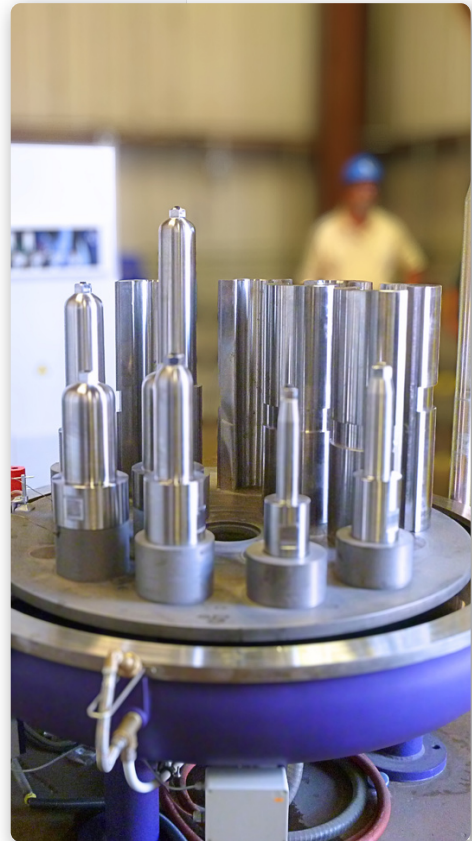


# Oil and Gas Industry

Plasma (Ion) Nitriding in the Oil and Gas Industry



## Parts:

- **Pump Barrel**
  - **Plunger**
  - **Valves and Seats**
  - **Sucker Rods**
  - **Polished Rod**
  - **Production Tubes**
- 
- **Extrusion mandrels for seamless tubing**
  - **Forging dies for valve bodies, couplings, flanges**

For manufacturing petrol industry parts like dies and mandrels - see Forging Industry

## Requirements:

- For high **Hardness**
- For high **Wear (abrasion) resistance**
- For high **Fatigue strength**
- For **Lower friction**
- For **Corrosion Resistance**

## Ion Nitriding Solutions:

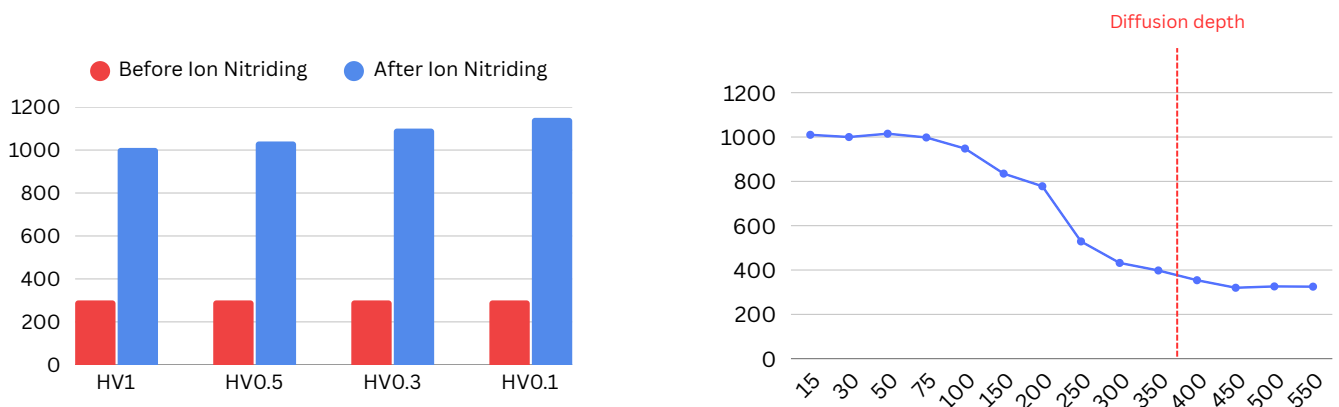
- **Significantly increasing the surface hardness, wear resistance and fatigue life of the parts, improving their lifespan and performance.**
- **Reducing the friction coefficient.**
- **Increasing the corrosion resistance.**
- **The core remains soft and ductile, allowing elongation and flexing.**
- **Allows for tight dimensional tolerance** - nitriding causes minimal to no increase in size.

Improving these parameters **will save from downtime and maintenance costs.**

## Steel Grades Used:

| Steel Grade       | Surface Hardness, HV | Case Depth, um |
|-------------------|----------------------|----------------|
| 41CrAlMo7-10      | 900 - 1100           | 150 - 400      |
| Nitroalloy 135M   | 900 - 1100           | 150 - 400      |
| 31CrMoV9          | 750 - 900            | 150 - 350      |
| 4142 / 42CrMo4    | 650 - 750            | 150 - 400      |
| 4340              | 650 - 800            | 150 - 400      |
| 4130              | 600 - 800            | 150 - 400      |
| 6150 / 51CrV4     | 650 - 800            | 150 - 400      |
| 5115 / 16MnCr5    | 650 - 750            | 150 - 500      |
| 5120 / 20MnCr5    | 650 - 750            | 150 - 500      |
| 630 / 17-4PH      | 950 - 1250           | 30 - 150       |
| 15-5PH            | 950 - 1250           | 30 - 150       |
| 431 / X17CrNi16-2 | 950 - 1250           | 20 - 80        |
| 420 / X20Cr13     | 950 - 1250           | 20 - 80        |

- Hardness and depth values are recommended for the industry and exact values will depend on the nitriding process parameters.
- This is not a full list of used steel grades



- Example of steel **41CrAlMo7-10** after Ion Nitriding - surface hardness and diffusion depth



## Equipment and Technology

Developed state of the art both Hot-Wall and Cold-Wall furnaces for Plasma (Ion) Nitriding.

## Know-How and Expertise

We share our knowledge and expertise on nitriding different steel grades and parts, gathered for more than 45 years.

## Support

We give full-time support.



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