



Automotive



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™ family of thermal spray and fluoropolymer coatings provide 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

> Over 20 years of leadership

Since the 1990s, Praxair Surface Technologies has been partnering with the automotive industry to improve the durability 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 enhance the overall performance of your product, improving component efficiency, performance and life—all of which add to the value you offer your customers while increasing your profitability. *More* matters.



Automotive Applications:

- Automotive drive, gearing, and shafting systems
- Brake disks
- Differential pins
- Friction disks
- Gear forks
- Journal pin carrier
- Racing motor gears and conrods
- Synchronizing rings
- Turbocharger nozzles

Double-Cone Intermediate Rings

You get more with Praxair Surface Technologies coatings for double-cone rings with grooves that are used in gearboxes on light commercial vehicles and light trucks. Coating both conical surfaces with molybdenum increases friction control in heavily stressed applications. This reliable, durable, high-performance solution is used by major gearbox producers in Europe.





Coating Design Optimization Unit

More real-world component coating design and application support

The first step to finding the right answer for your needs is determining not only what those needs are, but how a surface coating can bring out the best in your component or part. Our Coating Design Optimization Unit works with your engineers and designers, integrating more than a half century of coating expertise with the planning of the part's production. The result is *more* producible 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.

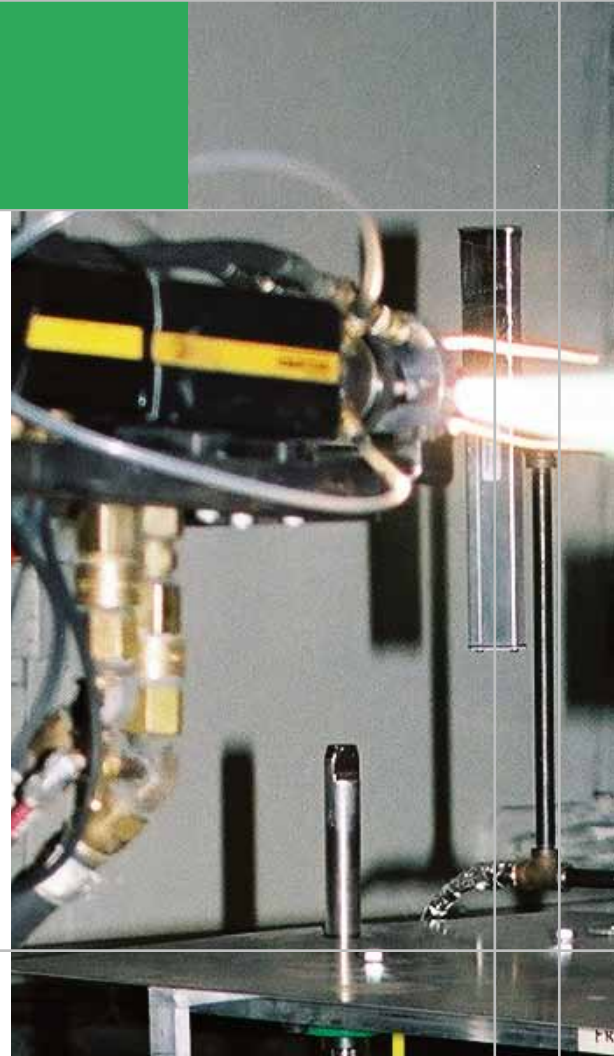
EXTREME Protection™ and ProtectionPLUS™ Coatings


More options for customized answers

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.

The proprietary coatings of our EXTREME Protection™ 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.





Automotive

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 that you get 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 process—and coatings—are indistinguishable. More usable parts, less risk.



Product Discovery Labs

More innovative answers

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.

These innovative coating processes—many of which are the foundation of today's surface technologies—include:

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

** Exclusive, proprietary Praxair Surface Technologies process*

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
 - SermaTel® 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

Finishing and machining

- Blending
- Brushing
- Honing
- Lapping
- Machining
- Polishing
- Precision grinding (diamond)
- Sanding
- Super finishing
- Surface grinding
- Vibratory

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

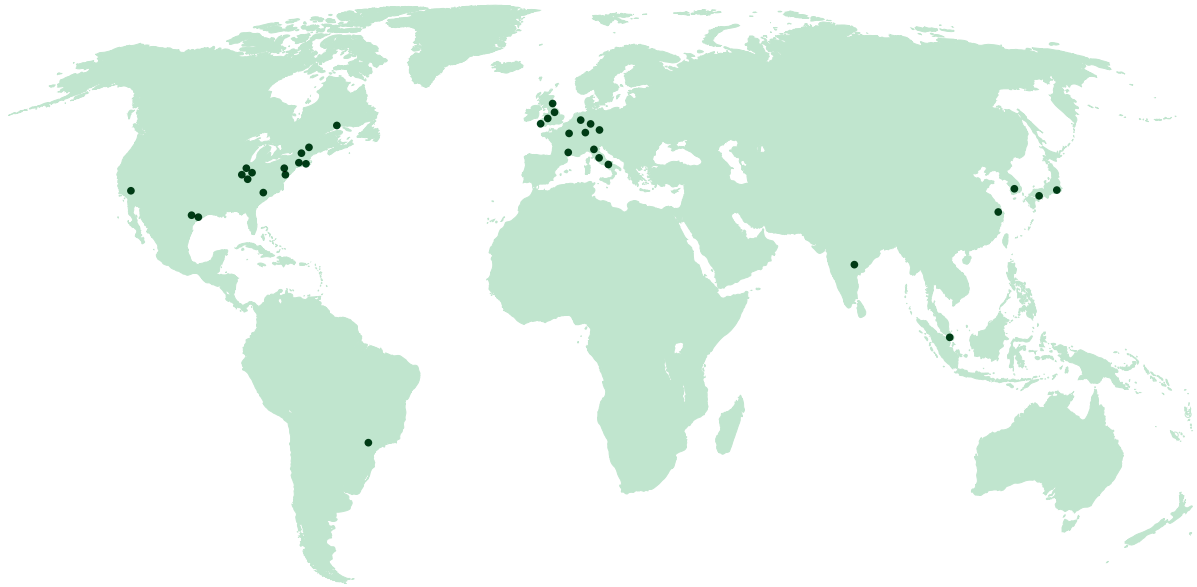
Other service operations

- 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

* Capabilities listed not available at all production facilities

Automotive

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

Duisburg, Germany
Tel. +49.203.935.842.0
Ratingen, Germany
Tel. +49.2102.495.0
Schluechtern, Germany
Tel. +49.6661.96780

India

Coimbatore, India
Tel. +91.4255.324743



Italy

Fornovo, Italy
Tel. +39.0525.401704

Monte Marenzo, Italy
Tel. +39.0341.601111

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

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



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