The Next Generation Coating Removal Solution is Here

Experience The Power of Plasma

- Works on hard-to-remove coatings
- Reduces job costs
- Provides for a safer work environment
- Environmentally friendly

ATMOSPHERIC PLASMA SOLUTIONS™

INTRODUCING PLASMA*BLAST*™

Precision Coating Removal System

- Lightweight and portable
- Media and chemical free
- Fast mobilization
- Safe and effective in tight spaces and hard to reach places

Strips and Preps in One Step™

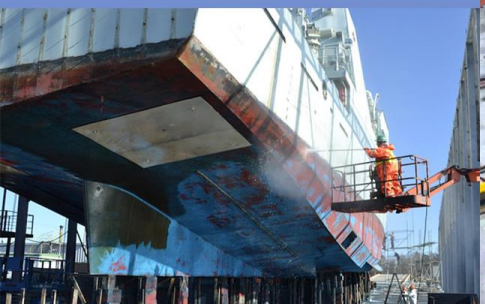
WHAT'S INSIDE

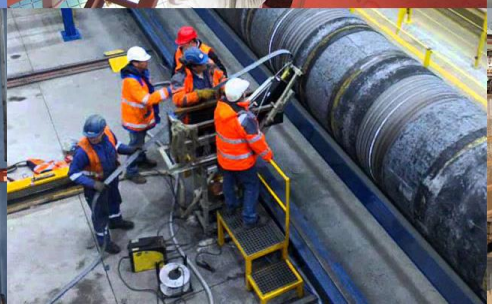
- Market Problems and Opportunities
- Technology Overview
- Applications and Results
- Company Vision and Mission
- Core Competencies
- Representative Customers & Validation
- Contact Information

DoD assets are protected from corrosion by paints, sealants and coatings, but the protection that goes on must eventually come off due to…

"The U.S. Navy Spends $3.1 Billion Annually Battling Corrosion"

- Corrosion Damage
- Repairs
- Inspection
- De-coating
- Repainting





THE PROBLEM

The paints, epoxies, and sealants (coatings) protecting almost all manufactured assets have become increasingly sophisticated, but the methods used to remove modern coatings are largely unchanged for the last 100 years. Because it's critical to ensure the integrity and reliability of an asset, eventually some or all of the protective coating is removed for repairs, inspections or reapplication.

The problem is, removing coatings is complicated, time consuming, costly, and can be dangerous. Traditional methods such as high-pressure abrasive blasting, chemical stripping and water jetting are heavy, bulky and limit the ability to reach all areas. Current coating removal methods can cause substrate damage, and in many controlled environments, grit and water blasting is simply not an option. When traditional tools can't be used, manual labor using needle guns and hand scraping is the only resort. In addition, media and wet abrasive blasting create a significant environmental impact.

Coatings Removal Methods Used Today Can Be...

There is a demonstrated need for cleaner, environmentally safe and cost-effective coating removal and preparation solutions for construction and maintenance application found in marine, aviation, defense industries.

PlasmaBlast™
COATING REMOVAL SOLUTIONS

"There's NOW a better way…"

TECHNOLOGY OVERVIEW

Atmospheric Plasma Solutions (APS) is developing the next generation of coating removal solutions for hard-to-remove coatings found in marine, aviation, defense and commercial applications. APS has perfected the delivery of plasma at atmospheric pressures using only compressed air and electricity. The atmospheric plasma coating removal (APCR) process converts most protective coatings and sealants into harmless gases that are safely vacuumed away.

The company's flagship Plasma*Blast*™ precision coating removal system reduces job costs, provides a safer work environment and is more environmentally friendly than traditional chemical stripping, media blasting or water jetting methods.

Strips and Preps in One Step™

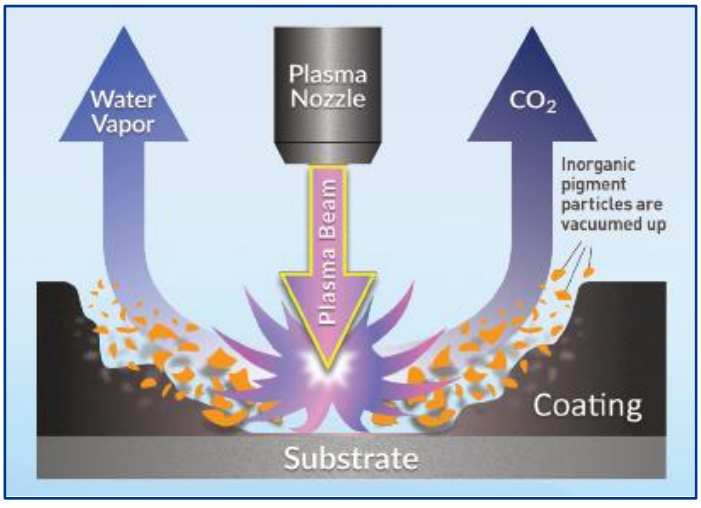
THE PLASMA*BLAST* SYSTEM

- Requires only compressed air and electricity to operate
- Single or multiple plasma beams are configurable for handheld or machine-mounted use
- Reliably removes coatings from virtually any substrate material.

HOW IT WORKS

Plasma*Blast* quickly and safely removes hard-to-remove protective coatings and sealants. Using an air plasma beam, the Plasma*Blast* precision coating removal system can reliably remove coatings from virtually any substrate material.

The Plasma*Blast* system vaporizes most paint and coatings into harmless gases and leaves behind a small amount of dust that is safely collected with a vacuum. Unlike traditional coating removal methods, Plasma*Blast* doesn't use abrasive media or chemicals, reducing the need for containment and the disposal of waste by-products. The system can significantly reduce the cost of the coating removal process, while increasing the productivity and safety for workers.



Current Technology Readiness (as of 2017): TRL 7

The Plasma*Blast*™ prototype system has been demonstrated in operational environments and is ready for production.

PlasmaBlast™
COATING REMOVAL SOLUTIONS



APPLICATIONS

- Spot coating removal
- Hard to remove sealants and adhesives
- Non-destructive inspection (NDI)

SEA	AIR	LAND
• Coating removal for coating touch-up and repair • Sealant removal for weld inspection • Removal of rust protective primers on new plate steel	• Sealant removal in fuel tanks • Remove form-in-place gaskets • Gap filler removal between panels • Coating removal on concealed service panels on OML	• Removes polyurethane coatings disbonded from steel plates • Removes coatings for weld inspection • Removes polysulfide interior coatings of welded steel fuel tanks

Spot Coating Removal

Sealants and Adhesives

Weld Inspection

APS recommends to use protective equipment as required for your application

ADVANTAGES & BENEFITS

Unlike traditional coating removal methods, Plasma*Blast* doesn't use abrasive media or chemicals, reducing the need for containment and the disposal of waste by-products. Recent field tests have shown our "precision blasting" system can reduce labor costs alone up to 90%, while increasing the productivity and safety for workers. Because the plasma is able to flow around surface features, it is well suited to treat both flat and more complex surfaces.

FEATURES	ADVANTAGES	BENEFITS
• Lightweight and portable • Media and chemical free, minimal clean up • Simple and quick mobilization	• Superior to grit and wet abrasive blasting • Often eliminates the need for containment • Safe and effective in tight spaces and hard to reach places	• Reduces time during construction, maintenance, repair and overhaul • Safer and environmentally friendly • Significantly reduces job costs

PlasmaBlast™
COATING REMOVAL SOLUTIONS

PROVEN EFFECTIVE

Tested in U.S. government and commercial trials, Plasma*Blast*™ is effective on a wide range of coatings and substrates found in the US Navy and other DoD service branches.

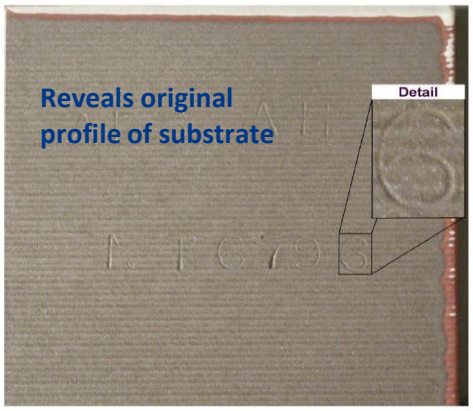
COATINGS

- MIL-PRF-24635 Haze-grey Type II, III, IV, V, VI
- MIL-PRF-24647 Anti-Fouling Coating System
- MIL-DTL-24441 Epoxy-Polyamide Primer
- RAM/LO on Carbon Fiber and Aluminum
- MIL-PRF-85285 Fluoropolyurethane APC
- MIL-PRF-23377 Epoxy-Polyamide Primer
- MIL-S-8802 Polysulfide Aircraft Sealant
- MIL-C-46168 CARC
- MIL-PRF-24667A Epoxy Nonskid Coating
- ... and more

SUBSTRATES

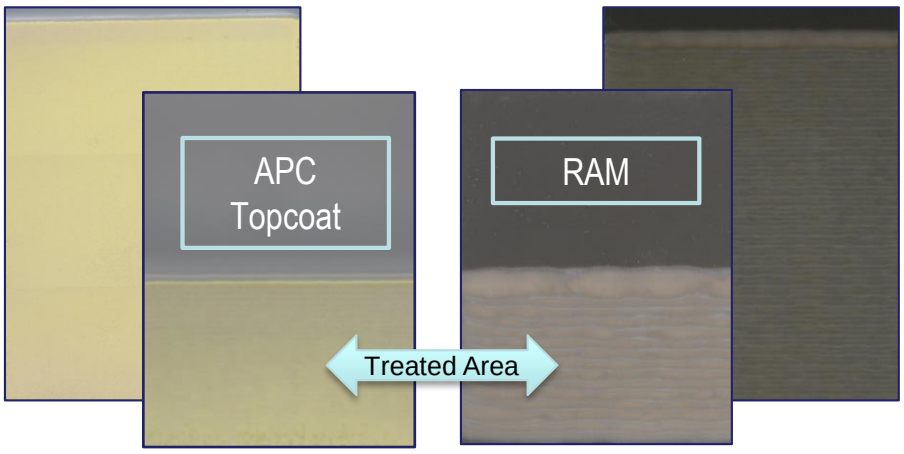
- DH-36 Steel
- HY-80, HY-100 Steel
- 6061, 2024, 7075 Aluminum
- Ti 6Al-4V Titanium
- AZ61 Magnesium
- Carbon Fiber
- GRP / Fiberglass
- Nomex/Kevlar Composites
- Concrete, Brick, Masonry
- … and more

MIL-PRF-24647 Anti-Fouling Coating System

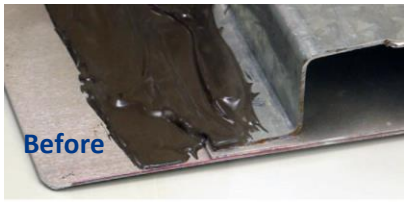


APC & Primer on 30mil 6061 Aluminum

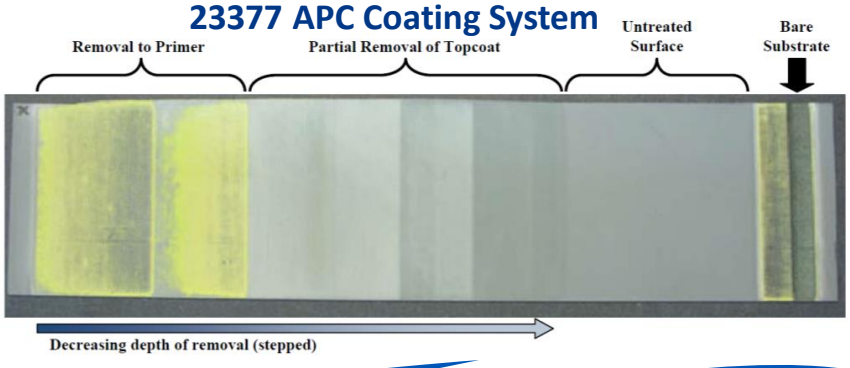
RAM on Carbon Fiber



Polysulfide Aircraft Sealant



Selective Layer Removal of MIL-PRF-85285 & 23377 APC Coating System



ATMOSPHERIC PLASMA SOLUTIONS™

COMPANY HISTORY

Atmospheric Plasma Solutions (APS) is developing the next generation of coating removal and surface preparation solutions for hard-to-remove coatings on a wide range of substrates found in marine, aviation, defense and commercial applications. For the past 10 years, APS has perfected the delivery of plasma at atmospheric pressures using only compressed air and electricity. The company's flagship PlasmaB*last*™ precision coating removal system reduces job costs, provides a safer work environment and is more environmentally friendly than traditional grit blasting, laser or water jetting methods. The technology is protected by multiple patents and trade secrets.

VISION

To innovate and deploy globally tools and techniques that use the power of plasma

COMPANY FACTS

- Technology originally developed in cooperation with North Carolina State University
- Private company
- 12 employees
- Located in the Research Triangle of North Carolina USA

Atmospheric Plasma Solutions is a proud participant in the Department of the Navy STP Program (SBIR Transition Program)

DEPARTMENT OF THE NAVY STP SBIR/STTR TRANSITION PROGRAM

MISSION

The mission of Atmospheric Plasma Solutions, Inc. is to be the leading provider of innovative atmospheric plasma solutions for a broad range of emerging applications in marine, aviation, defense and commercial markets. As a result, we will:

- Lengthen the useful lifetime of industrial assets
- Replace dangerous, costly and environmentally unfriendly technologies
- Support the readiness of our defense and industrial institutions through our discoveries and implementations
- Foster a workplace that enables all employees to bring forth the best in themselves, each other and the company

MILESTONES

Aug '12	Navy Phase 2 SBIR completion
May '16	Proto-type PB 5000 in operation
Nov '16	Fields test across multiple industries
Apr '17	Commercial product design initiated
May '17	Began DOD vendor approval process
Jun '17	Public launch of PlasmaBlast™
Oct '17	National Shipbuilding (NSRP) program award
Nov '17	National Research Council (NRC) Canada study

APS CORE COMPETENCIES

APS solves coating removal issues through the deployment of advanced plasma technologies in our Plasma*Blast*™ systems, and by undertaking consulting projects and government research projects. The company possesses patents and other intellectual property around core technologies that enable atmospheric plasma to be effective for coating removal and surface preparation. Core technologies for the company's work include atmospheric plasma processing, power electronics, analog and digital circuit design, and system integration.

APS provides free testing services for coating removal on substrates. Our testing laboratory features a 3-axis robotic stage with computer-controlled power supply and plasma pen for treating laboratory samples. Tested in U.S. government and commercial trials, our Plasma*Blast* Atmospheric Plasma Coating Removal (APCR) system is effective on a wide range of coatings and substrates found on Department of Defense (DoD) platforms as well as on industrial and commercial assets.

R&D	PRODUCTION	SERVICES
• Methods for removal of polymeric coating layers from coated substrates • Methods and devices for promoting adhesion of metallic surfaces	• Product design and development • Power electronics • Analog and digital circuit design	• Coating removal and substrate testing • Adhesion testing • System integration

PRODUCT ROLLOUT

Launching Q1 2018, our first Plasma*Blast* product will address precision blasting for non-destructive inspection (NDI), sealant removal and spot coating removal applications for defense and commercial industries located in the U.S. and Canada. In addition, we are on target for sales to the United States military in 2018.

We are working with an award-winning product development firm to design the system and prepare for contract manufacturing. The products will be sold and supported by in-house teams. In the next two years, product development initiatives will greatly increase the rate of removal by increasing the number of plasma beams operating simultaneously. With increased removal rates, our sales volume will rapidly increase as we expand the industries and countries served and new use cases.

ATMOSPHERIC PLASMA SOLUTIONS™

CONTACT INFORMATION

Atmospheric Plasma Solutions, Inc.
11301 Penny Rd, #D
Cary, NC 27518
Phone: 919-341-8325
Email: info@apsplasma.com
Website: www.apsplasma.com

PlasmaBlast™
COATING REMOVAL SOLUTIONS

CONTRACT VEHICLES

APS is pursuing engagements with contract holders to provide Plasma*Blast* equipment to the US Military.

APS has been selected by the National Shipbuilding Research Program (NSRP) to evaluate plasma beam technology for coating removal and surface preparation.

TESTING COMMUNITY

UNITED STATES NAVY

U.S. AIR FORCE

GENERAL DYNAMICS Electric Boat

Canada NRC·CNRC

SERDP DOD • EPA • DOE