

Telemast takes to oil and gas fields

Schramm Inc has been manufacturing and supplying drilling rigs to the oil and gas industry for many years and the company's latest drilling rig offering is proving to be a resounding success, based on orders the company has received, writes Rodney Evans Garrett

TO DATE there have been more than 25 of Schramm's new model drilling rigs placed on order with six being delivered in 2006. The orders received have come from oil and gas drilling contractors in Canada and the US.

The new model is designated the TXD Rotadrill and features the heaviest hoisting capacity of any Rotadrill that features the telemast system. It has a top head drive fixed to the telemast tower and features an automated pipe-handling system.

Schramm's telemast technology enables this drilling rig to handle range III casing and yet the rig in its transportable configuration is made very compact for maneuverability and over-the-road transportation.

Schramm says the TXD Rotadrill is designed for drilling activities such as shallow gas drilling, surface-hole drilling, coal bed methane (CBM) and directional and large bore diameter drilling. Borehole clean out can be performed with either mud or air.

The telemast was introduced on the T130XD, Schramm's mid-size rig, in late 2002 with deliveries started in 2003. The telemast enables the drilling rig to be more productive and simpler to transport. It is common for some contractors to move a drilling rig four to ten times a month, making its transportation cost a significant factor. Today, there are dozens of these drilling rigs operating in fields from West Virginia to Texas. Two natural gas drilling contractors in Pennsylvania who have much experience with the T130XD are Gene D. Yost & Son Inc of Mt Morris and Whipstock Natural Gas Services Inc of

Clymer. Whipstock owns six T130XDs while Yost owns five, and a T90XD. Both companies specialise in drilling new, and servicing existing, natural gas wells. The larger of the two companies, Whipstock

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employs 115 people and serves the western half of Pennsylvania, eastern Ohio and West Virginia, as does Yost. Both contractors selected the T130XD because of the telemast tower.

HOW THE TELEMAST FUNCTIONS ON THE T90XD, T130XD AND TXD

The tower is a two-section mast with section one being affixed at its base to the drilling rig's chassis. Section two is a sliding extendable mast that, when in the upright position, telescopes in and out of section one much as an extendable mast section on a forklift does.

The top drilling head is attached to section two, which is powered by two-way hydraulic cylinders for quickly extending or retracting. In the retracted, horizontal (transport) position, the T130XD has an overall length of 42 ft 9 in (the TXD is 46 ft, less a road tractor). With section two fully extended, the mast clearance is 69 ft high and has a 50 ft top-head-travel for handling range III casings, which come in random lengths to 48 ft long.

When section two is fully retracted and the mast is in the horizontal (cradled) position for



transporting the T130XD, the mast's overhang at the front of the rig's chassis is less than 6 ft. Since the TXD is trailer-mounted, an overhang is non-existent. Dave Wilson, superintendent for Whipstock, said the telemast tower is the single most outstanding feature to be found on the T130XD.

Telemast compactness is a great advantage for the three models. For example, the modest overhang feature on the T130XD makes the drilling rig simpler to transport, according to Mr Wilson. He said: “Our other drilling rigs handle only range II casings. Unfortunately, even on these drilling rigs, the tower overhang is 14 ft, which can present a problem when transporting the rig. The same manufacturer does offer the drilling rig with a longer tower for range III casings but that would present even more transport problems with its yet greater overhang. When making a turn with a rig

TELEMAST TOWER DIFFERENCES

While the telemast tower that is fitted to the new TXD is similar to the tower founded on the T130XD, it is mounted on a specially designed semi-trailer instead of a straight truck chassis. The semi-trailer is pulled with any conventional road tractor fitted with a fifth wheel. With the tower in the vertical (drilling) position, the fully extended section two can be retracted down into the base section within a few minutes. Once retracted, the tower can be folded (the tower is pivoted at its base) down into the horizontal position on the trailer cradle making it ready to transport. The retraction and extension of section two and the folding and uprighting of the tower are carried out by hydraulic power.



that has a long overhang, it requires a very wide clearance. In villages or in other tight areas it will not clear stationary objects such as trees, telephone poles or street signs. That means we have to make time-consuming detours to transport the old-style drilling rigs to some projects. As far as I know, there is no other drilling rig on the market that is as compact and maneuverable in the transport position as Schramm's, and yet accommodates a range III casing."

THE TOWER OF POWER

The TXD is the flagship of the three Rotadrills featuring the telemast. It has a 40% greater hoisting capacity than the T130XD and it is 100% greater than the T90XD capacity. Its hoist rating is 180,000 lbs (the T130XD has a hoist capacity of 130,000 lbs and the T90XD 90,000 lbs). According to Mr Wilson, the T130XD can drill holes 6,500-7,000 ft deep, provided at least some of the casing is aluminum, thus reducing the total pipe-lifting weight. While the TXD has 40% greater hoisting capacity, it does not necessarily translate into a 40% increase in drilling-depth capacity. Schramm's oil and gas products specialist Greg Hillier said it all depends on the total weight of the drilling pipe string or the casing being used. "This is one reason we at Schramm never rate a maximum drilling depth capacity for any of our drilling rigs," he says. "With all drilling conditions being equal, of course, a drilling rig with greater hoisting capacity can drill deeper. The question is, how much deeper, and that must be determined by each driller."

MORE THAN JUST TELEMAST ADVANTAGES

The telemast feature is not the only major attribute to be found on the TXD. Just as important is the specially designed drill pipe and casing trailer, which automatically feeds the drill head one-by-one as additional lengths of drilling pipe or casing are added to the string. This pipe-casing trailer is separate from the drilling rig trailer. The pipe-casing trailer has its own tandem axle system for transporting it with a conventional road tractor. When set up for drilling activities, the pipe-casing trailer is kept in the horizontal position by a series of outriggers. Up to 40 pieces of pipe can be stowed on the trailer until used in the drilling process.

By hydraulic action, the individual pipe or casing that rests in a cradle is tilted up from the horizontal position in the trailer to a precise incline position so it is in alignment with the drill head assembly that simultaneously tilts up to receive the pipe or casing. Once the two have been indexed together, a hydraulic-powered gripper automatically holds the pipe or casing in place while the drill head assembly screws it on at the rotating drive connector.

With the pipe or casing now connected, simultaneously, the head tilts down into the drilling position as the cradle that held the pipe or casing returns to the horizontal position for receiving another pipe or casing. The cradle is fed the new piece by it rolling from the holding section into the cradle. This rolling action is reversed when taking pipe out of the string, setting it in the cradle and placing it back in the pipe storage area.

Schramm has produced DVD showing how this automated pipe-handling system functions.

A very important attribute of the automated pipe-handling system is its versatility in handling any size tube up to 47 ft. It can handle the random sizes automatically.

This is of economic importance to many drillers for it means they can use random length tubing. For example, casing bought in random lengths is much less expensive to purchase than the specified range II or III casing.

SAFETY FIRST

Schramm portrays the automated pipe-handling system as a hands-free activity, thus making it inherently much safer than the more common manual pipe-handling systems. "Safety is always an important consideration for the driller and this hands-free system helps guard the drilling crew against incurring smashed limbs. Add to the safety factor the superior drilling production and it can be seen why this drilling rig has been an instant success. It is competitively priced too," said Mr Hillier.

Schramm has positioned the TXD rig in the marketplace as an alternative to double-drilling-rig systems by offering a level of automation not common to the oilfield. The TXD automated pipe-handling design has proven itself with a prototype built by Schramm for a deep water-well contractor. The contractor has been using the drilling rig daily for the past six years with no major issues occurring.

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