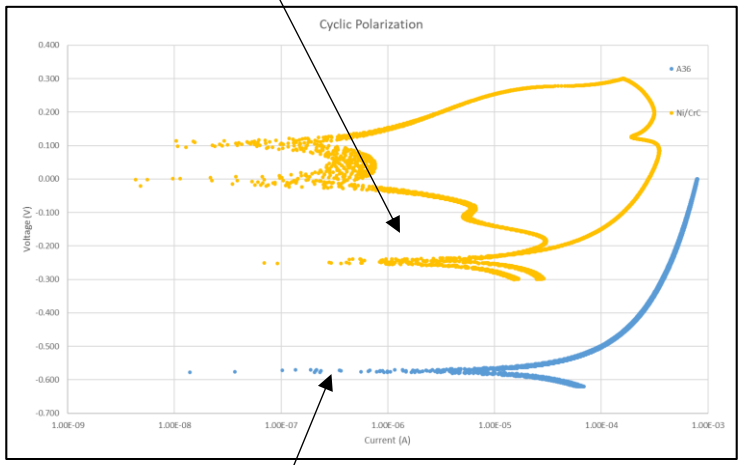


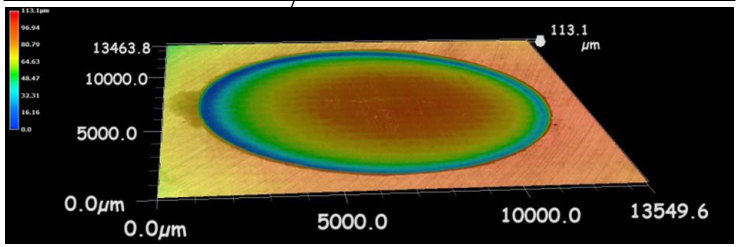
✓ Impact & Thermal Shock



✓ Steam Erosion







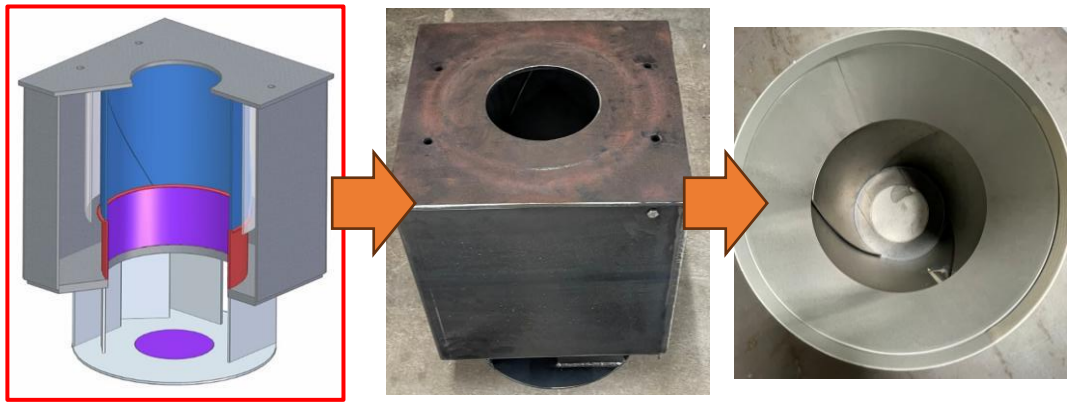
✓ Electrochemical FAC

Example Qualification Process

- Qualification
  - Test and Witness coupon material should be as relevant as possible.
  - Spray Replicates using Raptor machine and portable robot
  - Testing to include Adhesion, Porosity, Hardness
  - Test to meet acceptance criteria with Raptor and Robot
  - Establish critical process parameters and monitor limits
    - Process Gas Pressure and Flow, Powder Feed Rate and Flow, heater and applicator temperature
- Mockup
  - Apply repair in relevant geometry on a relevant material (substrate)
    - Destructively test mockup to ensure appropriate coverage and performance
    - Visual, Mockup metallography, hardness
  - Quality Control
    - Real Time Critical process parameter monitoring and Post Spray data review
    - Witness Coupon: coupon, sprayed before and after.
      - Onsite Testing: Visual, Thickness, Bend
    - Witness Coupon destructive testing.
      - Adhesion, porosity, hardness testing

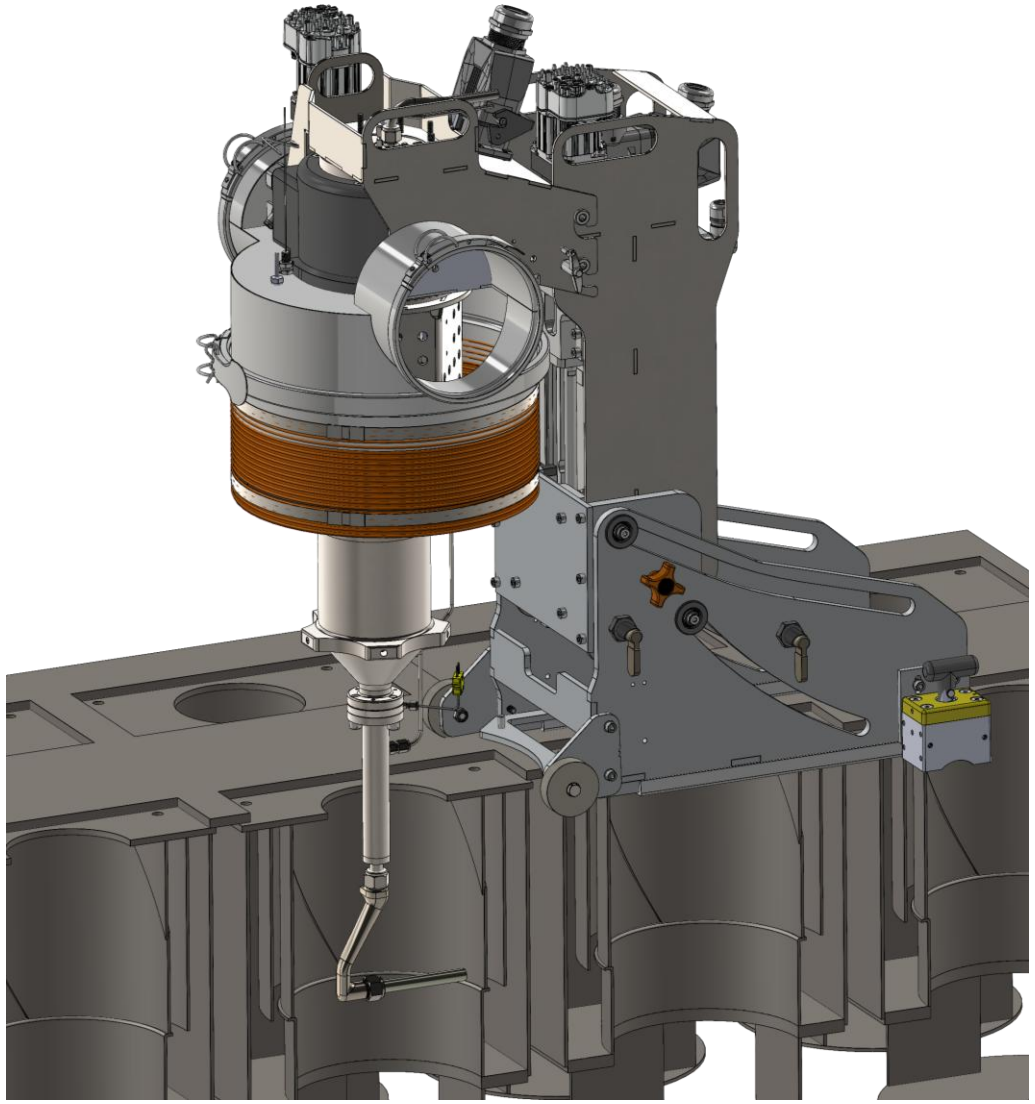
Example Qualification Matrix

Test	Replicates	Acceptance Criteria	Result
Adhesion	10	> 7,000 psi	Pass/Fail
Porosity	10	< 1.0 %	Pass/Fail
Hardness	10	> 300 HV	Pass/Fail
Bend	10	No Debond	Pass/Fail



Cold Spray Tooling

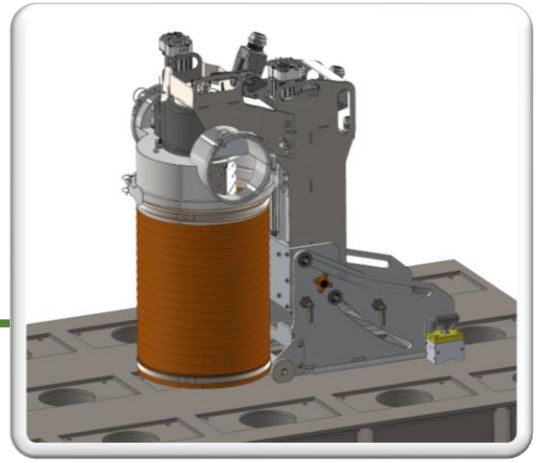
- Rotary right-angle nozzle
  - Nozzle longer than steam orifice - kinematically constrained entry motion
  - Heater is located on the rotary portion
- Custom slip-ring and rotary union
  - 480 VAC, 30A w/ 10A Signal lines
  - 75 rpm, 50 lb payload, 1" eccentricity
  - Split gas rotary unions for process and powder feed. Seals robust to powder loading.
- Motion control System
  - Closed Loop linear and rotational motion
  - Synchronized with Raptor Cold Spray system for single-button process control
  - Magnetic attachment to deckplate
- Integrated Dust Collection
  - Multiple attachment points for 6" Duct
  - Removable Bellows with deckplate magnets

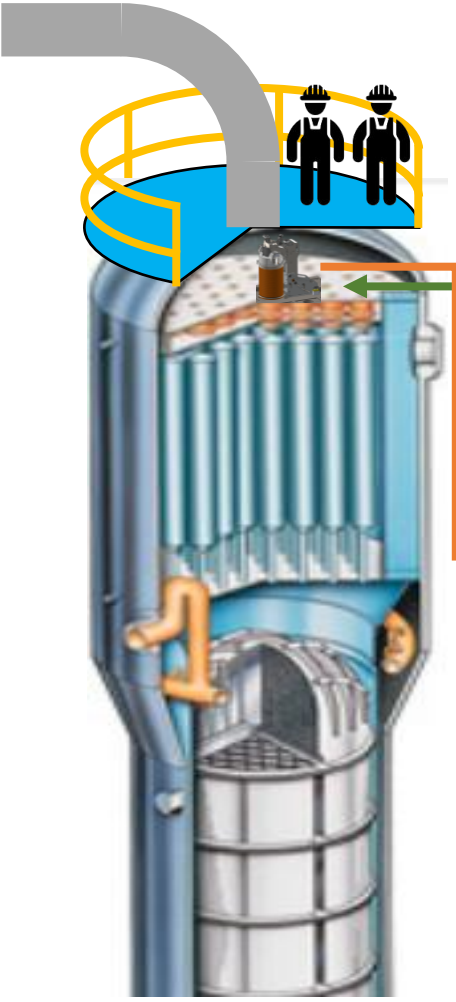


Implementation Process Overview (G1R46)

Cold Spray Dust Collector

Cold Spray Tooling





Approx. 100 ft

Containment

Task Lead

Control Area (Ginna Training Center East)

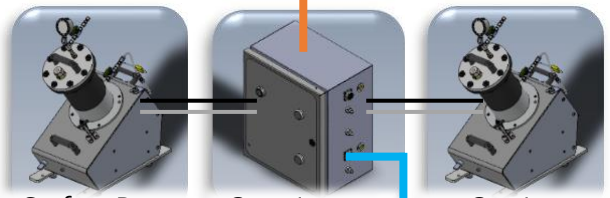
Located Outside Equipment Hatch

Compressed Air Cylinders (12-pk)

Compressed Air Cylinders (12-pk)

Compressed Air Cylinders (12-pk)

Containment Laydown Area



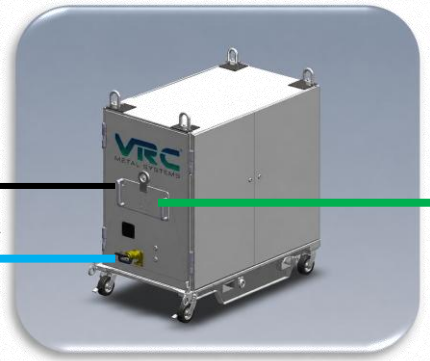
Surface Prep Powder Feeder

Containment Interface Box

Coating Powder Feeder

Containment Refuel Floor

Approx. 300 ft



Approx. 1,000 ft Fiber Optic

VRC Raptor™ Cold Spray System

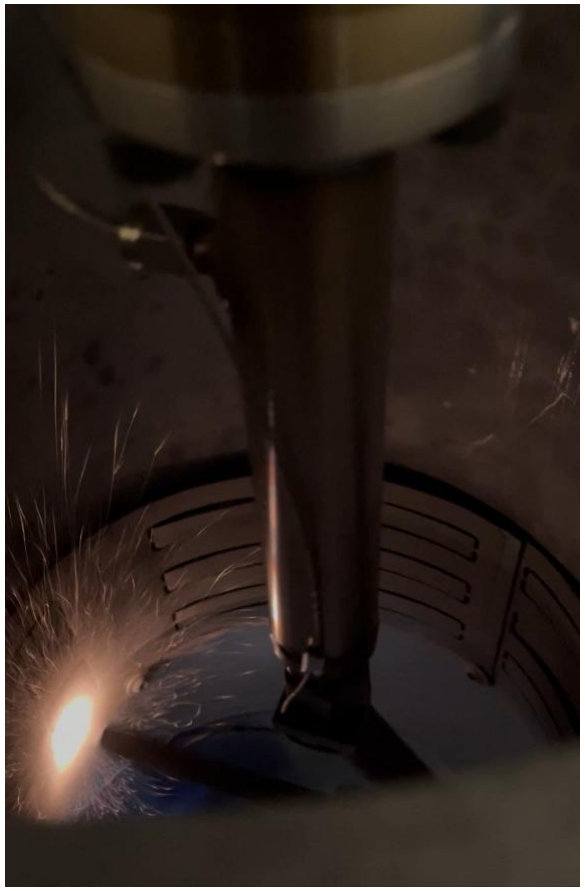
0:00:01 0:01:12

CONSTELLATION3

Saved to this PC

Cold Spray Tooling

Video of Witness Coupon Spray

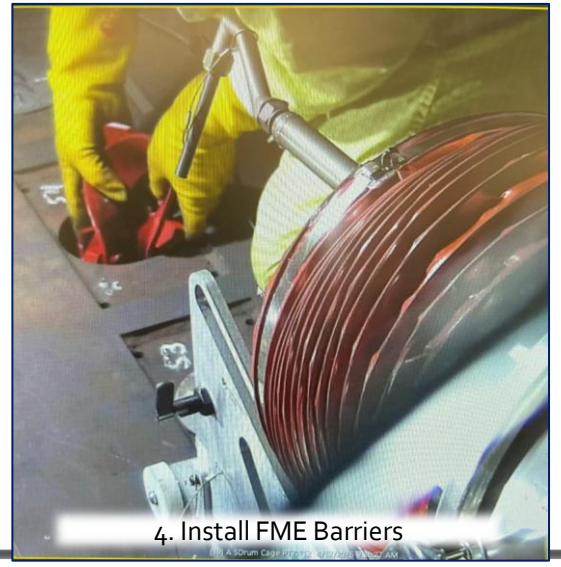


Outage Cold Spray Implementation

1. Identify SMS to be repaired

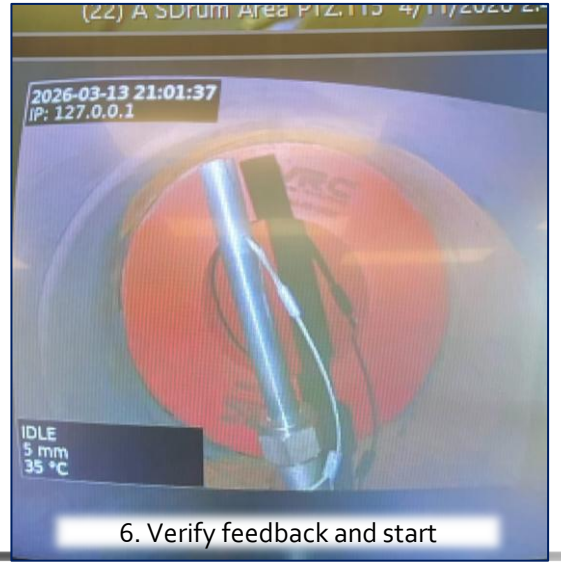
2. Move tool to location

3. Align tool to SMS



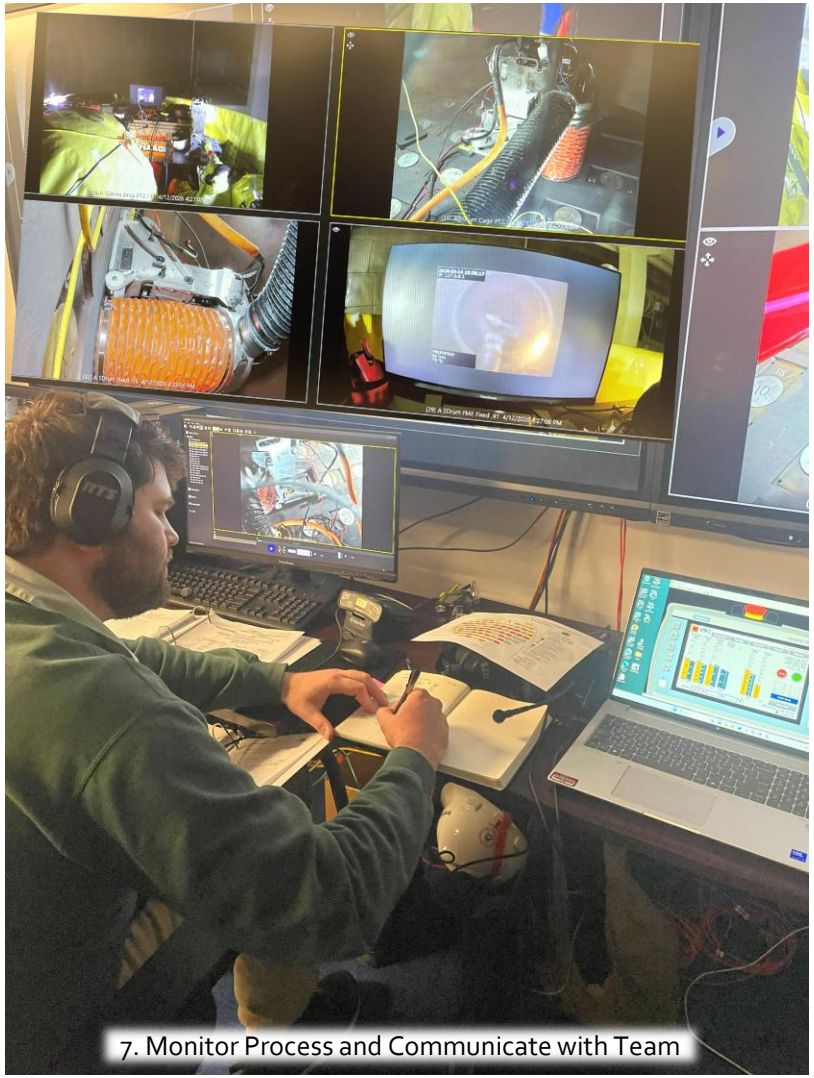
4. Install FME Barriers

5. Raise Tool Into Position

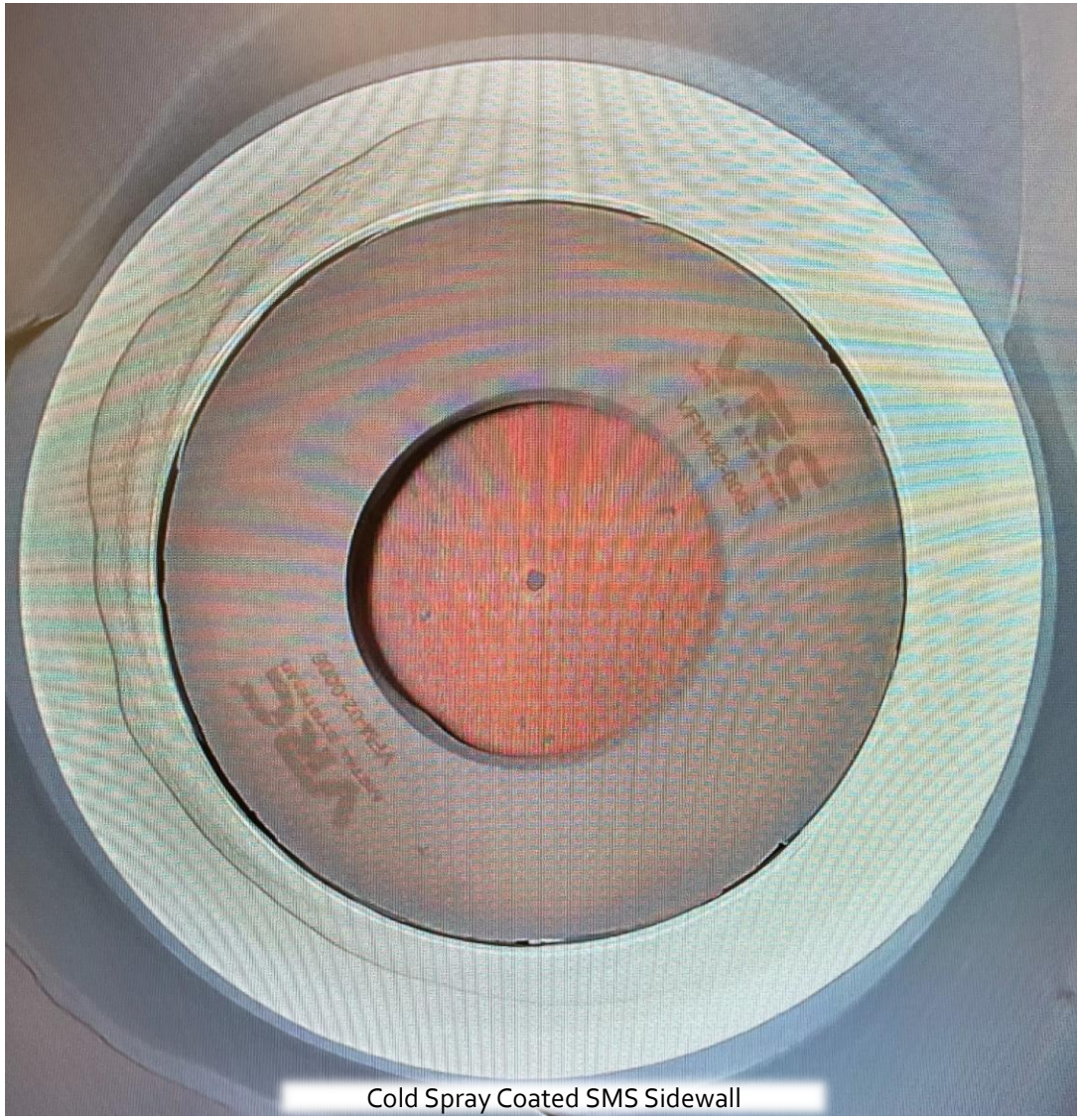


6. Verify feedback and start

Outage Cold Spray Implementation



7. Monitor Process and Communicate with Team



Cold Spray Coated SMS Sidewall

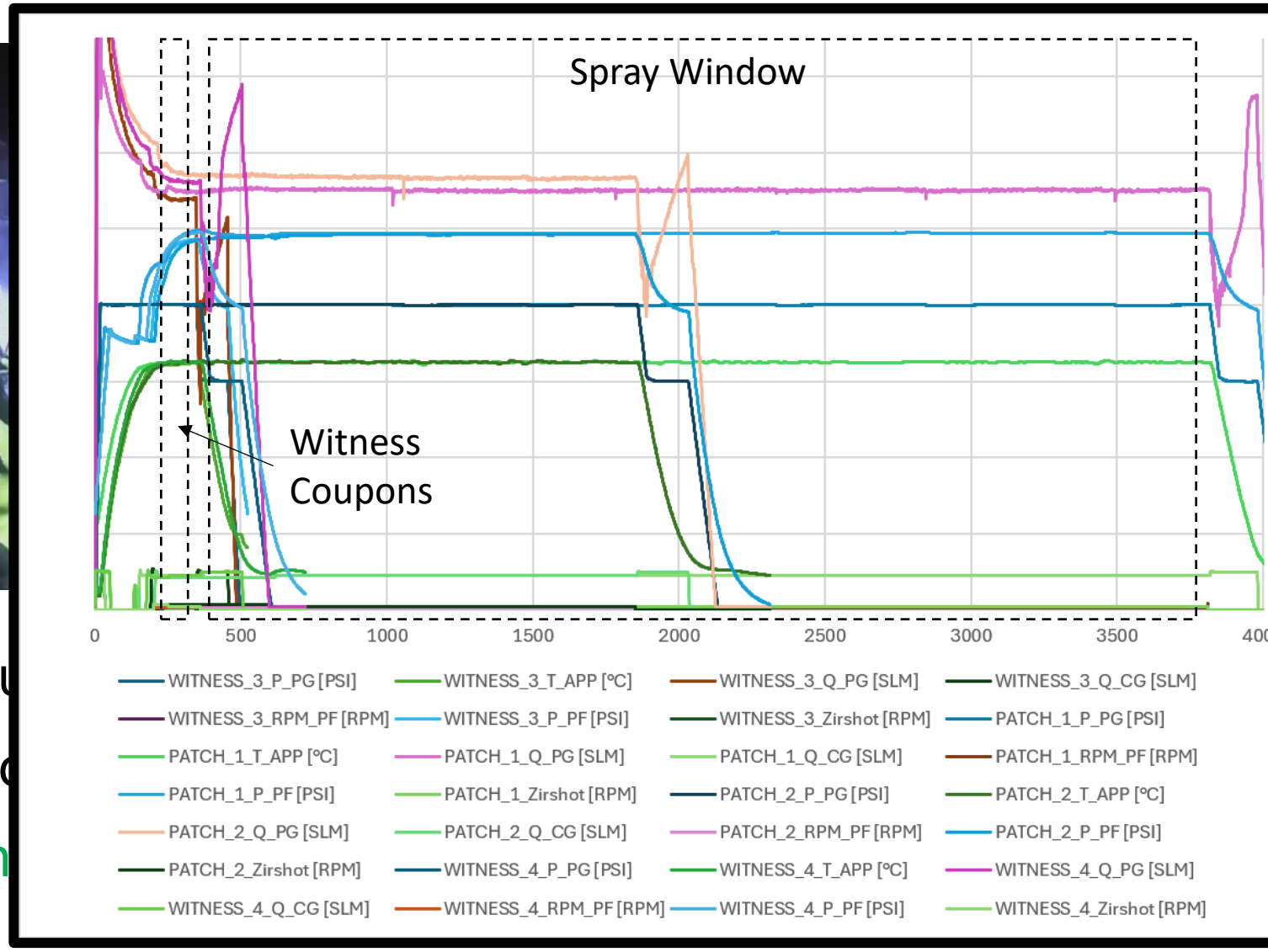
Example Real Time Process Monitor Table

Critical Value	Control / Monitor	Example Tolerance	High Deviation	Low Deviation
Process Gas Pressure	**Control**	± 5 psi	Nozzle Clog. Stop Process.	Bottle pressure or equipment.
Powder Feeder Pressure	**Monitor**	± 35 psi	Clog in PF line. Stop Process.	Leak. Stop Process when safe to do so.
Heater Temperature	**Monitor**	± 100 °C	Higher than expected losses. Check for leaks.	Thermocouple failure. Stop Process when safe to do so.
Applicator Temperature	**Control**	± 10 °C	Overshoot. Stop process if heater >850 °C	Element failure. Stop Process.
Process Gas Flow	**Monitor**	± 350 slpm	High Pressure or Low Temp.	Nozzle Clog. Stop Process.
Powder Feed Flow	**Control**	± 10 slpm	Potential clog indicator.	Bottle pressure too low. Stop Process when safe to do so.
Powder Feed RPM	**Control**	± 1 RPM	Equipment issue.	Motor stall. Clean Powder Feeder.

Outage Cold Spray Implementation

- Working around the clock, the team executed the repair of two steam generators
  - ➢ 65 sidewalls repaired
  - ➢ 100 lbs of powder throughput
  - ➢ 38,000 ft^3 of compressed air consumed
  - ➢ Average Cadence:
    - Day Crew: 25 /day
    - ✓ Night Crew: 33 /day
  - ➢ Number of Separators:
    - Day Crew: 32
    - ✓ Night Crew: 33

Outage Cold Spray Implementation



- Witness Cou coating
- Coupons inc UIPI-6320-901)

✓Coatings m ness, and bend.

Thank You!

Contact Information:
Kyle Johnson – Director of Engineering
VRC Metal Systems LLC
Kyle.Johnson@vrcmetalsystems.com
701-367-8956

Useful Web Pages:
https://coldspray.com
https://vrcmetalsystems.com