Cheng Fluid Systems, Inc.

Hard Surface Wear Protection: Boron Diffused CRV® & Elbow Combination

- The new improved product, the Boron Diffused CRV® and elbow combination, has a Rockwell hardness of 80 making it harder than any known sand or catalyst used in the oil industry.
- The current elbows are made with a long turning radius and wear out in approximately four to six weeks, leading to pipe failures, replacement & higher costs.
- Tar sand is liquid carrying hard sand flowing through a piping system causing rapid erosion of pipe elbows.
- CRV® in combination with an elbow coated with hardened boron has proven to solve the elbow erosion problems.
- The CRV® rotates the streamlines so it has equal length traveling through an elbow.
- There is no acceleration or deceleration of the fluid. Under this circumstance, it carries the particles as if it is a straight pipe, which substantially reduces wear and tear of the elbow walls.

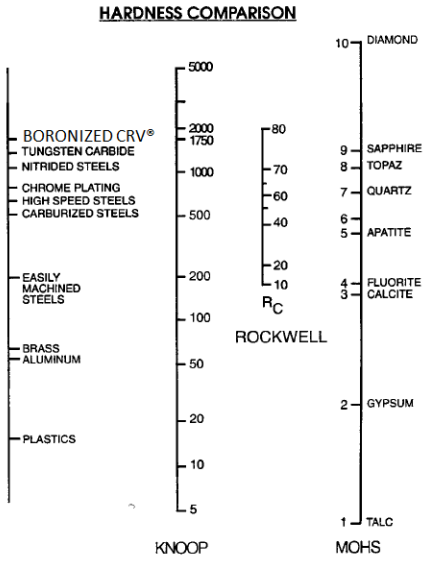
Quality Metal Erosion Protection System

- Cheng Fluid Systems, Inc. understands the value of high performing parts that minimize maintenance, plant downtime and costs.
- A CRV® will significantly decrease wear, erosion, cavitation, vibration and abrasion problems.
- A very hard, wear-resistant surface Boron Diffused CRV® increases component wear life up to several times.

BORONIZING *(Boriding) Treatment*

Boronizing is a chemical vapor deposition (CVD) pack cementation process whereby boron atoms are diffused into steel and other substrates of iron, nickel and cobalt base alloys, forming an intermetallic compound at the surface base metal. Uniform diffusion case depths are controlled by the thermo chemical reactions.

- **Boronizing treatment provides maximum resistance to abrasion, erosion, and wear.**
- **The boron vapors diffuse into the CRV® & leaves an enriched boron infused surface.**
- **Good corrosion resistance in many acidic and caustic environments.**
- **Excellent high temperature properties to 1100°F.**
- **Diffusion depths up to .020 inches are attainable.**
  - **Typical depths are .003 to .012 depending on the substrate.**
- **High temperature chemical process creates very hard boron alloys.**
- **Welding is possible on boron treated components.**
- **Less costly base metals VaporKoted outperform more costly untreated materials.**
- **Environmentally safe - no toxic waste generated from process.**
- **No voids at diffusion zone - 100% dense.**
- **Harder than tungsten carbide.**
- **Low coefficient of friction.**



CFS is dedicated to solving our customer's fluid flow problems by using our technology and experience, along with our patented products, the Cheng Rotation Vane (CRV®) and Large Angle Diffuser (LAD®)