

V&M

REPORT

THE VALLOUREC & MANNESMANN TUBES MAGAZINE

INTERVIEW
with Nicolas
De Coignac

CONSTRUCTION MACHINERY
Roots for
mega-cities

HIGH-TECH APPLICATION
High-pressure
piping systems

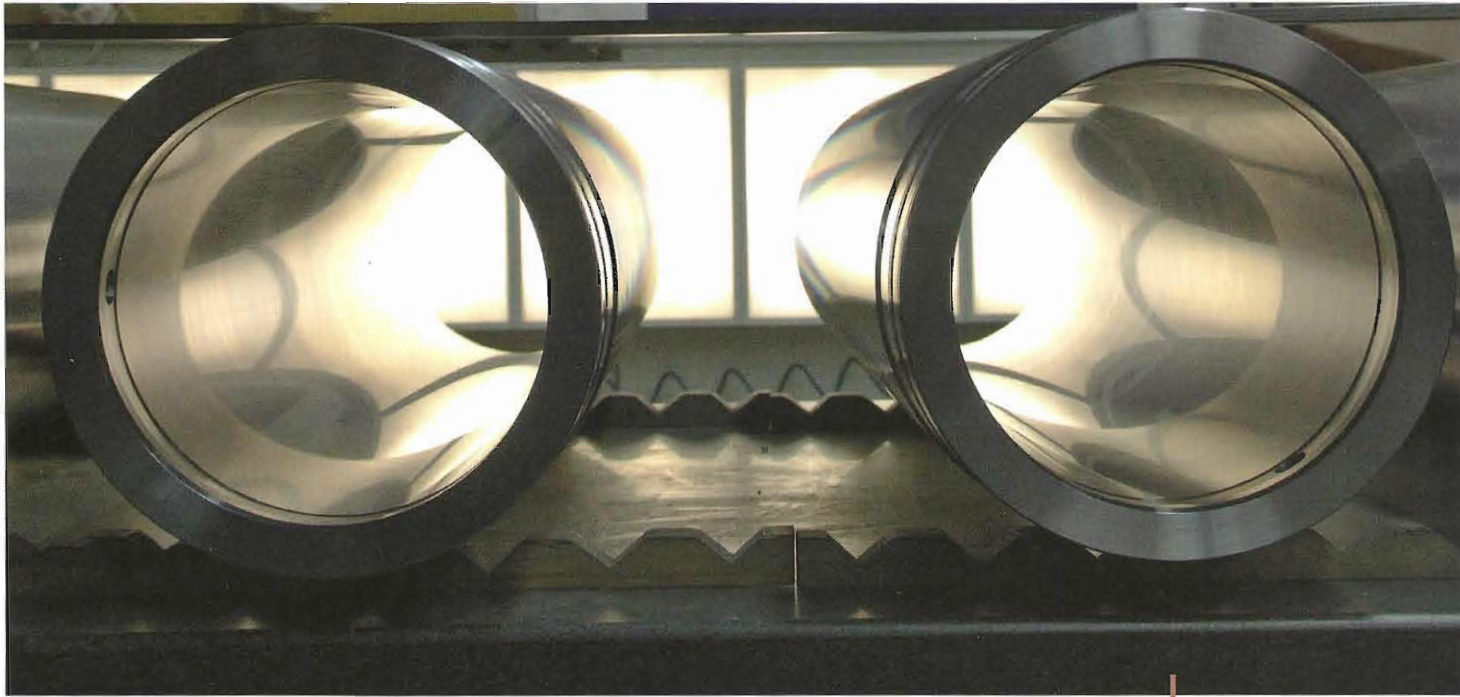
INDUSTRIAL SHED CONSTRUCTION

Two continents – two solutions



July 2010 - Nr. 25

Vallourec Group



RUHFUS Systemhydraulik GmbH, Neuss

A top tenner in the high pressure segment

Wherever you see a hydraulic cylinder being used in a difficult, rough environment, more likely than not it has been designed and manufactured by RUHFUS. And if so, there's every probability that the initial product was a quality tube from VALLOUREC & MANNESMANN TUBES. V & M REPORT visited this customer at their headquarters in Neuss and was amazed at the company's vertical integration and the application versatility of its hydraulic cylinders, which can be up to 16 metres in length and strong enough to operate gates weighing 400 tonnes.

Sometimes it's easy to describe a company. Take, for example, the hydraulics specialist RUHFUS from Neuss in the Rhineland. When you ask what they do, they simply say: "We work in the hydraulics sector and we manufacture everything that needs to be special in terms of function, design and quality." And for the design engineers, there are no limits regarding specific applications or industries. A broad-based expertise and in-depth knowledge of hydraulics is indeed what makes the company's system solutions

– and thus its success – so outstanding. Here, a customer doesn't merely buy a couple of precision-made cylinders, but often gets together with the RUHFUS design engineers right at the initial planning stage of the project, to explain the specific problem and discuss it with the specialist supplier.

TENSION AND PRESSURE IN 1001 VARIANTS

Such customer talks are like briefings: there is detailed discussion of installation dimensions, weights, and the spe-

Inspection in front of an illuminated wall: to ensure durably frictionless cylinder operation, the inside surfaces must be in perfect condition and free from inclusions.

(From left): Ardeshir Azartash, Sales International, RUHFUS GmbH; Christian Gry, Sales Director Mechanicals, V & M Deutschland; Hans-Günther Arndt, Sales Director and member of the management board of RUHFUS GmbH.



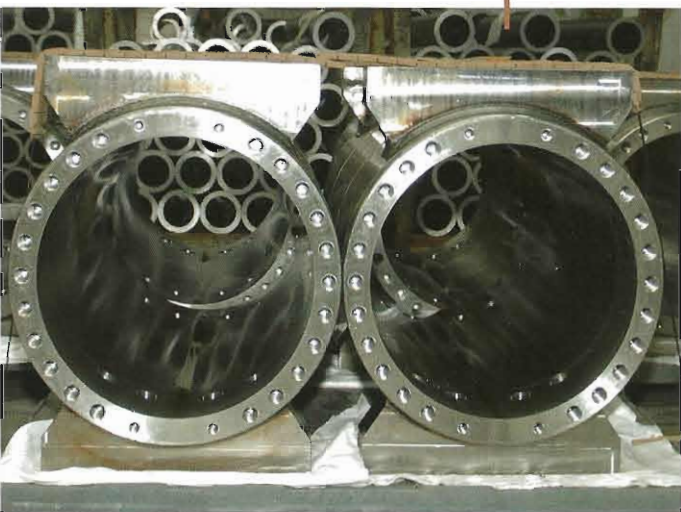


••• special operating conditions and loads that the hydraulic cylinders will be exposed to. For these parameters are as varied as the applications are specific: hydraulic cylinders regulate the propeller blades of offshore wind turbines and drive the blades of water turbines, they operate 400-tonne dam gates, they supply contact pressure to laminate presses and provide for the stirring motion required during vinification in giant wine vats. Even this tiny selection of applications is enough to indicate that solutions in industrial hydraulics must be as specific – both in terms of materials and design – as the operating conditions and environment.

POWERFUL, UNFLAGGING AND NOT TOO HEAVY

A special challenge for the designer of hydraulic cylinders lies in the apparently contradictory requirements involved: on the one hand huge dimensions and the ability to operate under heavy loads and pressures that often go beyond 200 bar and, on the other hand, an operating weight that burdens the overall structure as little as possible. These contradictions can be resolved – at least to some extent – by optimizing the wall thickness-to-diameter ratio of the cylinder components and using

The cylinders are internally honed and holes are drilled into the end faces for screwing on the base.



special high-strength steels. This is precisely where V & M TUBES Application Engineering and Production can provide valuable contributions. However, weight reduction is not always desirable. Sometimes, in fact, the weight of the hydraulic cylinder actually constitutes a significant design aspect in that it supports the stability e.g. of a crane or a dump truck. Conversely, in other “mobile” applications, light weight may be a factor that allows the vehicle manufacturer to build in a cost-saving feature, e.g. because the design can make do with one axle less. One requirement common to all applications (and also the image-forming quality feature) of hydraulic cylinders from RUHFUS is robustness and stability. The reputation of the system hydraulics manufacturer from Neuss for reliability and decades of low maintenance has been established for many long years and is now worldwide. Under rough and hostile climatic conditions (wind, seawater, sand, contamination) and highest mechanical loads. And even in cases where the function is not continuous but called off at extensive intervals of sometimes several years. Hydraulic cylinders from RUHFUS are designed and built uncompromisingly for this utmost reliability. On principle and with the knowledge that function failure could bring with it immense problems and costs for the plant operator. This commitment to quality is honoured around the globe – even under cost pressure and in the face of supposedly cheaper suppliers.

QUALITY TUBES PLUS PRECISION MANUFACTURE

To ensure this proverbial reliability long term, RUHFUS is a firm believer in high-grade prematerial and high vertical integration. The thick-walled quality tubes from V & M TUBES are machined to fully ensure that the very close tolerances in the range of a few hundredths of millimetres are not exceeded, even with cylinder lengths as impressive as 16 metres. Customers rely on this precision, which is verified at test pressures between 300 and 600 bar. After all, under operating conditions any deviations from these

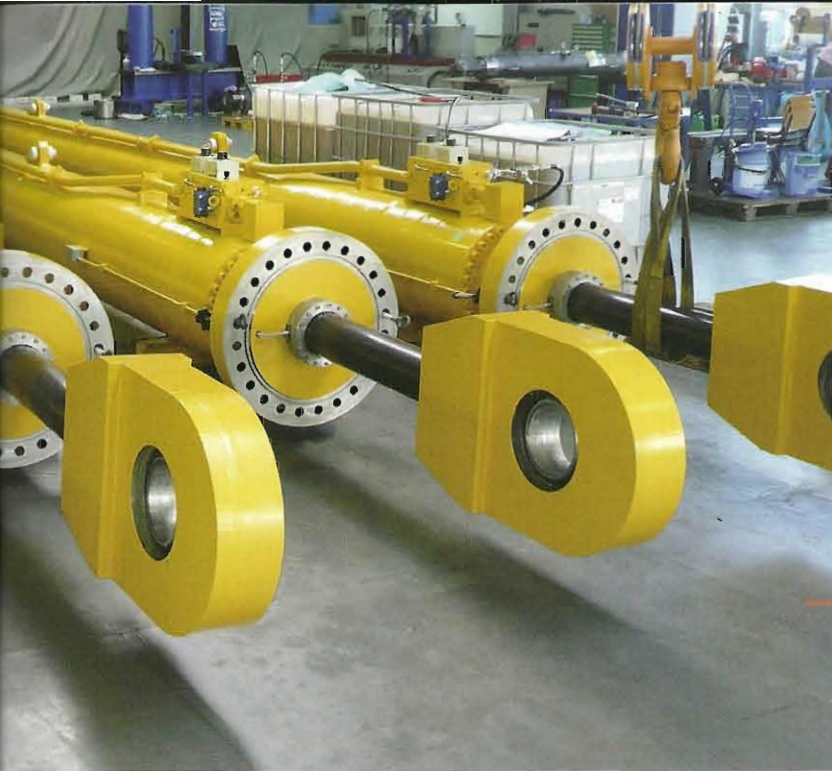


minimal tolerances or even the slightest imperfections or inclusions on the inside surface of a cylinder would cause damage to the seals and ultimately premature failure of the complete hydraulic system. And this risk must be ruled out, given that a 20-year lifetime is specified for a wind turbine, and the hydraulic system of a dam is even designed to remain operational for 50 years.

The manufacturing facilities at RUHFUS comprise all the processes required for system hydraulics, with possibilities stretching from honing, deep hole drilling, peeling/reeling to turning, drilling and milling and automatic welding. This spectrum is rounded off by component assembly, hydrostatic testing and final inspection. The finished cylinders can of course be paint coated or given another surface finish as specified by the customer in RUHFUS's own paint shop. A special aspect of the versatility in this steel fabrication is the sheer size and capacity of the machinery and equipment. Here, RUHFUS has joined the exclusive circle of perhaps ten companies worldwide that can carry out the manufacturing processes described above on cylinders up to 16 metres long which, when filled with oil, can weigh as much as 20 tonnes.

SYSTEMS FOR SPECIAL APPLICATIONS

From customised sizes and special applications, the next logical step is a



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These special cylinders from RUHFUS are between 10 and 15 metres long and they open and shut dam gates weighing up to 400 tonnes.

With its comprehensive park of special machines, e.g. for deep hole drilling, honing, turning, milling and welding, RUHFUS is one of the few manufacturers worldwide who can produce "XXL" hydraulic cylinders in lengths of up to 16 metres.

times unique – range of manufacturing facilities, RUHFUS is predestined to provide special solutions and complete one-off projects worldwide. Projects which require large, heavy-duty hydraulic systems are usually located in the world's newly industrializing regions. They include dam construction projects in the Middle East or South America as well as open-cast and underground mining for raw materials in Australia and China. In all these demanding and high-wear applications, RUHFUS Systemhydraulik has gained a name which is synonymous with high-tech hydraulics of uncompromising durability. (DK)

complete hydraulic system. This requires a holistic approach right from the design stage, with consideration of the application area and environment of the hydraulic cylinders. Consequently, integrating controls, assemblies, measuring systems and other functional components into the one system is the logical approach. That's why this holistic concept, which is ulti-

mately a decisive factor in a system's long-term functional integrity, also forms part of the company name: Systemhydraulik (system hydraulics). It covers design, construction, testing, assembling and maintenance – in other words the whole lifecycle and also, if required, the extended functional spectrum of the system.

With its wide and varied – and some-

