

world of rope

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JOHANNES WEIRICH



Andreas Schmeiss
WireCo WorldGroup
VP Global Cranes

Dear readers of our newsletter,

Welcome to our first edition of this year's "world of rope". Based on extremely positive feedback, we are very pleased this year to inform you about some of our current activities and innovations.

A particularly challenging year has just begun in which we, together with you, are going to achieve so much. The CASAR rope specialists, as a competent partner, are at your service.

Yours sincerely,

Andreas Schmeiss
VP Global Cranes

New state of the art high speed spooling centre in operation at CASAR

To control production costs, increase production efficiency and continue producing the best products, CASAR's internal processes are continually checked and improved. Moreover, for the future, the WireCo WorldGroup is making regular investments in the machine park and in new plant equipment to provide our customers with quality products of a high technical standard at a fair price.

After intensive deliberations, an investment over 2.2 million euros for a new wire coiling centre was concluded in February 2016.

The systems are in the building of the former workshop. The workshop was relocated to a

production facility and the old premises were completely modernized and converted. The new spooling centre is located directly in the logistic chain near the high rack wire storage. Conveyor belts in the spooling centre are assembled with wire coils from the warehouse, thereby enabling a spooling process on the new high speed coils "Just in Sequence". For this purpose, the coils are put on the special folding spools with a modern crane system and made directly available for the spooling machine ready for installation. Subsequently, the new wire, which has previously undergone numerous quality checks, is spooled with a speed of up to 30 m/s on the spooling machine into the exact amount needed. This is assured by a modern laser measuring technology.



Finally, the coils are transported directly over an additionally constructed access way to the stranding machines in production. This avoids longer storage time and time loss. It also reduces costs and setup times, and optimises material flow. The new spooling centre is then optimally integrated into the supply chain.

The eight new high-speed spooling machines with modern laser technology have already been built and tested, and employees are starting to learn how to use them. These machines replace 40 old spooling machines and reach a speed increase of 400–600 % which means a tremendous increase in productivity.

This project was overseen by Markus Stieren, Operations Manager at CASAR. He is very enthusiastic about this new concept:

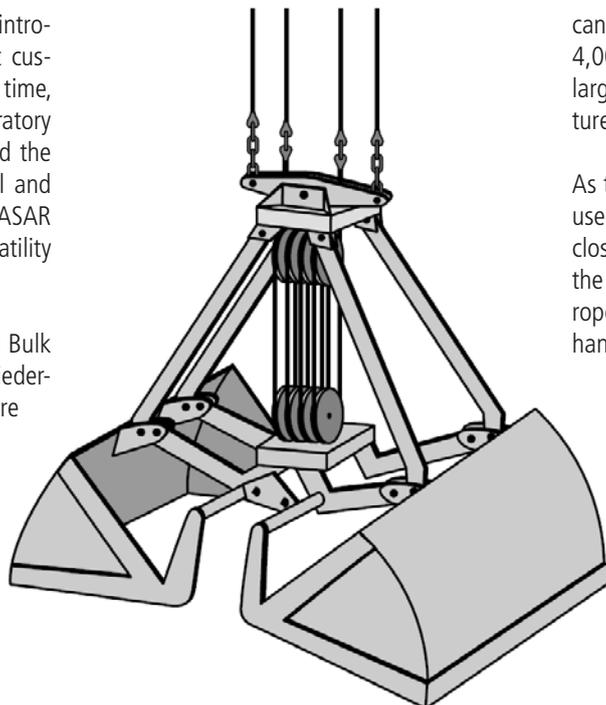
“Through this investment, we not only achieve an increase in production output but also an improvement in the availability of spooled wire for further processing on the stranding machines. As a result, downtimes and rejects are minimised and a marked increase in quality is achieved for our customers. But also for the employees, there is a clear improvement in ergonomics and occupational health and safety. As planned, the new spooling centre will be installed in the plant in February this year, so that we can offer our customers even more efficient quality products.”



Superplast10 Mix stands up to the job at the Bulk Terminal Wilhelmshaven

CASAR Superplast10 Mix was introduced and delivered to its first customer three years ago. At that time, the internal tests under laboratory conditions had just been completed and the rope started work on its first industrial and overhead cranes. In the meantime, the CASAR Superplast10 Mix had proved its versatility and was used in other applications.

The best example of this is the Rhenus Bulk Terminal Wilhelmshaven (formerly Niedersachsenbrücke) or BTW for short. There are Ø42mm Superplast10 Mix ropes in use on both the four fall double jib level luffing cranes. These have a load capacity of 63t with an offset of 44m; the gripper size is 44m³. Together with the 38t ship unloader overhead gantry crane, ships up to 250,000t in size



can be unloaded at a total unloading rate of 4,000t/h. Cranes and grabs are one of the largest construction classes that the manufacturers of both trades can deliver.

As the name suggests, four ropes in total are used, two holding ropes (outside) and two closing ropes (inside). With this configuration, the grab does not twist under load, as both rope types are designed right handed and left handed.

The two holding ropes are connected to the grabber by rope sockets supplied by the customer. The closing ropes are also fastened with rope sockets to the gripping ropes inside. The connection with the rope socket ensures that the short strand length in the gripper can be changed quickly and easily.



FACTS ABOUT THE BULK TERMINAL WILHELMSHAVEN (BTW)

The Bulk Terminal Wilhelmshaven (BTW, formally Niedersachsenbrücke) is a modern bulk terminal on the North Sea coast which handles the largest coal ships in the world. The BTW is the only coal terminal in Germany which can unload fully laden Capesize ships.

BASIC INFORMATION

Maximum draught	18.50 m sw
Length of ship	up to 330 m
Width	up to 60 m
Pier length	300 m + 160 m bollard bridge

- One 38 t ship unloader
- Two 63 t double jib level luffing cranes
- Storage area for 900,000 t coal (extension is planned)
- Wagon loading station; charging power 2,000 t/h coal
- Weighing/wagon loading > 99 %

The high number of bending cycles on relatively small pulleys combined with the abrasive action of the bulk material ensures that this short rope zone fails much earlier than the rest of the rope length and therefore must be changed much earlier.

When connecting the closing and gripping ropes, ensure that the left-hand closing rope is connected to the left-hand gripping rope and the right-hand closing rope is connected to the right-hand gripping rope respectively. Otherwise, both ropes will try to twist the coupling piece in the same rotational direction which would lead to the ropes untwining under load. This would result in a reduction in the breaking force and a structural change in the ropes.

The terminal is a newly constructed and modernised coal terminal which handles the largest coal ships in the world. Usually, hard

coal is shipped for the two coal-fired power stations located in Wilhelmshaven and for other power plants in Germany via the wagon loading system. Currently, the annual turnover is around 4–5 million tonnes of coal which is steadily increasing due to the acquisition of new customers.

According to Kurt Kühn, head of technology at Rhenus BTW, this steady increase in demand soon resulted in the original rope routing from another rope manufacturer being exchanged for the tried and tested CASAR rope to achieve better service life. In close collaboration with the company Tecklenborg, Kegel GmbH the new CASAR Superplast10 Mix was chosen for its excellent bending flexibility and constant wear behaviour over a wide load spectrum.

An initial conclusion can be drawn. On the number 1 level luffing crane, the change from the original rope to the CASAR Superplast10 Mix

led to an increase in the handling capacity of almost 14 % per rope set. On the number 2 level luffing crane, the first Superplast10 Mix has not yet reached its discard state. In any case, Mr. Kühn is very satisfied with the rope's specification.

Interview with the new CASAR Quality Manager, Johannes Weirich (JW)

Superior quality has always been a top priority since CASAR Drahtseilwerke (wire rope plant) was founded in 1948. Right from the beginning, the quality of the rope produced was monitored by the most modern tools and procedures, and specific in house developments. So now, "world of rope" (WOR) would like to give you an insight into the importance of our Quality Department and the change in management which has just taken place.

WOR: Firstly, Herr Weirich, congratulations on your new position, which you took up on 1st April last year. Could you please tell us a little about yourself?

JW: I have been interested in rope technology since I was young as I am a sports climbing enthusiast. After graduating in engineering from Rosenheim University, specialising in mechatronics, I started to work for CASAR as a design engineer in the Research and

Development Department in 2011. At that time, we were working on interesting projects such as the development of the Superplast10 Mix and the design of a series of special resin encapsulated end sleeves for mobile cranes. In 2013, I moved internally to the Technical Department and then in 2016 into Quality Management.

WOR: Looking in from the outside, wire rope production does not seem that difficult.

But the devil is in the detail. What challenges present themselves when making high performance wire ropes?

JW: Although at first glance it does not look so spectacular, several production parameters are combined in a special wire rope, all of which must be carefully coordinated. Hundreds of wires with their individual tolerances, thousands of metres of wire, synthetics and special greases are combined to make up a homogeneous rope with a tight tolerance along the whole length. This requires deep knowledge among employees, and also the required production and control devices.

WOR: This does seem complex. How do you and the quality assurance staff guarantee this high quality manufacturing standard?

JW: I must think about this a little more deeply. Our high-quality production rests on three pillars:

- **Special machining technology:** Our rope and cable stranding equipment is constantly being monitored and improved. There is continual high investment in ongoing quality and efficiency performance such as our new spooling centre.
- **The specification of the materials used:** Exact specifications and strict quality control of the raw materials used are the basis for precision rope production. Here, we go to great lengths to obtain statistically relevant information.
- **Our staff's qualifications:** The company's employees are vital to wire rope production. Due to the many individual tolerances,

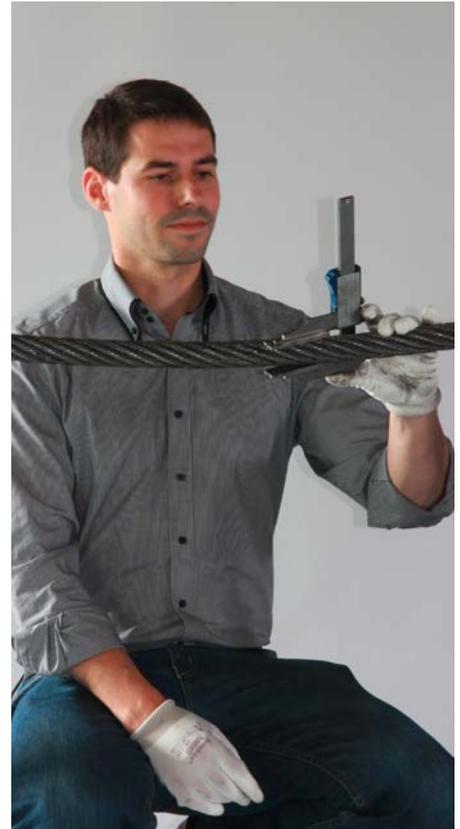
which must work together in a wire rope, the production and support staff are of vital importance. With their experience, they make a very good product from a good design, good materials and good machines. In all these areas, Quality Control plays an important role and is involved right from the beginning.

WOR: CASAR as a production site of WireCo WorldGroup must surely have its own unique challenges. Are there any synergies within the group which you can use?

JW: Here, you can clearly recognise the advantage of a large company. We intensively exchange experiences and improvement options between the sites. Depending on the production site, additional special quality procedures are specified to react to certain product requirements. In addition, we have within the corporation the possibility to access special testing facilities, for example a wire laboratory, large tensile machines and test devices for bending fatigue tests. We also exchange regularly with our corporate affiliates in the synthetic rope sector.

WOR: Is there something that you would like to share with the users of CASAR ropes?

JW: It is worth buying high quality ropes! False economies can result in lower performance and even compromise safety. Selecting a high-performance product is not so always so easy. So, my tip: Talk to our colleagues in customer service or product management. Here, you will receive sound advice from experienced specialists to help you to choose the best product for your application.



NEXT ISSUE WILL BE PUBLISHED IN

APRIL 2017

PLANNED TOPICS:

- REPORT ABOUT CONEXPO LAS VEGAS
- CASAR SUPERPLAST 8 FOR THE STEEPEST CABLE CAR IN THE WORLD
- ROPE TECHNOLOGY: THE FLEMISH EYE

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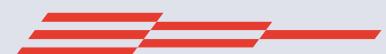
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