

In the Groove

The bulletin of Lebus International Engineers GmbH

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Troubleshooting MD sets up consultancy arm

Lebus International Engineers GmbH has established a new engineering consultancy division specialising in solving problems relating to wire rope spooling on winch drums.

As managing director of Lebus International since 1975, Cris Seidenather is already well-known in the wire rope business for his troubleshooting expertise and has often been called on to help wire rope manufacturers sort out the problems of their customers. By setting up a separate consultancy division, distinct from the Lebus manufacturing operations, Seidenather will bring his problem-solving expertise to wider markets across the world. An FPSO facility with a wire rope problem, for example, can bring production to a halt, costing millions of dollars a day in lost oil revenue. To experienced eyes, such as Seidenather's, the problem can often be quite simply – and cost-effectively – solved.

Typical projects that Seidenather has undertaken include, earlier this year, helping a crane owner who was experiencing shorter than expected rope life. Seidenather determined that the riggers were not pre-tensioning the wire rope sufficiently before spooling it onto the drum. He devised a way for them to spool the rope properly in limited available space.

Incorrect spooling can cause inner layers of wire rope not to sit properly on the drum and to be damaged by the force of the outer layers.

Seidenather's expertise stems from more than 30 years of manufacturing wire rope drums and spooling aids. Lebus was the original manufacturer of parallel grooved wire rope drums, and still retains a leading position in the industry, supplying some of the world's biggest crane manufacturers as well as offshore and mining contractors.

The drum manufacturing operations of Lebus International near Munich in Germany continues as before in workshops that are already operating at close to full capacity just two years after moving to new, larger premises.



CTT 331 cranes at work in the UK and (below) in Portugal

Contract signed for Terex Comedil winches

Terex Comedil's CTT 331 flat-top tower cranes now come fitted with Lebus parallel groove hoist drums as standard, following the signing of a supply agreement earlier this year. Already Lebus International has supplied more than 40 drums to the Comedil factory in Italy and envisages supplying up to 50 more next year.

Lebus is also supplying drums for Comedil's newest model, the luffing jib CTL 180.

And following a visit to Lebus in early October by Comedil's purchasing manager Elvio Netto and technical manager Antonio de March, further supply agreements have been made. "It is envisaged that all Terex Comedil tower cranes will be equipped with our drums," says Lebus managing director Cris Seidenather.

Though the detail is still under discussion, Comedil is re-engineering its entire product range with the intention of using Lebus drums throughout.

Lebus has for many years supplied grooved drums to Comedil's sister company, Peiner. Both companies have been part of the US Terex Corporation since 1998. Previously manufactured in Trier, Germany, the Peiner cranes are now produced at the Terex Demag factory in Zweibruecken.



Huisman-Itrec specifies Lebus for Jumbo and Mammoet cranes

Dutch company Jumbo Shipping's newest vessel, the *Jumbo Javelin*, has entered service with a pair of 800 tonne capacity heavy lift mast cranes.

The cranes were built in the Netherlands by Huisman-Itrec. Each crane is equipped with three winches, featuring Lebus drums. The main hoist drum is 1200mm in diameter and 1416mm long. The Lebus parallel grooves have been designed to hold six layers of 50mm diameter wire rope. The boom hoist drum, for luffing the boom, is the same design as the main hoist but holds five layers of 50mm rope. The auxiliary hoist drum has a diameter of 766mm and is 1030mm long. The grooving is designed for 36mm diameter wire rope in five layers.

Huisman-Itrec is also building a huge land-based crane for Mammoet, another Dutch heavy lift specialist. Mammoet owns several of the world's biggest crawler and ring platform-mounted lattice boom cranes. Mammoet's flagship cranes are its two PTC (Platform Twin-ring Containerized) machines, rated at 1600 tonne capacity. The first PTC entered service in 1999 and the second in 2001. A third rig will join Mammoet's fleet at the start of 2005. With a maximum load moment of 33,705 tonne-metres, these cranes can lift 602 tonnes at a radius of 50m, and 96 tonnes out at 107m radius.

Lebus is supplying nine rope drums for the new PTC, all with the Lebus counterbalanced groove to ensure safe and proper spooling, which is critical on such a huge crane.

The two main hoists hold 1500m lengths of 50mm diameter wire rope in 10 layers. The drums are 1040mm diameter and 1803mm long between the flanges. There is also a topping winch and a luffing winch of the same dimensions. An

Jumbo Javelin's deck cranes each have three winches, with Lebus grooved drums



auxiliary winch is 660mm diameter and 1039.5mm between the flanges. This holds 650m of 30mm diameter rope in eight layers. There are also two pull-in winches to lift the back mast and the A-frame. These are 840mm diameter, 535mm long and hold 350m of 30mm diameter wire rope in seven layers.

Finally, there are two Superlift winches to lift the counterweight

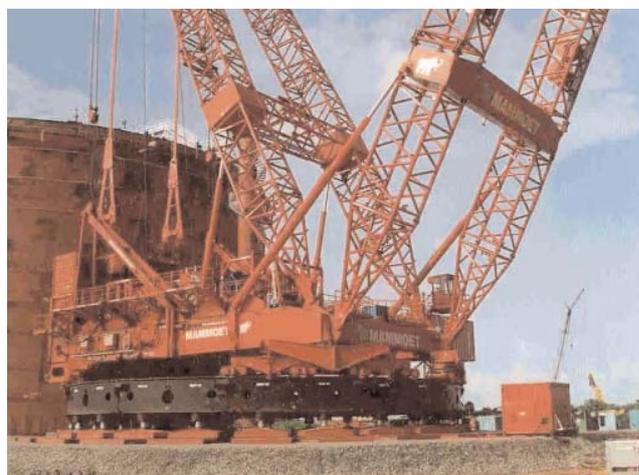


Jumbo Javelin picks up 1,600t in a tandem lift load test

sections. These are double compartment drums measuring 840mm in diameter and 535mm across. They hold 130m of 30mm diameter rope in three layers.

"We make the drum complete and smooth and then put grooved sleeves, which we make in two sections, onto the smooth drum," Lebus managing director Cris Seidenather explains.

"Using split sleeves means that if there are ever any problems we can just change the sleeves rather than the whole drum. It is an efficient solution."



Mammoet has commissioned a third PTC crane

Rope life increased for Petrobras

Brazilian state oil company Petrobras has eliminated problems of excessive wire rope damage on its largest production platform by bringing in Lebus International to replace imitation Lebus groove rope drums with genuine Lebus grooving. Lebus also modified the rope guide and first fixed sheave, which were not performing effectively.

Petrobras' P-40 platform, in the Marlim Sul Field, is the largest production platform in Brazilian waters, producing 170,000 barrels of oil a day. Operations rely on a 200-tonne capacity winch to pull flexible risers which have been layed by a pipe-laying ship. Pipelines connect the platform to the oilwells approximately 15km away. When the pipe-laying ship reaches within about 400m of the platform, the riser is taken by the pull-in winch, pulled towards the platform and then connected to the platform in a sensitive and critical operation.

The Norwegian-made winch was originally equipped with a parallel groove drum, in the style originally patented by Lebus. Since the expiry of Lebus patents in the 1970s, other drum producers have copied the style, but not always successfully. There was also a spooling device to guide the rope mechanically via a hydraulic level-wind system.

Petrobras was finding that every pull-in operation was leading to rope wear and damage on the strands. Together with its rope supplier, Casar, Petrobras called on Lebus to solve its rope problems.

Lebus engineers travelled from Germany to Brazil to analyse the situation and decided to install Lebus original grooving and modify the existing rope guide as well as the first fixed sheave. With 500 metres of 70mm diameter wire rope to get onto the drum, in eight layers, there was plenty of scope to crush the first few layers if spooling was not perfectly tidy.

Within six weeks the new grooved sleeves were designed, fabricated, delivered and installed. Not only did the first subsequent pull-in operation result in no wear to the rope, 12 further pull-in operations were conducted and each time the rope spooled perfectly and without any wear or damage to the rope.

Since solving the spooling problems of the P-40 platform, Lebus has been called on to solve problems with imitation Lebus winches on two production platforms off the coast of Angola. The 300 tonne pull winches on Kizomba A and Kizomba B have now been fitted with original Lebus sleeves.

Lebus sleeves were added to the drum ... So not only did the first layer sit neatly ... So did the eighth



Smooth spooling explained at Crane Safety conference

The engineering and geometry behind the smoothest possible spooling of wire rope was explained by Lebus International managing director Cris Seidenather at the Crane Safety 2004 conference in London in June.

The conference, an international event attended by more than 170 crane industry professionals from around the world, heard how correct spooling can prevent rope damage and so enhance safety.

Seidenather described the factors that affect how well wire rope wraps around a drum, including:

- Drum type – whether smooth, helical groove or parallel groove (Lebus style)
- Rope construction, including size
- Tension in the rope as it is spooled onto the drum
- Fleet angle (which is the angle at which the rope meets the drum).

Seidenather described the benefits of the parallel groove drum and explained how the correct groove depth and pitch depended totally on the type and size of wire rope to be used.

Any loose rope, not properly wrapped or sitting smoothly, is likely to be damaged by layers that sit on top of it. To avoid this, a minimum tension of 0.7% to 1.0% of the rope's breaking load should be on the rope while it is being spooled.

The fleet angle should ideally be in the range of 0.25° to 1.5°, said Seidenather.

The Crane Safety 2004 conference was organised by the magazines *Cranes Today* and *Hoist*. Other speakers at the event included representatives from leading crane manufacturers, wire rope producers and crane operating companies.

Soilmec chooses Lebus for its latest piling rigs

Soilmec, a leading Italian manufacturer of foundations machinery, has added a new piling rig to its product family that features Lebus drums to ensure smooth and safe spooling of the wire rope.

The R-312/200 hydraulic rotary rig is designed for drilling bored piles (either dry or with bentonite mud) as well as continuous flight auger (CFA) piles.

It can bore piles up to 48m deep and 1.5m in diameter. The maximum drilling speed on this new model is 42 rpm and the maximum nominal torque is 130kNm. The nominal line pull on the main winch, which has a Lebus-grooved drum, is 133kN.

The Lebus drum also features an integrated counter-balanced riser and a new-design Kickerplate to reduce the tendency of the wire rope to cut in during the rising of the second layer on the drum.

The winch of Soilmec's R-312/200



The diameter of the drum is 445mm and the length is 485.1mm. It is designed to hold 22mm diameter wire rope in three layers.

Lebus is planning to produce 50 drums for Soilmec's new piling rig during 2005.

DVD launched at Bauma China

Many visitors to Bauma China in Shanghai from 16 to 19 November may be tempted to purchase illegal pirate copies of the latest Hollywood blockbusters that are readily available from street vendors at bargain basement prices.

Alternatively they could stop by the Lebus stand at the fair and pick up a new – totally legal! – DVD that has been produced by Lebus International Engineers (Germany) to provide details of the company and to show how the Lebus spooling system works.

This is the first time that Lebus has exhibited at a trade fair in China but the company has been active in the market for some years. Last year, for example, it supplied rope drums to Shanghai-based manufacturer ZPMC for a 1600-tonne capacity crane barge.

DNV certification renewed

Lebus International Engineers GmbH has had its EN ISO 9001:2000 certification renewed by DNV.

“The auditors spent two days with us and found zero faults or defects,” said Lebus production and quality manager Tim Seidenather.

Lebus has had DNV certification for 10 years now, and the renewal runs for a further three years.

In May 2004 the company also secured Lloyds certification for EN ISO 9001:2000 quality standard.

About Lebus rope drums

In 1937 Frank LeBus, a supplier of equipment to oilfields, patented the use of a groove bar on hoisting drums to guide the spooling of rope. In the 1950s he refined the grooving geometry and came up with the LeBus Counterbalanced Spooling System, which today remains the most effective and sophisticated way to ensure that wire rope wrapped around a hoist drum in multiple layers continues to spool onto and off the drum totally smoothly, and in a way that maximises the life of the rope. Tests have shown that a Lebus drum, with grooves designed specifically to match rope size, can extend rope life by more than 500%.

Today, the term ‘Lebus’ is often used incorrectly to refer to any drum with parallel grooves. In fact, only a drum or sleeve produced by Lebus can truly claim to be a Lebus drum.

About Lebus International

Lebus International Engineers GmbH is a sister company of the US Lebus company, still owned by Charles Lebus, grandson of the inventor of the Lebus groove system.

Lebus International has manufactured Lebus drums and rope spooling systems in Germany since 1962 for a wide range of onshore and offshore winching applications. The Lebus product range includes:

- Rope drums with grooves cut directly into them (with or without bolted or welded flanges, as required)
- Grooved sleeves, supplied in two sections, that can be placed over smooth, ungrooved drums. These split sleeves are a good solution for retrofitting and for applications where drums may require replacing in future.
- Spooling accessories such as spooling angle compensator and cross thread spindles.

Contact us

For any queries relating to wire rope spooling, or for further details of Lebus products and how Lebus can help you, please contact:

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