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WWG HARD CHROME PLATING

Hard Chrome Plating (General Industry)

or

Nickel Plating + Hard Chrome Plating

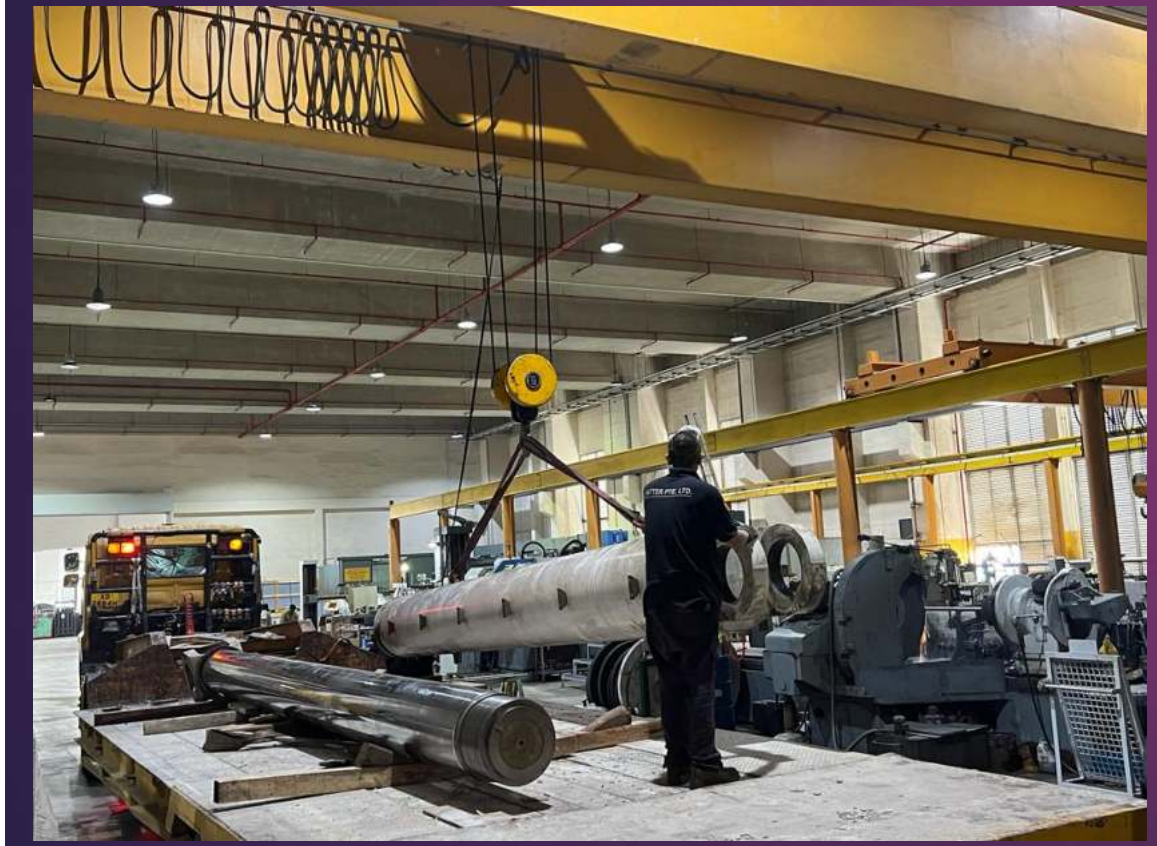
(Marine & Oilfields Applications)

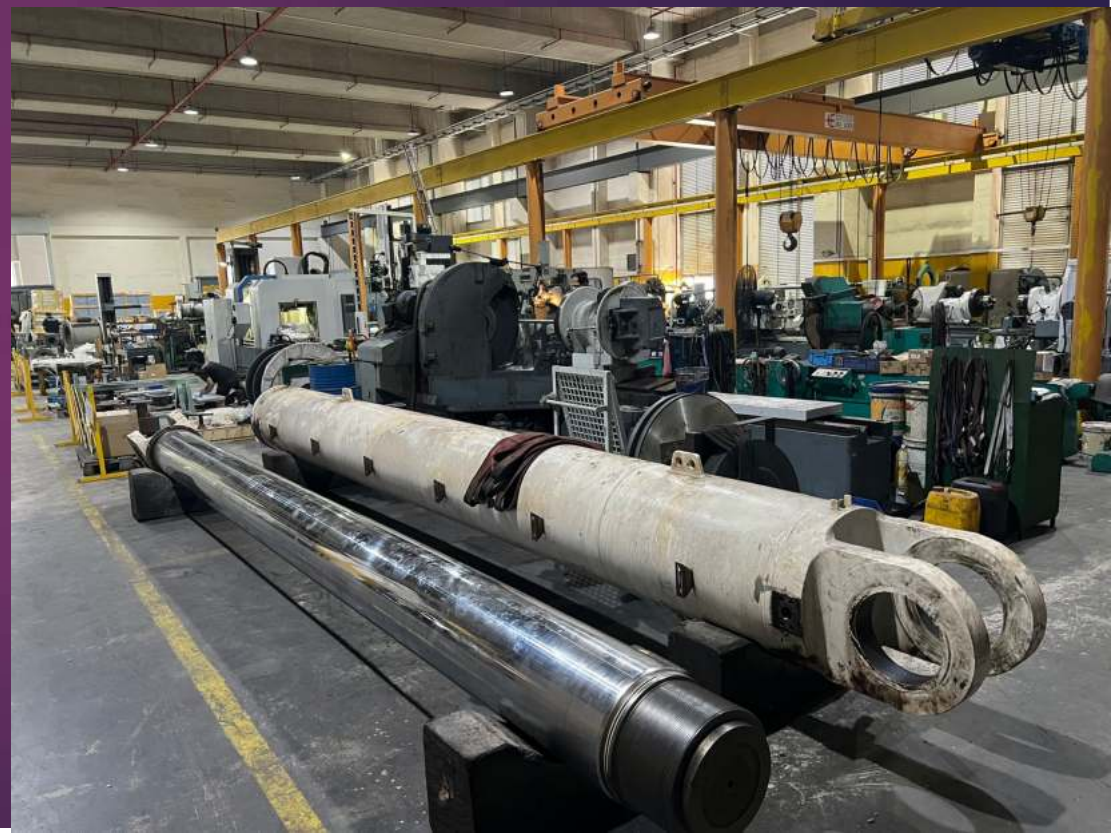



General Applications:

In Most Applications, it is single Hard Chrome plating layer only

In case of excessive thickness, Metal Spray is used to Compensate the thickness, and Chrome over it.





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Critical Applications Objective:

Hard Chromium plating over Nickel plating.
The Nickel Plating serves as a barrier coating for corrosion resistance

REFERENCED SPECIFICATIONS

1. ASTM B254: Standard Practice for Preparation of and Electroplating on Stainless Steel
2. ASTM B487: Test Methods for Measurement of Metal and Oxide Coating Thickness by Microscopical Examination of a Cross Section
3. ASTM B504: Test Method for Measurement of Thickness of Metallic Coatings by the Coulometric Method
4. ASTM B571: Test Methods for Adhesion of Metallic Coatings
5. ASTM B650: Electrodeposited Engineering Chromium Coatings on Ferrous Substrates
6. ASTM B689: Standard Specification for Electroplated Engineering Nickel Coatings
7. ASTM B733: Standard Specification for Autocatalytic Nickel-Phosphorus Coatings on Metals
8. ASTM E384: Test Method for Microhardness of Materials

PROCESS REQUIREMENTS (For Ni + Hard Cr)

1 Degreasing and cleaning: All surfaces to be plated shall be cleaned and free from scale, cutting fluids, oils, greases etc.

The cleaning process step shall include a heated alkaline soak followed by a clean water rinse.

2 Masking: Areas that are not to be plated per Engineering Document or Purchase Order shall be masked.

3 Activation: The activation of surfaces to be plated shall be performed after cleaning to ensure that the surfaces are ready for plating.

The activation step removes films and oxide layers that may interfere with the plating process.

Activation techniques are somewhat material dependent and include alkaline, acid and/or current reversals with electrocleaners.

For stainless steel substrates, the activation process shall be in accordance with ASTM B254.

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4 Nickel Plating: Nickel plate must be uniformly, fully covering substrate, to allow maximum protection to prepare for subsequent Hard Chrome Plating Deposition.

The nickel plating thickness shall be nominally 0.0015” (40 microns).

5 Chromium Plating: The plating process shall be of the hard chromium type in accordance with ASTM B650.

The plating thickness shall be as specified on the Engineering Document or Purchase Order but the finished chromium thickness shall be at least 0.002” (50 microns).

6 Heat Treating: A bake or heat treat cycle is required for high strength steels after plating to remove hydrogen from susceptible (to hydrogen embrittlement) substrates.

This requires a 375°F - 450°F (190°C - 232°C) heat treat cycle for typically 2 to 4 hours. This cycle is required for steels with a minimum specified yield strength of 125 ksi (862 MPa) or greater.

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Capacity

ROD (Ni + Cr + Grinding)

ID Range	90mm – 1,200mm
Max Length	9,000 mm (4.5m + 4.5m)
Max weight	6 Tons

Nickel 30 – 50 Microns
Hard Chrome 0.5 mm (thicker at extra cost)

Dia >200mm => 1.0mm (meaning 0.5+0.5)
Dia <200mm => 1.5mm (0.75+0.75)

BARREL (Honing)

Max OD	800 mm
Max Length	16,000 mm
Max weight	6 Tons

Usually 0.2 – 0.4 mm thick depending on Seal

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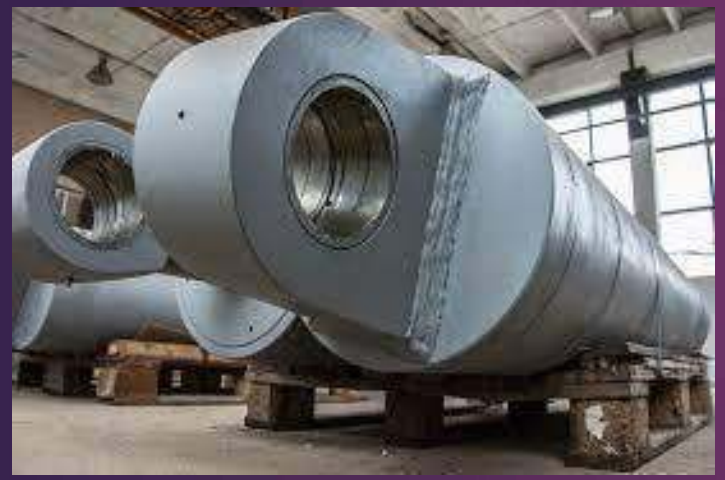
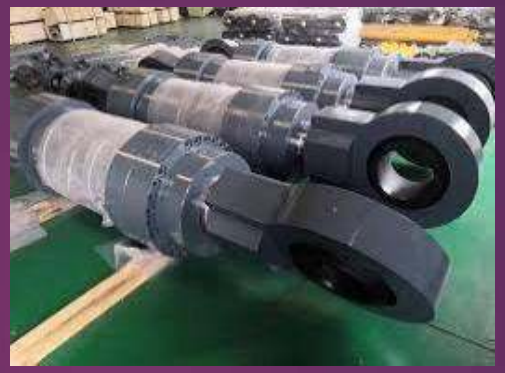
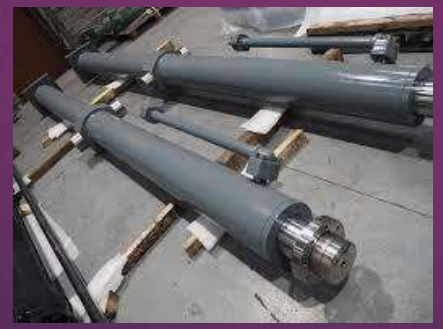
Barrel Honing
Up to 16 M







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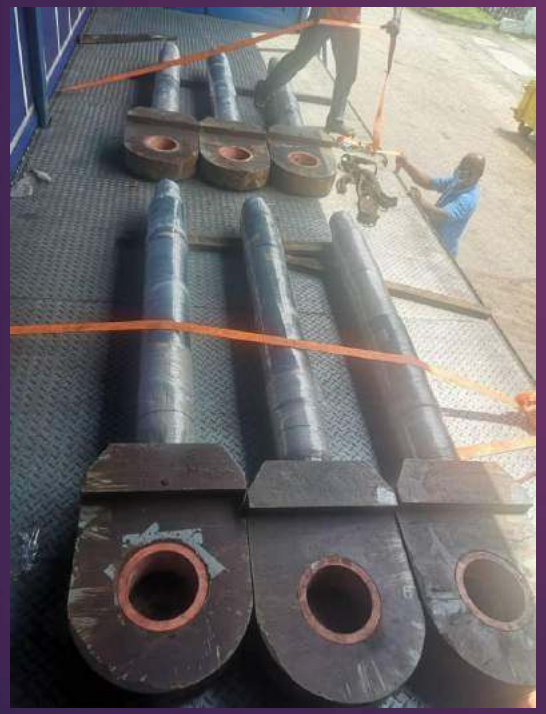
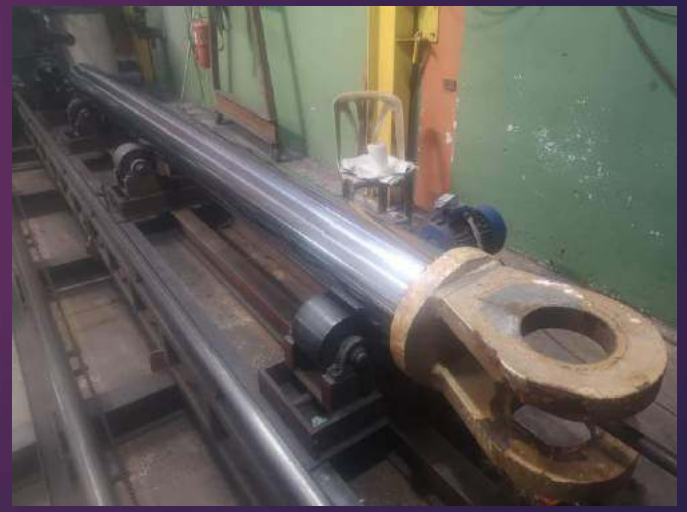
Examples
Hydraulic Cylinder Rods





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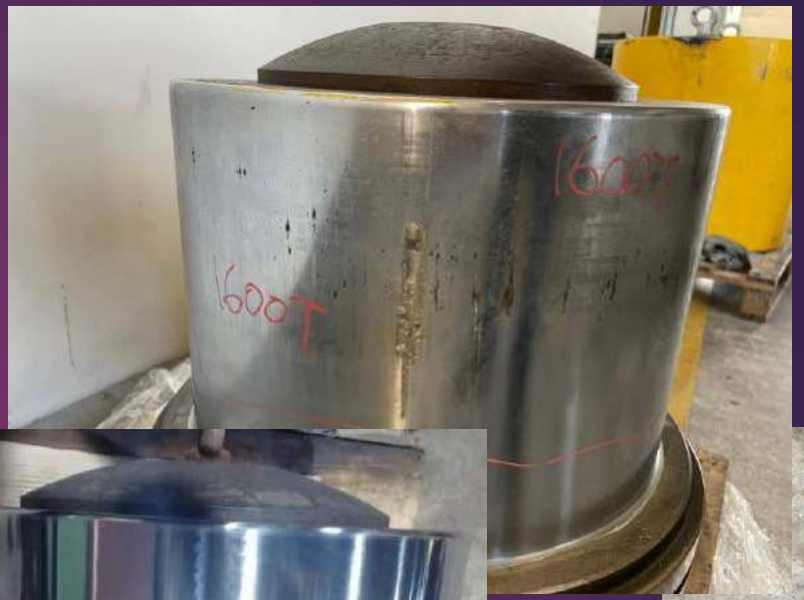
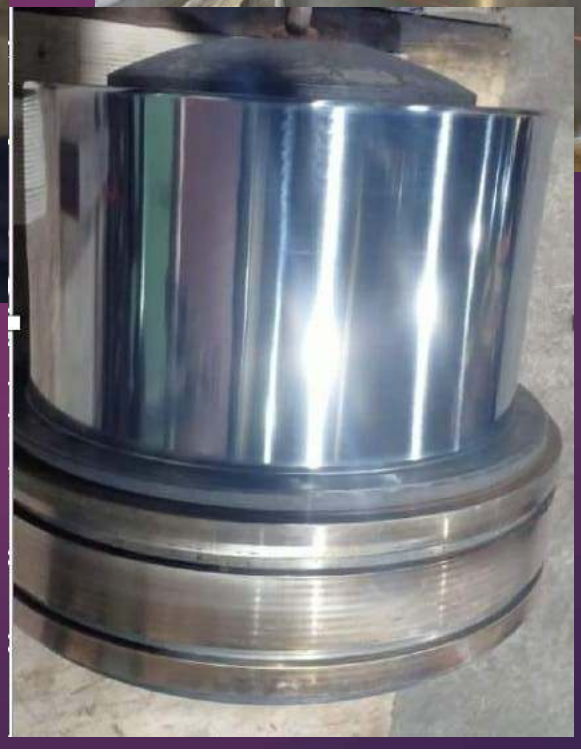
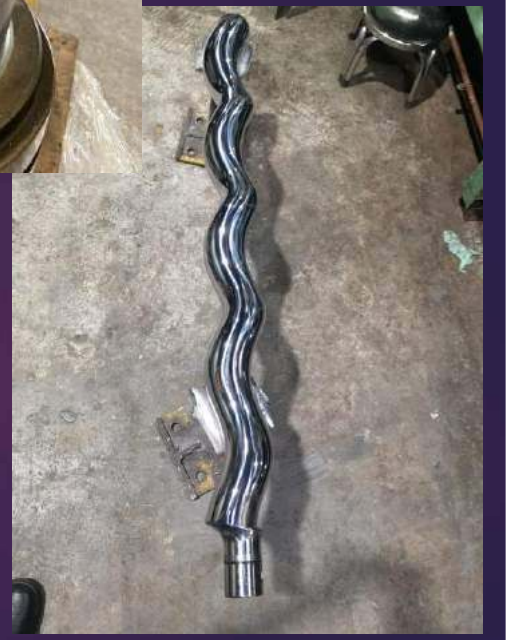
Before/After Plating

Valves
Shafts
Hydraulic Cylinders







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