Filling the Gap

Chocking of Jack-Up Rigs

Offshore Industry headed North to Broek op Langedijk, the Netherlands and met with Willem Wille, the founder and co-owner of Willtéco, who has just returned from a chocking project in Singapore.

"We were appointed to chock the legs of the jack-up rig Transocean Shelf Explorer, in order to prepare the rig for its journey to Sakhalin, Russia on board the semi-submersible Dockwise vessel Transshelf." The Shelf Explorer has been built by the French yard CFEM in 1982 and as with all rigs of this type built in the 1980s, it needs additional securing of the 140m long jacking legs in order to prevent serious damage to the rig during the dry-transport. Wille explains: "There are about seven of these particular rigs in operation today. The problem with these rigs is that the chocking plates, which are to be placed

Willem Wille (right) with a few of his team members on the Shelf Explorer.

between each chord and guide, don't fit properly. As a result the legs cannot be correctly secured by the chocking plates and additional measures are necessary to prevent damage during dry-transport."

Major Rig Damage

"We invented our chocking system about fourteen years ago", says Wille. "At that time the CFEM-built jack-up rig Neddrill Trigon (now Noble Al White) was being transported on board a semi-submersible vessel when they were forced to interrupt the transport because the movement of the jacking legs was causing major damage to the rig. The rig started its journey with the chocking plates, which were designed at new built, in place between each chord and guide. The clearance between each chord and guide at newbuild was 1-1.5 inch, but due to wear during the years the clearances between each chord and guide had increased to 2-2.5 inch. As a result, the chocking plates did not properly fit and they slowly moved out during the trip. During the transport it also became clear that, in addition to the motion created by the waves and the wind, the legs were reaching an increasing state of harmonic vibration, caused by the spudcan hitting the water, creating permanent damage to hull, guides and leg houses. A new chocking system had to be defined to fill up the gaps between guides and chords. At that point I was approached by one of my former colleagues whom I knew from when I was working in the offshore industry. When he asked me if Willtéco could provide a sound but quick solution to solve the problem, I took on the challenge."

Unique Method

Wille: "We came up with a system whereby we insert a number of flexible bags, made of specialized plastic, into the gaps between the chords and the guides. At the bottom of the bags retainers are welded in order to keep the bags into place. The bags are then filled with a special mixture of epoxy and several hardeners. We have named

this mixture Rig Fastening Compound, and the quantity needed depends on the size of the gaps between the chords and the guides. After the chocks are cured – depending on the ambient temperature, the chocks need between 12 to 24 hours to cure – the rig is ready for the journey to its next location." After this method was successfully applied to chock the legs of the Neddrill Trigon fourteen years ago, Willtéco was soon appointed to chock the legs of the other CFEM type rigs. Their chocking method is unique and today one can be certain to see a Willtéco crew board the rig if one of the seven CFEM type rigs needs to be prepared for dry-transport.

High Standards

"We are the only company in the world performing the chocking of the CFEM type rigs and our highly specialized team is available wherever the rig might be located. Our chocking team consists of about fourteen professionals, the only local labour hired are the scaffolding builders. The work is potentially dangerous because of the heights, and on the spudcans the danger of falling overboard is always present. Seagrowth in the legs also make it a dirty working environment, where the danger of slipping is always around the corner. An excellent working atmosphere combined with safety awareness of the crew is the only way to maintain these high standards, and team members are selected on this quality. Our team also has very high efficiency standards, because when the rig is loaded on the ship, the whole transport is waiting for us to chock the legs, and time is a lot of money in this industry! We need about two to three days of preparation time, but we can do this concurrent with other activities on the rig so no time is being lost. After the rig is loaded on the transporting vessel we need about three to four days to chock all the legs, this includes the curing time."

Extreme Conditions

The fact that the Willtéco crew sometimes have to work under harsh conditions is well illustrated by a recent chocking project carried out in Norway.

"We were appointed to prepare the jack-up rig Energy

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Exerter for its transport from Kirkeness, Norway to Kavalla, Greece. In January 2009 the rig was prepared for dry-transport on board the semi-submersible vessel Fjord, owned by Fairstar Heavy Transport. A complicating factor for us was the extremely cold weather in Norway; at one point the temperature even dropped to -37°C! Due to this low temperature the epoxy chocks could not be used. To chock the legs, the gaps between the chords and the guides were filled with aluminium shims. This is not the best solution, but in this case we had no other choice because our Rig Fastening Compound doesn't cure at these low temperatures." Willtéco was also appointed to carry out 750 m of welding for sea fastening the rig to the ship. "Originally this task was to be carried by another contractor, but they cancelled last-minute. This situation exactly illustrates our flexibility. We immediately arranged everything to carry out the required welding operations. And I can guarantee you, it's not easy to weld at these extremely low temperatures. I am proud to say that all the welds were checked after 24, 48 and 72 hours and not a single irregularity was found. The Energy Exerter was transported to its new location as planned."

Versatile Company

With only seven CFEM type rigs left in the world, Willtéco performs about two to three chocking operations per year. "We more or less rolled into this business 'by chance' fourteen years ago, but chocking is far from being our core business", says Wille. "When we founded the company, we originally focused on the delivery and overhaul of tools and equipment for 24hr industries such as refineries, electricity plants and incineration plants. Upon our clients' request we started to provide skilled labour to operate the tools and equipment as well. Today's activities are hard to describe in a few sentences. We remove, overhaul and reinstall equipment, we design and build new equipment, we make spare parts that are no longer available, just to name a few activities." To illustrate the versatility of Willtéco, Willem

Twenty Years of Excellence

After an impressive career as an engineer on board ships and offshore installations, Willem Wille finally started his own company nineteen years ago. "As a passionate technician I have always enjoyed working on ships and offshore installations. But I saw the business change and at the point when I was working eighteen hours per day I thought to myself that if I was going to work this many hours per day, I might as well invest that time in a business of my own. In May 1990 I founded Willtéco, together with my wife Patricia. Like so many companies, we started with a desk in our garage at home." In the almost twenty years of its existence, Willtéco has experienced significant growth and today they employ about thirty experienced and trained people on a permanent basis.

The days of working out of the garage seem far away when Willem Wille shares his ideas for the future with us: "Bound by geography, we have always had a strong focus on the offshore industry in and around the North Sea. But lately we are seeing that the business is moving towards the Mediterranean and the Far East. We are therefore exploring our options for expansion to these regions in order to serve these growing markets. Potential locations for Willtéco branch offices are Alexandria, Egypt and possibly Malaysia. We are now in the process of talking to possible partners to realize our growth strategy."

"We are pur sang problem solvers."

Wille highlights one of the challenging projects performed a few years ago. "We were approached by ExxonMobil to provide a rig mooring system for application in the Ehra West Field off Nigeria. Our scope of work included the supply of the steel wires that had to keep the rig positioned. Furthermore we were asked to design and manufacture the buoys to keep the steel wires afloat on the surface until the mobile drilling rig arrived. We also designed and manufactured a reel system for winding the steel wires."

Willem Wille concludes with a bright smile: "I guess you can say we are pur sang problem solvers."

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