# 3M Company

**Adhesives to replace common tasks**: VHB Tape – High strength bonding for demanding applications

## PROBLEM STATEMENT

The U.S. maritime industrial base faces skilled-trade shortages, aging infrastructure, and schedule pressure across shipbuilding and fleet maintenance. Traditional welding, drilling, riveting, and liquid adhesives consume scarce labor, create hot-work risks, damage coatings, and introduce corrosion-prone penetrations. These labor-intensive steps reduce throughput during compressed maintenance availabilities and high-rate modular construction.

## BENEFITS

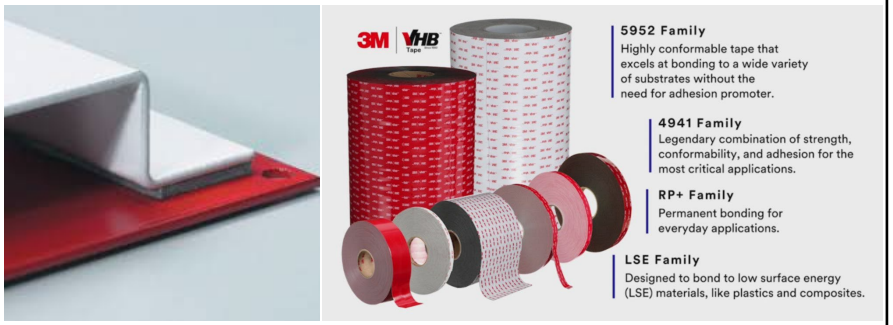
- High-strength bonding suitable for metals, composites, glass, and many plastics
- No mechanical fasteners, drilling, or welding required
- Helps reduce noise, vibration, and stress concentrations
- Creates clean bond lines with no curing time
- Excellent durability in outdoor and industrial environments
- Supports streamlined assembly and rework processes
- Panel to frame bonding (interior and exterior)
- Deck and bulkhead finishing (overlay panels, acoustic treatments)
- Corrosion mitigation by insulating barrier between dissimilar metals helps reduce galvanic corrosion risk

## TECHNOLOGY SOLUTION

3M™ VHB™ tapes (family of tapes: Max, 49 Series, 59 Series, GPH Series) offer a high-strength bonding alternative that requires no welding or drilling, provides immediate handling strength, seals against moisture, and bonds dissimilar or coated materials. In approved non-primary-structural applications, VHB can reduce labor hours, hot work, rework, and corrosion pathways in outfitting, trim, panels, stiffeners, and composite-to-metal interfaces.

By increasing effective shipyard capacity, VHB-enabled bonding can accelerate maintenance and future shipbuilding while supporting fleet readiness, subject to Navy design-authority qualification.

## GRAPHIC



# 3M Company

**Structural Adhesives to replace welding**: VHB Tape – High strength bonding for demanding applications

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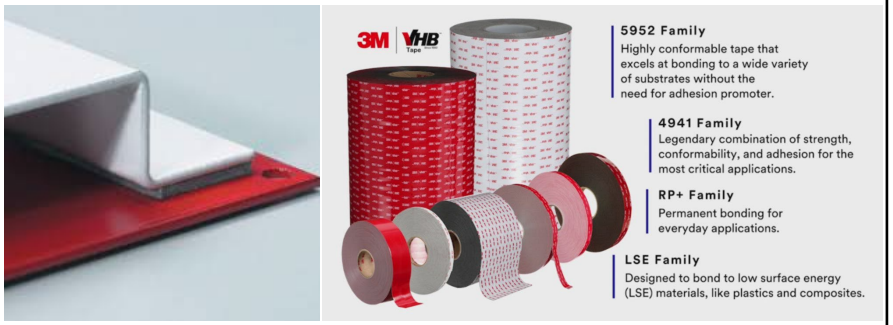
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## GRAPHIC



# 3M Company

**Robotics**: 3M™ Abrasives Product & Process Expertise for Automation

## PROBLEM STATEMENT

The US Maritime Industrial Base (MIB) cannot build and sustain the Navy's expanding fleet at required speed, scale, and quality because it faces a structural shortage of skilled trades labor, aging production infrastructure, and labor-intensive fabrication, surface-preparation, inspection, and repair processes that limit throughput and increase cost and schedule risk. The MIB's is explicitly pushing for the adoption robotics to help with routine shipbuilding and repair activities.

## BENEFITS

3M's Abrasives Product & Process Expertise for Robotics & Automation gives maritime manufacturers a validated, lower-risk pathway to automate grinding, finishing, weld preparation, and surface conditioning—combining 3M abrasives and application engineering with qualified integrators, robot manufacturers, and tooling partners to increase throughput, quality, consistency, and workforce safety.

## TECHNOLOGY SOLUTION

3M robotic abrasive processing team offers abrasive solutions and implementation support for robotic grinding, polishing, deburring, and finishing. 3M offers a 3M Robotic System Integrator Network to match manufacturers with system integrators. For maritime applications, the practical fit is in high-labor, repetitive, quality-critical tasks:

- Structural and component weld prep and grinding
- Component deburring and surface preparation before coating
- Robotic system design consultation and optimization
- Feasibility or proof-of-concept testing

## GRAPHIC





# 3M Company

**Corrosion Prevention**: Scotchgard™ Paint Protection Film Pro Series 200 Matte

## PROBLEM STATEMENT

Corrosion and rust remediation cost the U.S. Navy billions annually and directly reduce fleet readiness. Persistent exposure to sea-salt aerosols accelerates degradation of exterior surfaces, while visible rust has become a growing operational and political concern.

## BENEFITS

- Proven to be durable in demanding sea conditions
- Reduces rust staining along the side of ship hauls
- Fast, easy application
- Versatile across different rust prone surfaces

## TECHNOLOGY SOLUTION

**Scotchgard™** Paint Protection Film Pro Series 200 Matte is a 3M automotive film designed to protect painted vehicle surfaces while maintaining or creating a matte or satin finish. Following an initial pilot program, 3M partnered with NAVSEA 05 to demonstrate that paint protection films repurposed for shipboard use can significantly reduce rust staining along the hull sides of guided-missile destroyers (DDGs).

## GRAPHIC



# 3M Company

**Fire Protection and Control**: Fire Protection Products

3M Fire Protection for through-penetration, construction joints and flexible wrap systems

## PROBLEM STATEMENT

Navy and maritime industrial base face fire risks during industrial periods (construction, repair, maintenance) and while underway. In the past, hot work with disabled systems caused major shipyard fires, while machinery, electrical, and cargo fires threaten ships at sea. Staffing shortfalls, and training gaps leave critical vulnerabilities. These risks endanger lives, high-value assets, and fleet readiness.

## BENEFITS

3M Fire Protection Products through **passive fire protection** can help with containing fire, heat, smoke, and toxic gases; protecting critical penetrations and services; and helping maintain compartmentation during construction, repair, maintenance, and ship operations.

Firestop product technologies:

- Intumescent
- Ablative
- Endothermic
- Duct protection

Concepts involving multiple products to address conditions.

Vast experience in the firestopping industry for last 45+ years.

## TECHNOLOGY SOLUTION

- **3M Interam Endothermic Mat** and fire-resistive wraps create heat-absorbing barriers around structural steel, cableways, ducts, and critical equipment.
- **Fire Barrier Sealants, Putties, Blocks, Pillows, Plugs, Composite Sheets, Foams, Mortars, and Pass-Through Devices** restore compartment integrity.
- **Fire Barrier Water Tight Sealant 3000 WT**, intumescent electrical box inserts, putty pads/sticks, and cable transit sealing systems.
- **3M Novec 1230 Fire Protection Fluid** clean-agent suppression for total flooding, local application, and explosion-suppression applications.

## GRAPHIC












# 3M Company

**Metal Working:** Increasing shipyard productivity - 3M™ Cubitron™ 3 Abrasives  Faster grinding and weld removal

## PROBLEM STATEMENT

Shipbuilding and fleet maintenance require extensive grinding, weld removal, beveling, and metal preparation. These labor-intensive tasks consume skilled-trade capacity and can create production bottlenecks. Slow-cutting abrasives and frequent changeouts add labor hours and downtime, limiting throughput when shipyards face demanding construction and maintenance schedules.

## BENEFITS

- Faster grinding and weld removal to support higher throughput
- More work completed per disc, reducing abrasive changeouts
- Less grinding pressure required, supporting operator ease of use
- Cooler cutting to help reduce heat-related discoloration
- Consistent cutting and wear for manual and robotic applications
- Helps lower overall grinding costs through labor and abrasive efficiency.

## TECHNOLOGY SOLUTION

3M™ Cubitron™ 3 abrasives feature re-engineered Precision-Shaped Grain designed to deliver fast cutting and long-lasting performance across grinding, cutting, weld removal, and metal finishing applications. The portfolio helps shipyards improve productivity throughout fabrication and maintenance by reducing processing time and abrasive changeouts. Solutions support both manual and automated operations, helping maximize available labor and lower overall abrasive process costs.

## GRAPHIC






# 3M Company

**Safety:** Welding Grinding & Painting Protection

**PROBLEM STATEMENT**

Welding, Grinding, or painting in rugged, warm environments while also having to wear other PPE for head, eye, and face protection. Negative Pressure Respirators require users to be CLEAN SHAVEN and to be quantitatively or qualitatively FIT TESTED.

**BENEFITS**

- Not necessary to be clean shaven
- No fit testing required
- Higher Protection factors
- More COMFORTABLE, Air is provided, not dependent on user to pull air through HEPA filters
- Virtual elimination of foreign body eye injuries
- Reduces Temperatures and can provide head to toe cooling

**TECHNOLOGY SOLUTION**

3M™ ADFLO PAPR and 9100MP Welding Helmet

3M V-100 Vortex Cooling Tube. Lower ambient temperature of air by 50 Degrees

3M Soft hoods with our without hard hat protection

**GRAPHIC**



# 3M Company

**Safety:** Respirator

## PROBLEM STATEMENT

Fitting half face respirators underneath welding or grinding shields comfortably.

Increased breathing resistance that P-100 filters give the respirator user.

Weight and comfort of full and half face respirators.

## BENEFITS

- Low profile face pieces and P-100 filters for welding and grinding
- Least amount of breathing resistance in P-100 filters
- Water proof filters with increase surface area for breathing
- Nuisance level odor relief
- Reduces cost
- Several styles of full and half face respirators
- Can marry up to PAPRs and Supplied Air devices

## TECHNOLOGY SOLUTION

3M™ 7500 Series Half Face Respirator

3M 6500 Series Half Face Respirator

3M 6000 Series Full Face Respirator

3M FF-400 Series Full Face Respirator

## GRAPHIC









