

Keeping the wells pumping

Oilfield Improvements' products bring major cost benefits for well operators

By ALAN BAILEY

Petroleum Directory Contributing Writer

Sometimes a simple invention can solve an expensive problem — and provide an inventor with a great business opportunity. Take for example the wheeled rod guide, a device that steers the sucker rods that pass down the tubing of a rod-pumped oil well.

Hughes Coston, president of Oilfield Improvements Inc. and inventor of the wheeled rod guide, told Petroleum News that he started in the oil business by drilling an oil well in north-eastern Oklahoma in the late 1970s.

"The way that I got into business was that I had my own (oil) production," Coston said. "I borrowed a drilling rig to drill my first well."

As Coston's oil production business grew, he encountered problems with wear in oil wells where the well sucker rods rubbed against the well tubing.

"I kept wearing a hole in the tubing at a certain depth in one particular well and I tried different types of rod guide and they didn't help," Coston said. "I came up with the idea of a wheeled rod guide at night — I woke up and said 'I'm going to try this'."

When Coston implemented his innovative rod guide design he found that time between well servicing increased from one month to six months.

In fact the wheeled design proved so successful that in 1982 someone approached Coston to form a partnership to manufacture and sell the guides. The new business, called Oilfield Improvements, flourished — eventually Coston bought out his partner and became the sole owner of the company.

Replace rod couplings

Oilfield Improvements' wheeled rod guides consist of 27 to 29-inch rods with polyethylene wheels slotted in. The wheels enable the guides to roll along the inside of the well tubing. The guides fit into a string of sucker rods.

"They replace the couplings that normally would hold the sucker rods together," Coston said.

The alignment of the wheels along the length of the guides enables the guides to support reciprocating well pumps. The guides come in a variety of sizes, to support all combinations of tubing and sucker rod diameters.

Because the guides replace rod couplings, it's easy to fit the guides on-site. In addition, people can easily and cheaply replace worn wheels.

UltraFlow guides

In addition to manufacturing its hallmark wheeled rod guides, Oilfield Improvements manufactures UltraFlow guides. This type of guide consists of a plastic tube that slides onto a sucker rod. Plastic vanes project outwards from the tube to deflect the rod away from the well tubing. Gaps between the vanes enable oil to flow up the well tubing.

Typically a well operator will place several guides on each rod — the number of guides required depends on the length of the sucker rods and the stroke of the pump.

As well as reducing rod and tubing wear, UltraFlow guides prove effective in preventing rod or tubing stacking near the bottom of a well during the upstroke and downstroke actions of a reciprocating pump. The guides can also scrape out paraffin deposits in the upper parts of a well.

And UltraFlow guides work with any type of rod pumping system.

"Our (rod guides) can be used in reciprocating wells and they can be used in wells where they spin the sucker rods to produce the oil," Coston said.

Unlike other types of plastic guide, UltraFlow guides can be fitted in the field — a major advantage in reducing installation costs.

"Most (types of rod guide) are molded on (to the sucker rods)," Coston said. "You take your sucker rod to a plastic place ... they injection mold guides onto the



Hughes Coston, president of Oilfield Improvements Inc., displays the company's rod guides. The big rod is for 6 5/8-inch tubing, while the smaller rod is for 1.9-inch tubing. The rod guides were manufactured for Amoco Canada. Coston is standing in front of the company's 12,000 square foot plant in Broken Arrow, Okla.

Reduce steel costs

With the recent escalation in the price of steel, many people are seeing major cost benefits in using Oilfield Improvements' products.

"Rods have become so expensive — the price of steel has almost doubled," Coston said. "... so we're saving people thousands of dollars in ... the cost of rods and tubing."

Reduced rod and tubing wear can also have a dramatic impact on the cost of servicing wells.

"To service a well that's 10,000 feet deep you're talking sometimes \$15,000 to \$25,000," Coston said. "... if you can prevent (the well) from going down twice a year you've saved \$30,000 to \$40,000 ... our guides cost pennies compared to those kinds of costs."

And Oilfield Improvements minimizes costs by contracting out the manufacture of the parts for the guides.

"I have different suppliers that supply the parts and we assemble them," Coston said. "Business-wise it's been a smart decision because other people can make things cheaper than we can."

Also, because customers can fit both the wheeled guides and the UltraFlow guides themselves, Oilfield Improvements can ship the guides to anywhere in the world for on-site installation.

"If a guy's in Australia (for example) he can buy our guides, put them in his pickup truck and when he gets to his well put them on," Coston said.

Types of application

The well characteristics determine what type of rod guide to use in a particular application — the cost of the guides needs to be balanced against the potential savings in well maintenance.

The wheeled guides cost more than the UltraFlow guides but last much longer. So wheeled guides prove especially cost-effective in demanding situations such as the bottom of a deep well or around the bends of a deviated well. A sharp bend in a well, for example, may require relatively short sucker rods coupled together

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Computer analysis

With something of a science around determining the type of rod guide to use and the placement of the guides, Oilfield Improvements offers a free computer analysis of a customer's rod guide requirements. A computer program uses a well's directional survey together with information such as the pump stroke length to calculate the interaction between the sucker rods and the well tubing.

"If (the customer) has a directional well and they're wanting to figure out how to run that most efficiently, we put their data ... from the directional survey ... through the computer," Coston said. "It gives us how much side load there is in each section of that well that they've surveyed."

The calculated side loads enable Oilfield Improvements assess whether rod guides are needed and, if so, what type to use and where to place them, to minimize well operating costs.

"We actually have some places where there's 1,000 pounds for every 25 feet (of well), and then you need a wheeled rod guide," Coston said. So, Oilfield Improvements has established a flourishing niche business that helps customers reduce their well operating costs. And with a continuing need to minimize the cost of producing oil, Coston sees a bright future for his company.

"We work with people who have production with rod-pumped wells," Coston said. "They can do without our product, but it's gonna be expensive." ●

Editor's note: Alan Bailey owns Badger Productions in Anchorage, Alaska.



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