

## Protective Coatings Extend Gate Valve Service Life

### Praxair Coatings Resist Corrosion and Wear; Withstand High Pressure

Gate valves used in oilfield service are subjected to hostile operating conditions. Valves must be corrosion resistant, be able to withstand high pressures, and resist erosive and abrasive wear. The critical parts of the valve that are most vulnerable to these conditions are the valve stems, seats, and gates. The gates and seats are exposed to well conditions at all times and must maintain a tight seal when open or closed.

Gates valves are subjected to corrosion and wear due to the presence of various combinations of hydrogen sulfide (H<sub>2</sub>S), hydrochloric acid (HCl), carbon dioxide (CO<sub>2</sub>), salt water, and sand. **A hard surface coating is required to resist corrosion, erosion, abrasion, sliding wear, and galling**

while providing the proper friction coefficients for maximum ease of opening and closing.

#### Effective Protection

**Praxair LW-45, GV-50H, and SDG GV-70D tungsten carbide coatings on gates, seats, and stems have been proven effective** in combating the hazards to which gate valves are subjected. These coatings, applied by our exclusive detonation gun or high-velocity oxy fuel (HVOF) processes:

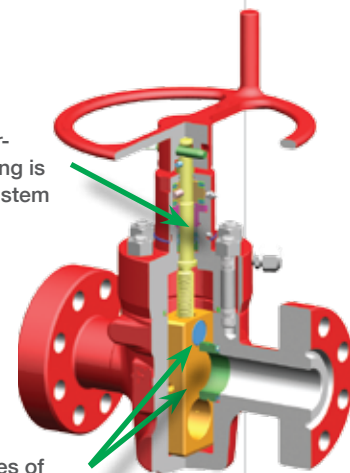
- **Maintain the integrity of the finished surface in oil well environments,**
- **Offer a low coefficient of friction for ease of valve operation, and**
- **Provide resistance to the corrosion, erosion, and abrasion found in most operating well environments.**

Praxair coatings are finished to provide the required sealing surfaces and the proper friction coefficients.

#### Proven Results

Praxair coatings are a proven, **cost-effective means of providing excellent metal-to-metal sealing**

**properties and superior resistance to scratching, galling, and wear.** And, Praxair coatings perform well throughout any temperature range that a gate valve is likely to encounter during service.



A Praxair wear-resistant coating is applied to the stem

Mating surfaces of valve trim and seats are also protected with a Praxair coating

#### Efficient Coating Process

Praxair's coating process does not raise the workpiece temperature above 300° F, well below the critical temperature of steel and stainless steel base materials. The low-temperature process avoids the problem of distortion frequently encountered when using welding or fusing techniques—eliminating the need for additional heat treating.



# Complete Package Service to Protect New Parts and Restore Worn Parts

## Restore Critical Components to Like-New Condition

When wear does eventually occur, the remaining coating can be removed and a new Praxair protective coating can be applied, finished, and returned to service at less than total replacement cost.

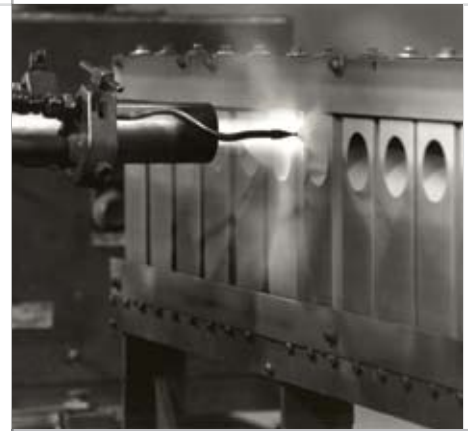
Praxair offers a complete package service — strip, build up, coat, finish, inspect — whatever it takes to restore worn or damaged parts to your specifications.

## Related Applications

Praxair coatings are also used to extend the wear life of components in well drilling tools, including:

- Blowout preventers
- Centralizers
- Choke valve inserts
- Connector pins
- Drive shaft seal areas

- Downhole logging and inspection tools
- Housings, sub pins, and wear pads used in MWD / LWD
- Mud, fracturing, and stimulation pumps
- Mud motor rotors
- Mandrels in drilling and fishing jars / shock tools
- Pipe inspection equipment
- Shock absorbers
- Single-lobe rotors for artificial lift pumps
- Stabilizers
- Tri-cone drill bits
- Wash pipes



## How to Get Started. Contact Us Today.

Praxair metallic and ceramic coatings are offered on a service basis.

Praxair field representatives are readily available for consultation. They are prepared to examine the details of your application and identify ways we can help.

Praxair locations currently providing coatings services for gate valves:

**France**  
Saint Etienne  
+33 477 42 6262

**Italy**  
Novara  
+39 0321 674 811

**United Kingdom**  
Swindon  
+44 793 512 555

**United States**  
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+1 713 849 9474

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Schematic of gate valve shown on page one provided courtesy of FMC Technologies.

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