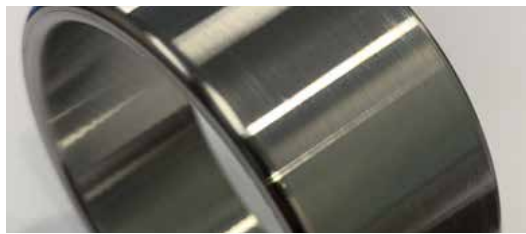
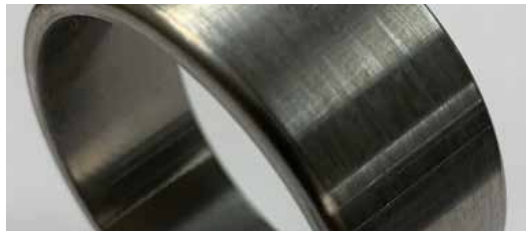


## PASSIVATION SERVICES

Houston Plating's oversized tanks – 143" long x 72" wide x 66" deep – provide passivation services for larger stainless parts that are typically beyond the capabilities of most service providers.

Passivation, an acid-based process, protects stainless steel by reducing the metal's chemical reactivity. Using nitric acid to treat and coat the metal, the free iron on the surface is removed and a passive, protective layer forms.

Passivation services are provided at HP&C's South Houston facility.



## INTRODUCING NI-SIDE™ POLISHED AND NICKEL PLATED PROTECTION FOR CARBON STEEL GAS CYLINDERS



Ni-Side™ (pronounced Nside) Provides 100% Protection From Carbon Steel Contamination At Significantly Lower Cost Than Stainless Steel or Composite Cylinders

Introducing Ni-side, Nickel Plated protection for carbon steel gas cylinders. Industrial gases can become contaminated from contact with carbon steel which degrades their effectiveness. Ni-side is a remarkable new polishing and plating process that produces a uniform layer of nickel plating on the interior of a carbon steel cylinder that prevents contamination. Nickel plating facilitates removal of moisture, which also contaminates gases.

Ni-side is scalable, so that a virtually unlimited supply of carbon steel cylinders is available to the industrial gas industry (previously, only a relatively few could be produced annually) at considerable savings over the cost of the alternative stainless steel, aluminum, or composite cylinders.

Larger vessels used by the industrial gas industry for storage and transportation of gases can also be polished and plated with the Ni-side processes or in HP&C's traditional, larger plating tanks.



1301 Georgia  
South Houston, TX 77587  
713.946.8920

Electroless Nickel Plating / Spray Coatings / SBN-QPQ / Ni-side™  
ISO 9001:2015 Certified

www.houstonplating.com • 800.946.0172



2622 Wilson Rd.  
Humble, TX 77396  
281.964.4600



"Your performance not only allowed Cameron to meet a very tight delivery schedule for our customer, but to improve upon it. This riser order set a new delivery record for Cameron and resulted in a very satisfied customer."



"...they work nights, and all weekend if we want, and are there for us for just about everything we throw their way."



"In the past 20 years working with Houston Plating, I have been most impressed with your customer service. When we call, there is always someone that is willing to go the extra mile."



"Houston Plating is a great asset to Oceaneering. They always provide great customer service and the schedule has always been met. I would recommend them to anyone no matter how small or large the scope is."

Industries Served Include:  
Aerospace • Automotive • Defense • Electronics  
Firearms • Food Service Machinery • Industrial Gases  
Marine • Medical Equipment • Oil Field Equipment  
Petrochemical • Power Generation • Printing  
Recreational Vehicles • Tool & Die



# Houston Plating & Coatings

Your One-Stop-Shop For Corrosion And Wear Protection Services

Electroless Nickel Plating • SBN (Salt Bath Nitriding) - QPQ<sup>SM</sup> (Quench Polish Quench) • Ni-side™ Industrial Gas Cylinder Polish & Plating  
Xylan® Fluoropolymer • Molybdenum Disulfide • Phosphate and Oil • Polyurethane Multi-Coat Epoxy System • Dry Film Lubricant

**Houston Plating & Coatings (HP&C)** has provided electroless nickel plating (ENP), a wide array of spray coatings, salt bath nitriding (SBN-QPQ), phosphating, passivating, and other corrosion and wear protection services to petroleum equipment and other manufacturers since 1988.

To better serve its customers, HP&C has dramatically expanded its nickel plating, spray coating, SBN-QPQ, and phosphating capacities and capabilities to include:

- Largest ENP tanks in the Southwest
- Remarkable new Ni-side™ Cylinder Polish and Electroless Nickel Plating
- Largest SBN-QPQ capacity in North America
- Additional ovens, including 10' x 10' x 20' oven
- Multiple phosphate lines (zinc, low weight zinc & manganese)
- 13.8, 25, & 5 ton overhead cranes & 18 & 25 ton capacity forklifts
- 60,000 sq. ft. spray coating, phosphating, and SBN-QPQ facility in Humble, TX with dedicated epoxy coating facility
- Expanded QC and inspection departments
- AMPP certified coating inspectors for NORSOK coating systems
- Dedicated process supervisors ensuring full compliance with specifications and certifications



With the addition of the new, proprietary Ni-side™ high-pressure gas cylinder polish and plating process, specialized applications, SBN-QPQ, and additional coating and phosphate services, HP&C has become one of the few plating and coating specialty firms in the nation to offer a full range of corrosion and wear protection services that produce operating efficiencies for its customers.

HP&C provides “One Stop Shopping” for the majority of its customers’ corrosion and wear protection needs.

Additionally, satellite operations at OEM facilities, scheduled pick-up and delivery, coordinated trucking, streamlined procedures for tracking parts and processing purchase orders, invoices and other administrative tasks, are a few of the unique ways HP&C partners with its customers to develop supply chain based solutions for finishing requirements.

**“Our customers know and trust our commitment to get their job done right the first time, on schedule and on budget. Our recent expansion of facilities, services, and capabilities evidences our commitment to continuous improvement.”** Bill Howard, CEO and President

For additional information on our Electroless Nickel, SBN-QPQ, Phosphate, Spray Coating, Ni-side or other corrosion protection services, please contact your Houston Plating & Coatings sales representative at 713.946.8920.

## ELECTROLESS NICKEL

plating that provides superior corrosion and wear protection significantly increasing the life of carbon and stainless steel parts. The combination of trained and experienced staff, new equipment, and the largest tank capacity in the Southwest, allows HP&C to produce the highest quality and fastest turnaround ENP services to a broad range of industries.

ENP services are offered only at HP&C’s South Houston plant and, with the largest tank capacity in the southwest, HP&C has the ability to handle the largest nickel plating jobs efficiently.

## SPRAY COATINGS

HP&C offers a wide variety of spray coating applications, including: multi-coat epoxy systems, molybdenum disulfide, Xylan, and other coatings, many of which require oven curing. HP&C offers an extensive range of coatings that allow HP&C customers to have virtually all their coating needs provided at one location, saving time and reducing costs.

In addition to ISO Certification, HP&C is one of the few plating and coating companies in the Houston-area that employs an AMPP Senior Certified Coating Inspector on staff as well as several other AMPP certified inspectors. AMPP certified inspectors are required for NORSOK epoxy coating applications.

Spray coating services are offered at both HP&C’s South Houston and Humble plants.

## SBN-QPQ<sup>SM</sup>

HP&C is the only company in Houston authorized to provide the remarkable salt bath nitriding/quench-polish-quench finishing process. SBN-QPQ is a heat treating/diffusion process that adds no measurable dimensions to the part while hardening its surface up to three times the strength of steel. Additional hardness produces superior wear resistance, improved fatigue strength, and surface lubricity.

The SBN-QPQ process also provides corrosion protection of cast iron, carbon and stainless steel components, and is a cost effective and environmentally acceptable alternative to chrome plating. The SBN-QPQ process produces a cosmetically appealing black finish. HP&C has the largest SBN-QPQ capacity in North America.

SBN-QPQ services are offered at both HP&C’s South Houston and Humble plants.

## PHOSPHATE

A phosphate coating is typically used as a pre-treatment (primer) prior to applying a spray coating finish, which increases overall corrosion protection, lubricity (the friction properties of sliding components) and adhesion of the top coat. Phosphate coatings, along with a top coat of oil are also widely utilized as an interim coating for inventoried and threaded parts to prevent rusting and/or galling. There are very few environmental concerns regarding the use of phosphate coatings.

HP&C offers three different types of phosphate – Manganese, Zinc, and a low weight Zinc. Manganese phosphate is softer than zinc phosphate and provides superior corrosion and anti-galling properties. Zinc phosphate coating has a larger crystal structure than manganese which provides for better adhesion of various high performance top-coats.

Manganese phosphate and zinc phosphate are offered at both HP&C’s South Houston and Humble facilities. .



## UNIQUE SPECIALTY APPLICATIONS

### PROPRIETARY ELECTROLESS NICKEL PLATING

With some of the largest electroless nickel tanks in the industry (two 4,000 gallon tanks) and significant lifting capacity, HP&C has the ability to plate very large parts and vessels in quantities that the majority of plating companies cannot even attempt. These large tanks also allow HP&C to run multiple jobs at one time and produce the fastest turn-around times in the industry.

Over the years HP&C has developed unique plating techniques and processes for certain industries that offer significant customer benefits. Some of the unique electroless nickel applications include the following:

### Power Generation

Certain power generation parts, particularly impellers, are very difficult to plate due to the types of materials used in their construction (stainless steel or very hard tool steel to which nickel plating does not easily bond), and the part configuration that typically includes many layers and angles, as well as blind spots.

Historically, power generation companies have experienced a failure rate as high as 75% for nickel plated impellers. To solve this problem, HP&C’s nickel plating team developed a proprietary, multi-staged system for plating these parts using specially designed fixtures that has produced a 100% plating success rate.

### Cylinders & Vessels

Industrial gas cylinders and vessels used in the storage and transportation of corrosive gasses are subject to significant degradation when interacting with carbon steel. This produces an unacceptable degradation of the gas.

Polishing and nickel plating a carbon steel gas cylinder prevents degradation of gases from moisture or contaminants. However, the cylinders are extremely difficult to polish and plate because of the very small, single opening into the cylinder. Until Ni-side (pronounced Nside), it was difficult to obtain the necessary solution flow needed to produce a uniform plating or to plate sufficient quantities. HP&C’s Ni-side™ processes are scalable so that a significant number of cylinders can be plated at a single time. This not only lowers the cost but dramatically increases availability.

### Computer Shelving, Cabinets and Related Parts

The size, materials used, and geometric complexity of storage shelving, cabinets and other parts used in the computer and electronics industries make those parts difficult to plate. HP&C has developed processes to ensure uniform plating of these large and bulky items. With some of the largest electroless nickel tanks in the country, HP&C can plate those parts economically.

### Firearms

HP&C has applied nickel plating to rifles, shotgun barrels, and related parts for decades. The US Coast Guard, for example, requires electroless nickel plating on their firearms not only because it provides excellent corrosion protection, but also for the beautiful flawless silver finish, which is also a necessity for retail sales.

### High Temperature Heat Treatment of High Phosphorus Electroless Nickel

High phosphorus electroless nickel is widely used in highly corrosive environments due to its functional properties such as hardness, wear resistance and corrosion protection. Applying a well-defined method of thermal treatment to the electroless nickel plated steel substrate at temperatures above 600 °C further enhances these properties by forming an interdiffused bonded layer.

This process generates a layer of protection that promotes an improvement in corrosion resistance, adhesion bond, hardness and abrasion properties when compared to standard as-plated high phosphorus electroless nickel plating

