Get more
Praxair Surface Technologies delivers more experience, more innovation, more options and more support
Get more with Praxair…

Customized answers. Praxair Surface Technologies EXTREME Protection™ and ProtectionPLUS™ coatings combined with SermeTel®, ShorCoat®, SermaLoy™, SermaFlow™, and SermaLon® slurry coatings for the ultimate in flexibility, ensuring we have the right answer for your unique challenge.

Design and application support. Our coatings help bring out the best in your components, while you always get the confidence of knowing your parts have been through real-world simulations.

Uniformity and repeatability. Whether your parts are produced in the Americas, Europe or Asia, you know you’re getting consistent results you can rely on.

Innovation. Our scientists, renowned throughout the coating industry, rank among the most authoritative sources in application techniques, always looking for new surface enhancement options.
What does it mean to get more?
At Praxair, we go beyond the surface for individualized answers to your toughest problems

At Praxair Surface Technologies, we understand that your customers’ requirements demand more. That’s why we’re dedicated to helping you deliver more product life, more ways to reduce operating costs, more ways to improve performance, more risk mitigation. Partner with us and you get more than protective coatings—you get complete access to our exclusive global network of resources.

Look for more
At Praxair Surface Technologies, we have more down to a science. Look for the “greater than” symbol (>) to find out how working with us helps you get more.

EXCLUSIVELY MORE:
PRAXAIR’S INDUSTRY-LEADING EXTRAS

- Coating Design Optimization Unit
- EXTREME Protection™ and ProtectionPLUS™ Coatings
- Operational Excellence System
- Product Discovery Labs

More than half a century of leadership
Since the early 1950s, Praxair Surface Technologies has been partnering with original equipment manufacturers (OEMs), airlines, and maintenance, repair and overhaul companies (MROs) to extend the life cycle and performance of critical components. Our expertise in wear-, corrosion- and thermal-resistant coatings has made us the preferred supplier in the industry.

Why does more matter?
When you get more, you can give more. Parts that include our advanced surface technologies help you improve component efficiency, performance and life—all of which enhance the overall performance of your product and the value you offer your customers while increasing your profitability. More matters.

The evolution of more

1904 More tradition
Concentrated Acetylene Company (later known as Prest-o-Lite) is formed, creating headlights for early automobiles. Our work with acetylene would one day lead to the discovery of today’s surface coating technology. We don’t just date back to the beginning—we are the beginning.
Fixed Wing Airframe Coating Applications

- Actuation systems
- Auxiliary power unit components
- Environmental control components
- Landing gear components
- Propulsion structures
- Slat and flap tracks
- Starter components
- Wing components

Fixed Wing Airframe Coatings

Praxair Surface Technologies has taken off with aircraft operators and OEMs in countless flight tests, providing real-world coating simulations including the replacement of chrome plating on landing gear components as well as testing for wear and corrosion on many other critical components. Time and time again, these extensive tests have shown that component life and performance can be greatly improved with the use of selected EXTREME Protection, ProtectionPLUS, D-Gun, Super D-Gun®, HVOF and plasma coatings and SermeTel® slurries.
The first step to finding the right answer for your needs is determining not only what those needs are, but also how a surface coating can bring out the best in your component or part. That’s where our Coating Design Optimization Unit comes in. It works with your engineers and designers, integrating more than a half century of coating expertise with planning of the part’s production. Partnering with our Coating Design Optimization Unit from the beginning ensures you get more produceable coatings, more protection, more customization and more performance from your part.

Our team begins by identifying:

- Function of the coating (clearance control, thermal insulation, wear/corrosion resistance, etc.)
- Geometry, composition and properties of the substrate
- Environmental and production impact (corrosion, temperature and operating environment)

Once we’ve narrowed down the possible coating alternatives, we test each coating on your part in environmental simulations that replicate your everyday operating environment. When this exhaustive testing process is complete, you’ll have more confidence knowing exactly how coatings will perform on your part day in and day out.

Real-world environmental testing simulates:

- Abrasion and impact wear
- Adhesion
- Bond strength
- Cavitation
- Corrosion
- Fatigue
- Galling/sliding
- Oxidation and extreme temperatures
- Particle and water erosion
- Thermal shock

Answers in action:

We customize our answers to fit your individual problem. For example, if wear and/or corrosion resistance is required at ambient or high temperature, we can tailor a coating to perform in either environment.

1948 More explosive discoveries

Explorations into acetylene detonations lead to the discovery of a new groundbreaking flame-plating process. The technique developed from this breakthrough—which uses a “detonation gun”—forms the foundation of the modern thermal spray industry. To this day, we are the only company that can offer D-Gun and Super D-Gun® coatings, both benchmarks of the industry.
There is no one coating answer to every surface problem. Your unique problems require unique answers. That's why we created our EXTREME Protection™ and ProtectionPLUS™ lines of surface coatings.

Our EXTREME Protection™ proprietary coatings are designed to provide customizable answers you can't get anywhere else.

Our ProtectionPLUS™ coatings are used throughout the industry and feature the additional, exclusive application techniques and knowledge-base of Praxair Surface Technologies. In fact, we originally developed and patented many of these methods and materials.

**Engineered for aviation**

The aviation industry presents unique challenges: components need to withstand extreme environmental, thermal and wear conditions at exceptionally high temperatures and pressures. That's why our surface enhancement solutions are designed with the toughest jobs in mind.

Our advanced technology is designed to help your customers:

- Extend product life of critical parts
- Improve performance
- Increase repair/replacement cycles
- Increase the use of advanced materials and component designs
- Employ environmentally friendly technologies to replace chrome and cadmium plating

**Answers in action:**

We not only protect but also restore. We have in-house services that can strip, restore and remachine worn components.

**More coating options**

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**1958 More exclusive innovations**

The innovations continue as we develop our exclusive plasma coating technique—which once again revolutionizes the thermal coating industry, delivering an exceptionally versatile solution.

**1962 More flexibility**

A breakthrough coating process, high-velocity oxy-fuel (HVOF), is developed that introduces powders of metals or ceramics into a high-temperature, high-velocity gas stream. The stream then heats and propels them against a prepared surface. The result is excellent wear and corrosion resistance.
Operational Excellence System
More uniformity, consistency and repeatability

From the initial conversation to the final inspection, the application of your coating follows our strict Operational Excellence System. This process guides our industry-leading quality control programs and guarantees consistent, uniform results that are on time, every time.

At the core of Operational Excellence are Six Sigma quality tools and a complete set of lean manufacturing techniques. Instead of batch production, we focus on one-piece-flow pull production that improves quality and shortens cycle and changeover times—which greatly improves turntimes for your applications.

Operational Excellence also allows us to deliver uniform, repeatable results you can rely on. You can be confident that whether your part is coated in the Americas, Europe or Asia, the processes—and coatings—are indistinguishable. More usable parts, less risk.

Vertical integration
Praxair Surface Technologies controls the entire coating process from receipt of your component to completed coated part. Not only do we manufacture the gases, powders and slurries used to make the coatings, but we also invented many of the processes used to apply them.

1965-69 More global uniformity
The first overseas production plants open in England, Japan and Switzerland as our unique quality control process begins to develop, ensuring uniformity and repeatability regardless of the component or continent.

1992 More efficiency
We become the independent company you know today: Praxair Surface Technologies. The change gives us greater control over raw materials and resources, enabling us to become the first vertically integrated operation in the industry. In 1998, ASM International recognized the Speedway (Indianapolis) Laboratories as a historical landmark.
Aircraft Engine Coatings

From the beginning of gas turbine flight, aircraft engine OEMs have come to Praxair Surface Technologies when they needed to make jet engine components functional and last longer between overhauls. Our EXTREME Protection and ProtectionPLUS coatings have become synonymous with gas turbine engine performance.

www.praxairsurfacetecnologies.com
At Praxair Surface Technologies, we have a long-standing tradition of excellence in innovation. Many of the materials and processes in use today throughout the industry began in our world-class Product Discovery Labs. The focus of these labs is singular: develop next-generation surface coating technologies that solve the performance problems you face today and tomorrow.

➤ **Top research scientists**

We provide access to the most renowned scientists in the coatings industry. These highly qualified professionals have published extensively and, in many cases, literally *written the book* when it comes to application techniques. Working with a staff of experienced lab technicians, specialists and research engineers, our scientists are continually developing new coating processes and products that are designed to find real-world, groundbreaking answers to even your toughest performance problems.

➤ **More discovery**

Coating processes that are the foundation of today’s surface technologies were invented by Praxair Surface Technologies, including:

- Detonation gun (D-Gun) coating process*
- Super D-Gun® coating process*
- HVOF (High-Velocity Oxy-Fuel) coating process
- Plasma spray coating process
- Tribomet® electrodeposition coating process*

* Exclusive, proprietary Praxair Surface Technologies process

Ongoing testing is critical for discovering new ways to solve your performance problems.

➤ **2009 More capabilities**

Praxair Surface Technologies expands its product and service offerings by acquiring Sermatech International and its line of SermeTel®, SermaLoy™ and ShorCoat® high-performance slurries. The partnership delivers coating options and capabilities unmatched throughout the industry.
Rotary Wing Airframe Coating Applications

- Actuation systems
- Bearings, rings and pistons
- Bevel, conical, input and pinion gears
- Blade components
- Landing gear components
- Main rotor components
- Shafts
- Swashplate assemblies
- Tail rotor components

Rotary Wing Airframe Coatings

High vibrations cause unique forms of stress in helicopter components, making our low-fatigue coatings particularly well-suited for these applications. And because our state-of-the-art coatings are compatible with stronger, lighter materials (e.g., aluminum, titanium, magnesium), designers can improve performance and reduce weight—without compromising structural integrity.
What can more mean for you?
Let’s work together to find your answers

It starts with a conversation. It ends with an answer to even your toughest performance problems. The unmatched service, experience, innovation and dedication between those two points? That’s more. We offer more support, more coatings, more knowledge, more testing, more consistency. No one else even comes close. For answers to the tough problems, demand more.

Coating processes
- Cold Spray – LOXPlate® coating
- Diffusion
  - Diffused Slurry – SermaLoy™ and SermAlcote™ coatings
  - Pack Diffusion
  - Platinum Aluminide
  - Vapor Diffusion
- Electrodeposition – Tribomet® coating
- Electroless Plating
- High-Performance Slurries
  - SermaLon® metallic ceramic polymers
  - SermeTel® metallic ceramics
  - ShorCoat® light metal coatings
- High Power Laser Processing
  - Laser Cladding/Hardfacing
  - Laser Hardening
  - Laser Welding
- Thermal Spray Coatings
  - D-Gun and Super D-Gun® coatings
  - Gator Gard® coating
  - High-Velocity Oxy-Fuel (HVOF)
  - Plasma Spray
  - Wire Arc Spray
- Vapor Deposition
  - Cathodic Arc Physical Vapor Deposition
  - Chemical Vapor Deposition
  - Electron Beam Physical Vapor Deposition
  - Physical Vapor Deposition

Inspecting and testing
- Air flow
- CMM digital laser scanning
- Fluorescent penetrant
- Gaging and dimensioning
- Laser holography
- Magnetic particle
- Moment weighing
- Nital etch
- Profilometer
- Radiography
- X-Ray

Manufacturing
- Large diameter machining
- Large milling capabilities

Other service operations
- Abrasive blasting
- Acid stripping
- Aluminum oxide blasting
- Brazing
- Ceramic peening
- Chemical stripping
- CMM
- De-brazing (disjoining)
- Electrolytic stripping
- Gaging and dimensioning
- Glass bead peening
- Graphite varnishing
- Grit blasting
- Mechanical stripping
- On-site services
- Sealing
- Shot peening
- Silicon carbide blasting
- Stress relief
- Turnkey operations
- Ultrasonic cleaning
- Vacuum heat treating
- Vibratory tumbling
- Welding

Finishing and machining
- Blending
- Brushing
- Honing
- Lapping
- Machining
- Polishing
- Precision grinding
- Sanding
- Super finishing
- Surface grinding
- Vibratory

* Capabilities listed not available at all production facilities.
Aviation

2,500 people, more than 30 facilities and 13 countries

Primary Facilities

- **Brazil**
  - Pinhais, Brazil
  - Tel. +55.41.3661.6200

- **Canada**
  - Dorval, Quebec, Canada
  - Tel. 514.631.2240

- **China**
  - Changzhou, China
  - Tel. +86.519.8622.9000

- **France**
  - St. Etienne, France
  - Tel. +33.4.77.42.62.62

- **Germany**
  - Ratingen, Germany
  - Tel. +49.2102.495.0
  - Heiligenhaus, Germany
  - Tel. +49.2056.93090
  - Schluechtern, Germany
  - Tel. +49.6661.96780

- **India**
  - Coimbatore, India
  - Tel. +91.4255.324743

- **Italy**
  - Forlì, Italy
  - Tel. +39.0525.401704
  - Monte Mareno, Italy
  - Tel. +39.0341.60111
  - Novara, Italy
  - Tel. +39.0321.674803

- **Japan**
  - Kozuki, Japan
  - Tel. +81.790.88.0564
  - Okegawa, Japan
  - Tel. +81.48.5.91.0731

- **Singapore**
  - Singapore
  - Tel. +65.6542.2765

- **South Korea**
  - Changwon, South Korea
  - Tel. +82.55.260.2482

- **Switzerland**
  - Meyrin, Switzerland
  - Tel. +41.22.989.8989

- **United Kingdom**
  - Lincoln, England
  - Tel. +44.1522.878200
  - Southam, England
  - Tel. +44.1926.81.2348
  - Swindon, England
  - Tel. +44.1.793.512.555
  - Weston-super-Mare, England
  - Tel. +44.1934.411301

- **United States**
  - Compton, CA
  - Tel. 310.604.0018

- **Manchester, CT**
  - Tel. 860.646.0700

- **North Haven, CT**
  - Tel. 203.287.2700

- **Indianapolis, IN**
  - Tel. 317.240.2500

- **Biddeford, ME**
  - Tel. 207.282.3787

- **Charlotte, NC**
  - Tel. 704.921.5400

- **New Castle, PA**
  - Tel. 724.598.1300

- **Houston, TX**
  - Tel. 713.849.9474
  - Tel. 713.991.8700

Praxair Surface Technologies maintains additional coating and administrative facilities not listed above.

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Praxair and the Flowing Airstream design, EXTREME Protection, GatorGard, LOXPlate, ProtectionPLUS, SermaFlow, SermAlocate, SermaLon, SermaLoy, SermeTel, ShorCoat, Super D-Gun and Tribomet are trademarks or registered trademarks of Praxair Technology, Inc. in the United States and in other countries. Other trademarks used herein are the registered trademarks of their respective owners.

Praxair Surface Technologies, Inc.
1500 Polco Street
Indianapolis, IN 46222
USA

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Telephone: +1.317.240.2500
Fax: +1.317.240.2255

www.praxairsurfacetech.com
info@praxair.com