



Shot Peening

**Ultrasonic
Peening**

Thermal Spray

**Metallurgical
Lab**

**Powder
Coatings**

**Hybrid Polymer
Coatings**

**Phosphate
Coatings**

**Research &
Development**

About Us

In 1990, Superior Shot Peening, Inc. was founded on the basis of a **“Better Idea”**. The founders, Albert Johnson and Jack Blasingame, were working in the surface preparation industry, and they saw a need for a better approach and an opportunity for a company that could better serve the surface preparation requirements of Houston industries by providing superior quality and rapid turnaround of shot peened parts. On this basis, Superior Shot Peening was launched.

As time passed and the base of satisfied customers grew, customers requested Superior to add additional services and treatments. Many of the components required additional processes in addition to basic shot peening, and logistically they preferred to have all process performed in one place. As a result of this requirement, and management vision, Superior Shot Peening now provides 21 processes and services that increase the quality and life of metallic components used across a very broad industry base that is international in scope. Superior has now become known as the **“One -Stop Shop with 24-Hour Turnaround”**.

As industries have become more global in their businesses and sourcing, quality services on a fast turnaround basis became a requirement on a global basis. In response to these requirements, Superior Shot Peening has complete processing facilities in Changzhou China, a joint venture in Singapore, and ongoing discussions for additional facilities in South America, the Middle East, India, and Europe. Additionally, there are ongoing discussions with potential global partners, and Superior continues to add new processes and technologies as required and requested by the customer base.

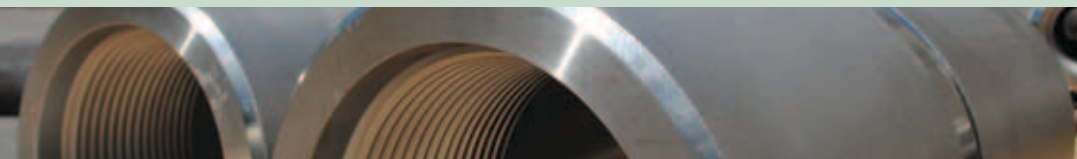
Also, Superior has completed the first four phases of their new facility on 30 acres of land in Cleveland, Texas, and starting the fifth phase. These include new robotic facilities for thermal spray, a state of the art grinding facility, and new automated peening equipment. All of these increase the ability of Superior to meet their customers’ ever increasing requirements for more precision work to meet the challenges of extended component life.

At the core of Superior Shot Peening are the people. The staff of Superior Shot Peening boasts well over 100 years of collective experience in the metal enhancement industry. The senior partners have been meticulous in their selection of technical personnel as they have grown the company to include on-staff personnel that includes a PhD Metallurgist, a BS Chemist, and a BS Chemical Engineer, plus key people in the thermal spray and metalizing, peening, and coatings departments that all have over 20 years of experience in their fields.

The depth of education and experience at Superior allows for complete consultation in all fields with customers who bring in new applications for the various processes. If an existing process does not exactly fit, the staff and technicians have the ability to customize processes for particular applications.

All of this makes Superior Shot Peening the only **24/7 One-Stop Shop** in the metal enhancement industry, while still remaining small enough to be flexible enough to handle their customers’ biggest jobs and ever changing requirements.

At Superior Shot Peening, our customers always receive personalized service and never get a telephone recording; real people answer the telephone 24 hours a day, 7 days a week.



Shot Peening

Superior Shot Peening has peened almost every commercial metal known to man, including exotic metals such as Hastelloy, Inconel, and various Titanium Alloys.

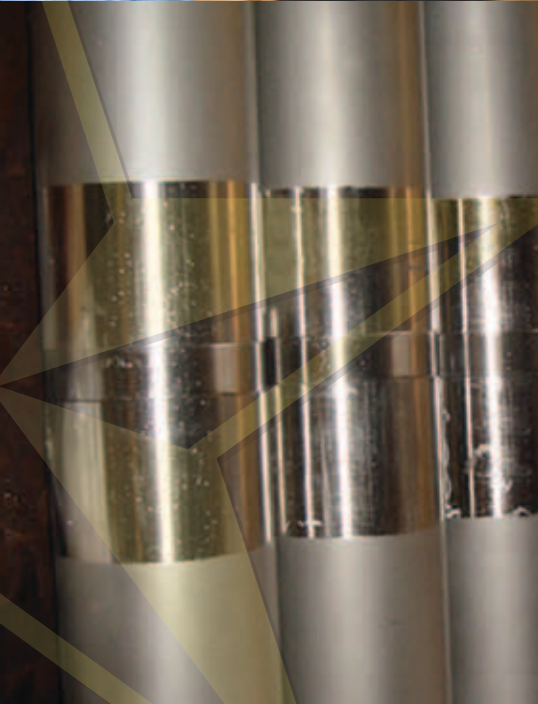
Our shop is equipped with various peening equipment set-ups; from the most basic manual cabinets and enclosures to the most highly automated plc controlled systems. This allows us to address every peening application from the most basic parts up to the most sophisticated aeronautical and marine components; from the 1 inch square piece to the 40' long component weighing 6,000 pounds.

In addition to the broad range of equipment, we stock virtually all types, hardnesses, and sizes of peening abrasives giving us the ability to provide the broadest possible range of peening specifications.

In addition to our in-house capabilities, we have performed numerous field peening jobs that include nuclear submarine components at harbor side, boiler tubes at power plants, aircraft structural components and landing gears at airfields and airports, and pneumatic conveying pipe systems in locations at various chemical and plastic manufacturers' sites; all while maintaining the same critical quality control specifications that we do in-house.

In a continuing effort to provide the best service for our customers, Superior Shot Peening has funded the development of Predictive Software that will enable the user to determine the optimal peening parameters for any component. The team leading the development in Europe is made up of internationally known experts in the field of component fatigue and fracture mechanics, and held in high esteem by all of the major aerospace and aircraft companies in the world. This software, HERCULES, is the only tool of this type in the world.

The Superior Shot Peening team has always taken a **“Can Do”** attitude to essentially all customer requests, and has earned us the reputation of willing to take virtually any task, any where in the world, and producing the highest quality work in the shortest period of time.



Ultrasonic Peening

Esonix UIT™

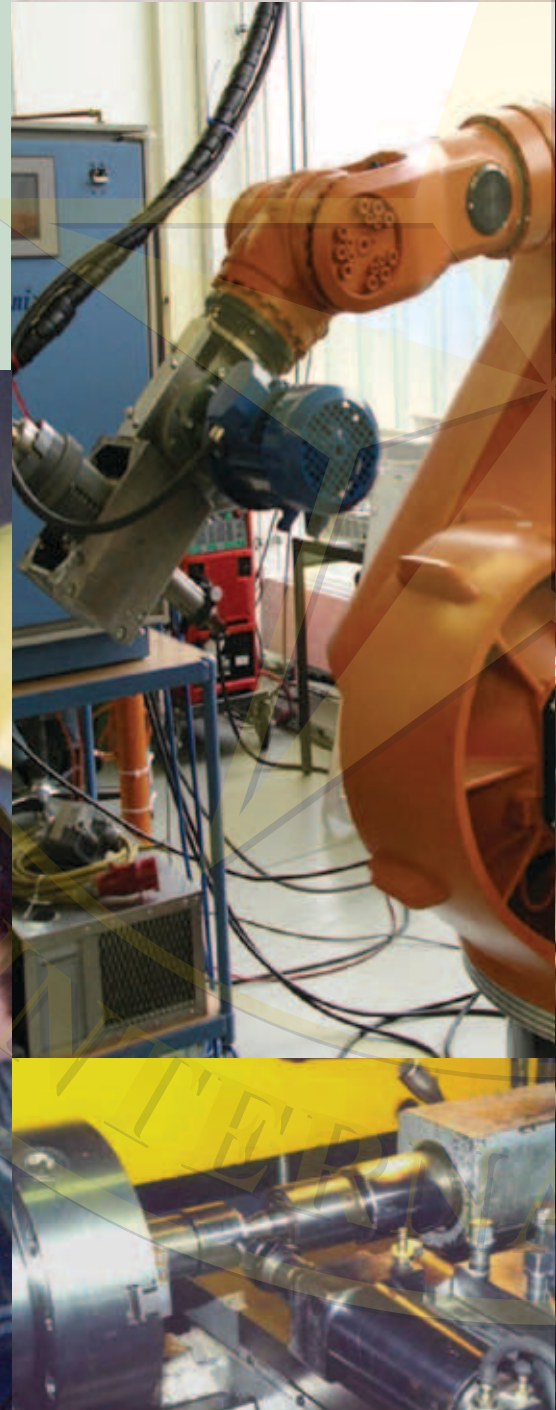
Superior Shot Peening is a strategic business alliance partner with Applied Ultrasonics and a certified provider of Esonix UIT™ treatments.

Esonix UIT™ is new technology that provides fatigue life enhancement unparalleled by any other technology. The fatigue life enhancement is achieved through depths of compression to 2.5 to 3.0mm (over 5 times the maximum obtainable through shot peening) below the surface, while relieving tensile stresses to depths of 12 to 15mm below the surface. This results in a component with a very deep level of compression with a favorable uniform stress profile.

The end result of UIT treatment is a component that has fatigue life improvement of 250% to 500%, in many instances 5 times that of a peened component, while increasing the corrosion resistance due to the work hardening of the component surface without loss of ductility that is associated with “over-peening”.

UIT has been successfully used on bridge welds, high light pole and traffic sign masts, stainless steel tank welds for prevention of stress corrosion, ship hull and deck welds, stationary power and locomotive crank shafts, turbine bases, vibratory deck weldments, submarine hull welds, oil field pump components, and many more components from every day life.

While UIT is not needed in all components, it will provide the maximum fatigue life extension for metallic components of virtually all metallurgies which include carbon steels, high strength steels (>100 Ksi yield), brass, bronze, titanium (6/4, 6/2/4/2), aluminums, Hastelloy, Inconel, and stainless steels.



Thermal Spray Processes

Superior Shot Peening provides several options for thermal spray coatings. Depending on your requirements, we will work with you to provide the best process for your work. In their new facility, Superior has added multiple robots to assure the most accurate, uniform, and repeatable coatings that can be achieved.

HVOF (High Velocity Oxygen Fuel)

When high density (less than 1% porosity) protective metallic coatings are required, we provide the option of HVOF. Superior recently added the technology of the latest Thermal Spray System that provides coatings with higher thicknesses, lower coating stresses, and overall higher coating quality than the traditional HVOF equipment. This is in addition to multiple styles of thermal spray systems from global manufacturers, and gives Superior the flexibility and capability to provide the best match for any given coating system.

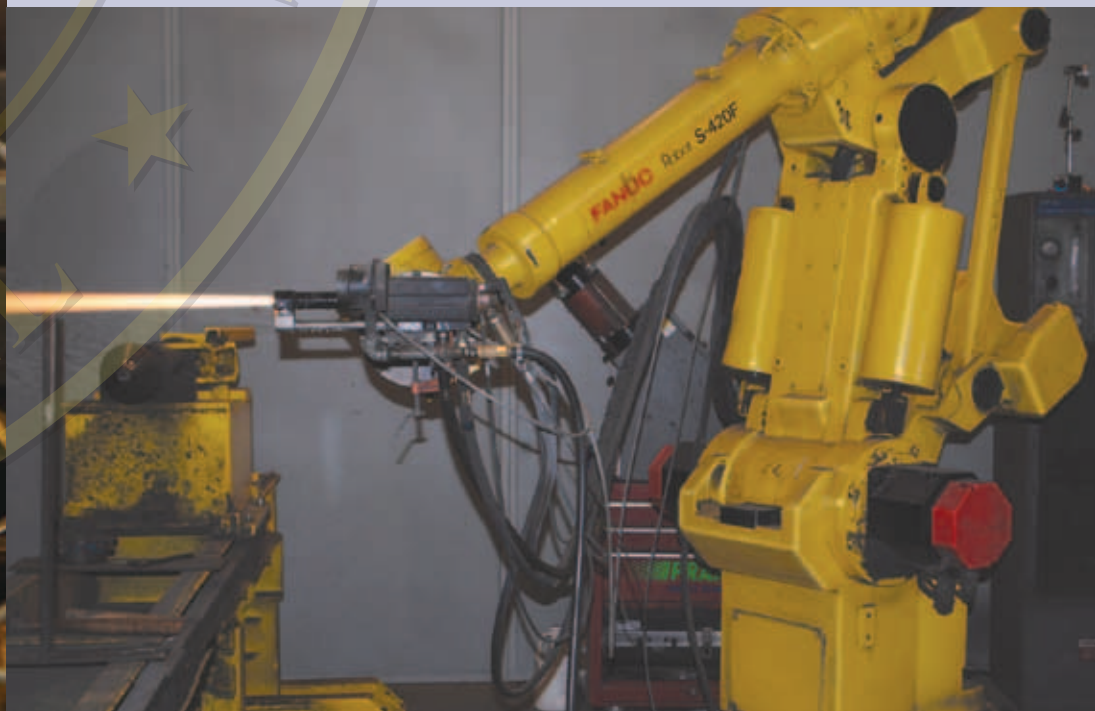
Typical applications use tungsten carbide as a replacement for hard chrome due to the technically superior bond strength, density, and abrasion resistance. Also, Inconel, stainless, molybdenum, all tungsten carbide alloys, chromium carbides and many more to meet the requirements of high temperature, abrasion, and corrosion resistance are available. Our experienced staff will work with you to select the proper coating for your application.

Plasma Spray

In the area of a multitude of coatings, plasma spray is used primarily in the area of ceramics for thermal barrier coatings. These are prevalent in aircraft and land based turbines where higher temperature barriers are required. Many other applications other than thermal barrier protection require plasma spray, and we will work with you to provide the optimum material for thermal, abrasion, and corrosion protection.

Metalizing: Twin Arc Spray and Combustion

When the corrosive resistance of aluminum and zinc are required, metalizing is typically used. Also, metalizing is used for restoration of dimensions on mismatched or worn parts. Typically these coatings are thicker than either plasma or HVOF, and use distinctly different alloys.



Thermal Spray Processes

Spray and Fuse

Spray and fuse involves metallic coatings applied by combustion, and then fused in either vacuum furnaces or high induction heat. This provides a superior metallurgical bond as it actually fuses into the substrate. Typically used when spalling cannot be tolerated and zero porosity is required. The Colmonoy Coating is the latest addition to the complete line-up of coating that Superior has available.

Special Refurbishing Processes

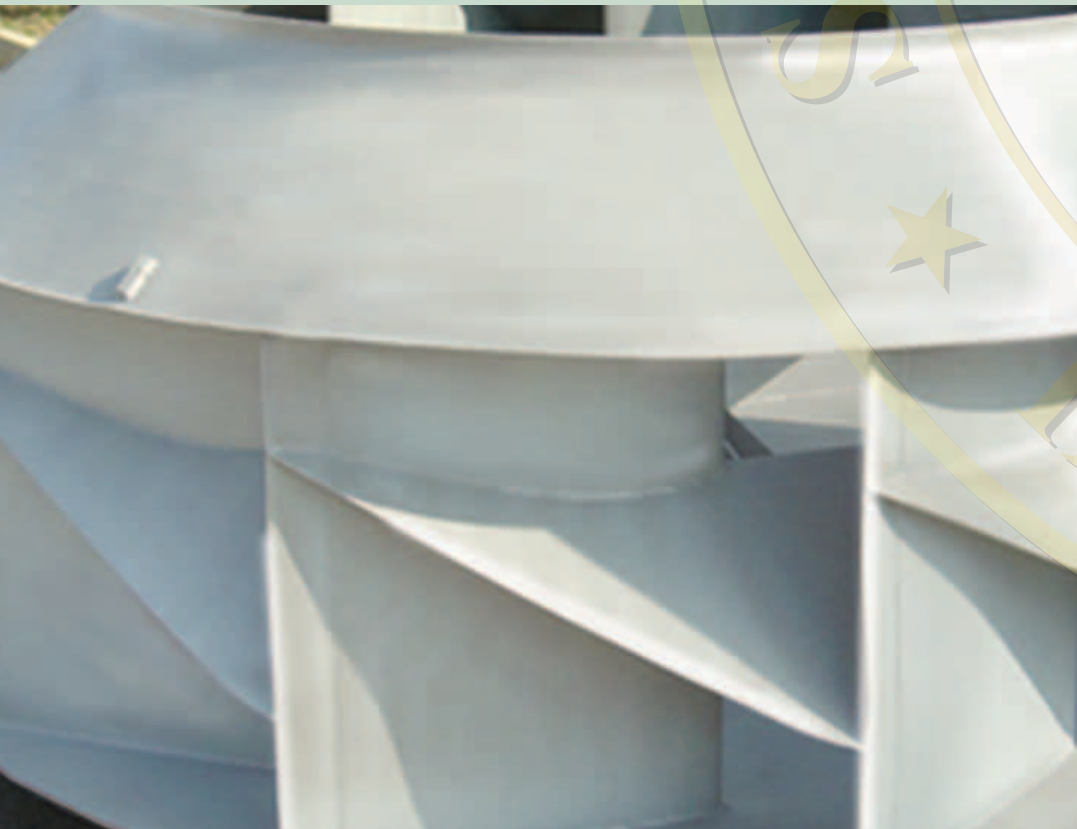
Many times, it is economically more feasible to restore a very high cost component. Typically these are components of high precision and are in abrasive and/or corrosive environments. Typical parts would be worn tools and tooling, rotating and reciprocating parts, housings and impellers, fans turbine components, mandrels, pump shaft, various drive shafts, and bearing journals on a wide assortment of parts. These parts can be refurbished by using any one of the **Thermal Spray Processes** employed by Superior. The ultimate application process will be determined by the alloy required, and the environment in which the refurbished part will run.

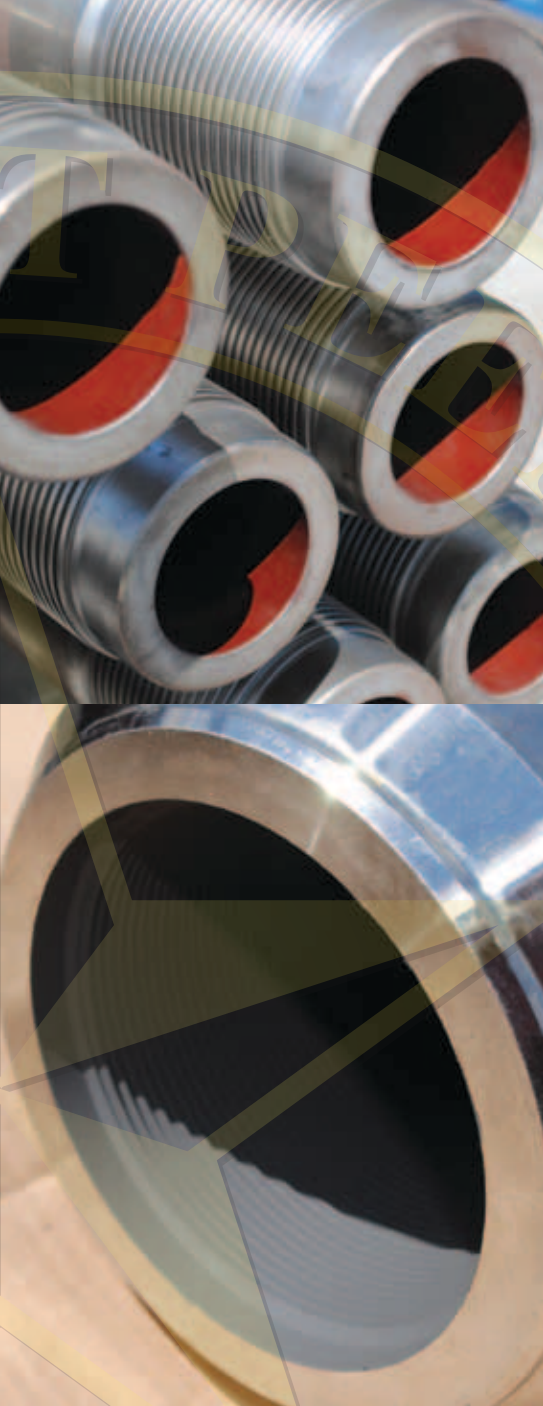
Grinding and Honing

Many of the metallic thermally applied coating processes that Superior Shot Peening provides requires pre-grinding of the surfaces. This can be an undercut to allow for the build up of the coatings to final dimensions, or it can be to remove old coatings for re-coating in a refurbishing process.

Additionally, when the coatings are applied, a finish grind is required to bring the part into final dimensional tolerances. Also, some parts require a very fine micro-inch finish to meet the performance criteria of a given part.

Superior Shot Peening has a full compliment of grinders and honing units in-house to complete all of these requirements in an environmentally controlled building to assure accuracy.





Metallurgical Lab

To ensure proper quality, composition, and deposition of metallurgical coatings, Superior Shot Peening has a complete in-house lab to fully analyze critical properties of applied coatings. This allows for immediate quality checks to ensure the customer of the highest quality.

Organic Coatings

Superior Shot Peening can provide a very broad base of organic coatings to meet a variety of requirements, including corrosion, abrasion, lubricity, and cosmetics. Superior also has certified NACE Inspector associations when required.

Xylan®, Moly, Ever-Slik®

Many times, parts need coatings that will provide lubricity and sometimes corrosion resistance at the same time. Superior Shot Peening provides all of the industry standard Fluoropolymer-type coatings for these applications, such as Xylan®, Moly, Ever-Slik®, and others as required by customers.

Corrosion and Electrical Insulation

Superior Shot Peening provides a selection of coatings designed specifically for corrosion protection and electrical insulation.

High Bake Phenolics

We have a selection of high bake phenolics that are resistant to virtually all forms of environmental and chemical corrosion. The materials are spray on coatings, and one product has flexible properties which is unique to phenolics. The flexible properties make it more suitable to withstand flexing from expansion and contraction such as in large storage vessels where normal phenolic systems tend to crack. We also have the ability to add a metallic additive that greatly enhances the abrasion resistance of the final coating.

PVC Coatings

Superior Shot Peening provides both liquid and powder sprayed systems of PVC. These coatings are used for electrical insulation as well as corrosion resistance. These are true coatings, not pull-over molds, with extremely high bond strength that will not pull off easily, and as such, tears in the material will not compromise the coating integrity. Also PVC has an extremely high dielectric constant to resist high voltage break down.

Urethane Coatings

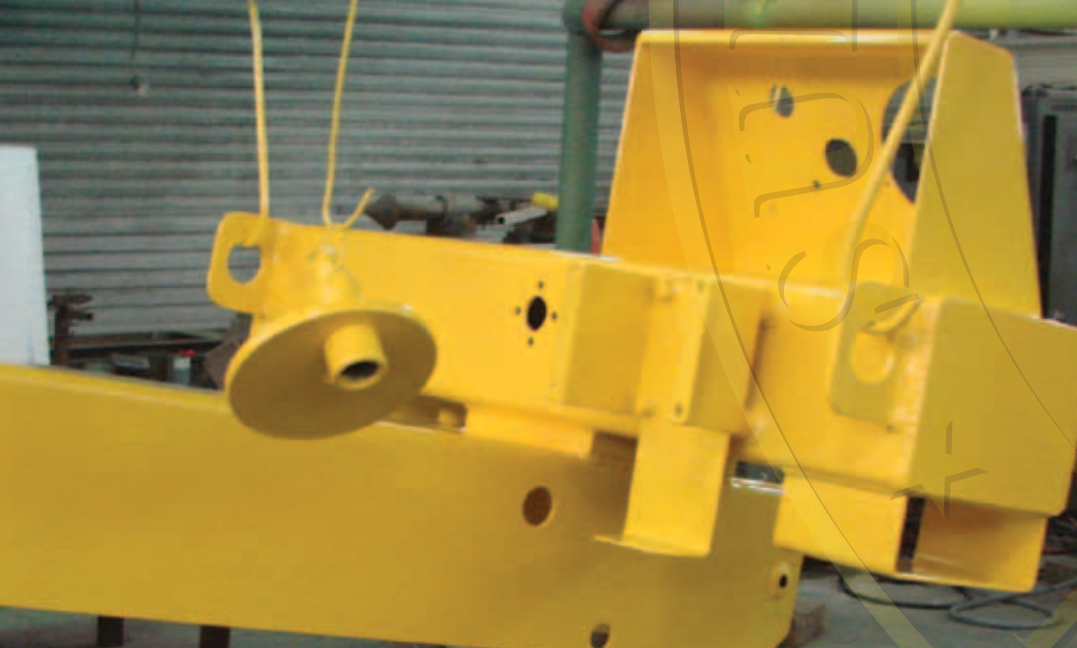
Superior Shot Peening is an experienced applicator of virtually all liquid urethane and epoxy coating systems with access to a broad variety of materials that encompass various colors, physical properties, and applications.

Superior has several ovens of varying sizes to accommodate curing of the smallest parts up to parts 40 feet long to facilitate complete heat curing when required.



Powder Coatings

Superior Shot Peening can apply essentially any powder coating system available in industry. These include coating systems for anti-corrosion, anti-erosion, wear and abrasion resistance, and insulation. The systems include urethanes, epoxies, polyesters, and hybrids that are used across all industries including marine, aerospace, nuclear, agricultural, medical, military, and oil and gas, and we can accommodate curing pieces of to 40 feet in length.



Hybrid Polymer Systems

Superior Polymers

Superior Polymers is a new strategic business unit of Superior Shot Peening, Inc., that provides customized polymer systems for coating or molded products. The systems are proprietary custom blended systems that provide:

- High abrasion resistance
- Chemical/Corrosion resistance
- High temperature applications: 350°F to 700°F
- High release/low coefficient of friction
- Spray-on or molded

Proprietary additives can be used to provide abrasion resistance up to 7 times that of commonly used urethane systems, and 20 times that of rubber. Additionally, these additives can provide a low surface energy that yields a product approximately 70% as slippery as Teflon.

Coatings for the Cement Industry

Superior Polymers has developed a series of coatings for use in the cement, Ready-Mix, and Gunnite Industries. These coatings are for non-stick, high release to facilitate cleaning, and abrasion resistance.

SP-4000: This coating is applied to the exterior of the Mixer shell or body. It provides a clear coating that prevents the cement from sticking to the metal, requiring only a high pressure water jet to clean the cement off.

Sp-1000: This coating is applied to the main load hopper, the main chute, and the flipper, providing a highly abrasion resistant and high release coating that prevents abrasion, and allows for easy clean-up.

4" Hydrocyclones for use in Oilfield and Water Treatment Solids Control

Superior has developed a 4" Hydrocyclone, 2" elbow, and high strength 2" Victaulic Clamp for use in solids control. The use of as high strength hybrid polymer and the proprietary abrasion resistant additive provides service life in excess of 4 times that of the conventional hydrocyclones currently produced in the industry.

The most recent addition is a hydrocyclone that is capable of withstanding temperatures of 300°F which makes it the only polymeric hydrocyclone in the industry that is suitable for geo thermal wells. The high temperature hydrocyclone also exhibits the same superior life that is exhibited by the standard hydrocyclone.



Phosphate Coatings

Phosphate coating is temporary corrosion resistant coating. It can also be used as a corrosion resistant base for subsequent coating applications which produces components with a gray or gray-blue, non-metallic, non-conductive, velvety finish. Superior Shot Peening offers both zinc and manganese phosphate coatings, and can coat parts ranging in size from very small up to 25 feet in length. For parts larger than this, a special cascade operation can be done

Passivation

Freshly machined stainless steels have active surfaces that are prone to oxidation. To passify the surface, Superior Shot Peening applies a chemical treatment to prevent the surface from oxidizing. The process clears micro-burrs, leaving a very finely etched surface that has a very thin film of Cr_2O_4 that prevents further oxidation. Our capacity for this process ranges from the smallest parts to U.S. Army tanks

Custom Surface Preparation Abrasive Blasting

Superior Shot Peening provides a broad spectrum of surface preparation blasting options. Whether it is for pre-paint, pre-thermal spray, pre-powder coat, your antique car frame, or your grandmother's antique iron bed, we have a system that will provide the maximum cleanliness and anchor pattern for the desired final coating without damaging your part.

Superior stocks a complete line of abrasives of all types, such as steel, ceramic, glass, aluminum oxide, black beauty, and stainless steel. These are stocked in many sizes and hardnesses to give the customer the best surface for the application.



Complete Research & Development

With the staff of scientists at Superior shot Peening, we have the ability to provide customers with complete R&D on new projects; our technical staff can discuss the customers' desired requirements, and then can implement a full R&D program to fully establish new materials, new application techniques, or totally new systems to address metallurgical and chemical issues.

Consulting

Superior Shot Peening offers complete consulting services to assist customers in analyzing and diagnosing problems and finding solutions. The technical staff at Superior Shot Peening has extensive experience in fatigue life extension, abrasion, and corrosion resistance; essentially all facets of improving the life of any metallic component. This is accomplished in-house and at the customers' facilities.

World-Wide Field Service

Many times, people require the services provided by Superior Shot Peening, but component size, work schedules, and shipping requirements creates a need to perform the services at the customer facility. Our experienced international field crews can travel anywhere in the world with our portable equipment and can provide virtually every process that we do in our own facilities.

Field crews are often dispatched on only a few hours notice, to provide the same high level of quality and service that is produced in our facilities, but at the customer site. We have extensive experience in providing this type of service to the aerospace, chemical, oil & gas, aircraft, and food processing industries.

Training Schools

Superior shot Peening provides training in all aspects of our treatments; particularly in the areas of coatings and shot peening. We are a certified trainer for MFN, and international organization focused on metal finishing and peening. In this capacity, we teach 3 levels of shot peening that can provide the students with certificates that are recognized by the FAA and NADCAP. We can perform this training at our own facilities as well as at customer facilities. We also have prepared custom schools for customers' specific applications.

Custom Line Fabrication

Superior Shot Peening manufactures its own line of portable and stationary shot peening and abrasive blasting equipment, which is suitable for most applications. Our line of self-contained blast and peening cabinets, as well as other equipment, can be designed and/or modified to meet the customer's particular requirements and will always meet mandated safety and environmental requirements. Extensive training in the use and maintenance is provided by our experienced technicians at no additional cost. Other equipment such as stationary presses and work handling conveyor systems are also manufactured at our Houston, Texas facility.

You Tell Us What You Need; We Will Build It!



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