

# TRC Inc. Makes a Big Impact on the Oil Services Industry



The Rod Company Inc. (TRC) was formed in 1996 by a group of oil service industry veterans. Headed by Bob Payne, the company's personnel has over 200 years experience in inspecting and reconditioning sucker rods and couplings as well as in the "down-hole" operation of pumping wells. Sucker rods bring oil to the surface in sucker rod pumps. This type of mechanical pump can lift oil 10,000 feet or more.

With its inception, TRC took on formidable competition including well-established reconditioning rod companies and manufacturers of new rods. But Bob knew the secret to reducing lifting costs by reducing premature rod failures: shot peening.

Bob's experience with shot peening started over 31 years ago in his first rod conditioning company. Shot peen-

ing was not common in rod manufacturing and the average rod had a life expectancy of 10 million reversals. Bob believed that shot peening could stress relieve the rods and thereby extend the life of this expensive component in an oil pump. He worked with shot peening experts from Wheelabrator who confirmed that up to 80% of the 10 million reversals could be removed as long as the metal hadn't been work hardened.

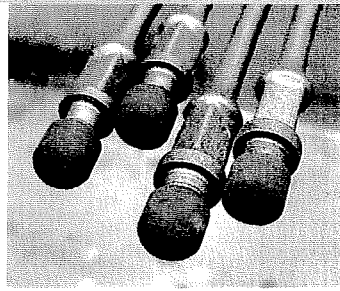
Bob and his staff were shot peening pioneers in the oil industry of the early 70s—he developed processes using Almen strips to determine the correct depth and coverage. Bob achieved tremendous growth with his company. Sales topped \$200,000,000 annually and the company went public.

Bob then started TRC Inc. because he was confident that he could take rod conditioning services to an

even higher level. Within a few short years, TRC Inc. has ten patents pending for inspection and reconditioning procedures. TRC's state-of-the-art inspection and reconditioning technology includes:

- Removal and inspection of couplings. Rods and pin threads are cleaned and visually inspected for wear, corrosion and other damage
- A four runner rack system that checks the rods for body and end straightness
- A process to magnetically normalize the rods
- Shot peening to induce a compressive layer on the surface which stress relieves the rod and increases resistance to fatigue failures
- Two types of eddy current inspection
- A four channel electromagnetic inspection head
- A computer controlled rotating laser beam to measure OD wear and cross-sectional area of the rod body
- Measurement of the total rod length is measured and recorded to assure size compliance to the American Petroleum Institute (API) specifications
- Cleaning and checking of threads
- A wet fluorescent magnetic particle end area inspection to detect fatigue cracks
- A final demagnetizing coil
- A corrosion inhibitor
- Color coding to API specifications
- Inspection and coating with corrosion inhibitor of pin threads and installation on new pin thread protectors

Shot peening is the first step in the reconditioning program. "Our entire process is built around shot peening," according to Bob. Every rod that comes into a TRC plant is shot peened to prepare it for the thorough inspection process. (TRC has facilities in Oklahoma City, Oklahoma and Midland, Texas. They will be opening a new facility in Odessa, Texas this year.) In addition to extending the cycle life of a rod by 50 - 400%, peening cleans the rods to a white metal finish which enhances the electronic inspection and creates an anchor pattern for the down-hole inhibitors. Pangborn designed a shot peening machine specifically for TRC to accommodate the unique size requirements of sucker rods. These rods are 1 1/8" to 5/8" in diameter and up to 25 ft. long. "The Pangborn



*Shot peening stress relieves and cleans the rods to white metal before inspection.*

machine does an unbelievable job for us," Bob says.

TRC Inc. has made a real dent in the rod industry. TRC offers the same warranty on their reconditioned rods as manufacturers provide on new rods: A full one-year down-hole warranty. Bob is confident that a TRC shot-peened reconditioned rod will perform as well as a new un-shot peened rod and he has the track record to prove it with over 325

clients in the oil industry. "We're bigger competition to new manufacturers than other new manufacturers," Bob says. TRC also sells new rods and Bob represents a company in Argentina. This company is one of the few that shot peens new rods—most domestic manufacturers still do not shot peen.

A superior product, good marketing materials, a strong warranty, and a high level of customer support have been key to getting the industry to appreciate the value of shot peened sucker rods. An ally has come from an unexpected source: The internet. When Bob and his sales staff are questioned about peening, they tell the customer to enter "shot peening" in a search engine. Over 1,000 articles and web sites are available on shot peening. To learn more about TRC Inc. and to take a plant tour, visit their web site at [trcrods.com](http://trcrods.com).

## **Additional Reading on Shot Peening and the Oil Industry**

The following papers can be downloaded from the Shot Peening Universe web site at [www.shotpeener.com](http://www.shotpeener.com).

### **Title: Shot Peening Cuts Drill Pipe Failures**

Author: Irving, R.

*Abstract: Corrosion is controlled in oil drill pipes by sand blasting and then shot-peening. Sand blasting removes mill scale from the interiors allowing corrosion either to affect the whole surface simultaneously or to migrate over the surface as each spot is progressively passivated by oxide film. When the scale is not removed, it tends to spall off in spots leaving anodic areas adjacent to passivated cathodic areas. These anodic spots are then subject to concentrated attack leading to failure under service conditions.*

Shot peening is used to control corrosion fatigue failure. Under the alternating stress conditions of service, disarranged material is produced which is corroded as it is formed. Peening develops compressive residual surface stresses which prevent this. Sand blasting must precede peening or mill scale will be hammered into the surface producing conditions of localized spot corrosion. In simulated dulling tests, peened pipe withstood four times more cycles of stress than unpeened pipe.

### **Title: Fracture Analysis, Service Life Prediction and Strengthening of Elevator Links for Oil Well Drill.**

Author: Jin, D.-Deng, Z.-Zhou, H.

*Abstract: The failure and the prevention of failure of elevator links for oil well drilling have been investigated. After presenting a failure analysis of elevator links, a fracture mechanics approach used for computing the fracture strength and residual life is described and the results are compared with those obtained by fatigue tests of actual links. Finally, the effect of shot peening on the fatigue lives of elevator links is discussed. Descriptors: High strength low alloy steels - Mechanical properties; Fatigue life - deformation effects; Shot peening; Oil field equipment.*