

Press Release

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High Operational Reliability Combined with Low Total Costs with CH Series Universal Joint Shafts from Voith

Several aspects of Voith CH series universal joint shafts jointly contribute to lower life cycle costs (LCC): High fatigue strength under vibration and component lifetime, large torque reserves under overload conditions and a long bearing life with a bearing concept that is also easy to maintain.

Ideal fields of application for this type of universal joint shafts are primary drives for rolling mills, mining machinery or systems in which the universal joint shafts are exposed to high or maximum torques. Therefore, the universal joint shafts are always individually customized to the specific drive requirements. With a revolutionary bearing concept, over the last three years Voith has again succeeded in considerably improving the heavy-duty universal joint shafts with rotation diameters ranging from 590 mm to 1,460 mm.

One of the decisive factors is the improved bearing technology. Until now, the rolling elements ran directly on the journal cross. In the CH series, Voith added a newly designed internal bearing ring with integrated axial bearing. The axial bearing on roller bearings ensures maximum deformation resistance and uniform load distribution. The weight forces of the universal joint shaft are reliably handled even under high lateral accelerations.

The cassette design of the new bearing unit also excels with its ease of assembly. In this design, the internal bearing rings and the external ring are assembled as a single unit. This is clearly a plus where life cycle costs are concerned, which Voith estimates to be 20 to 30 percent less. The reason: bearings are wear parts. With the technology currently available on the market, the complete journal cross assembly must be replaced along with the bearings. The Voith cassette technology eliminates that

need with the ability to replace just a single bearing. As a result, operators save additional costs for acquisition and storage of the journal cross assemblies.

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The special configuration of the rolling elements also increased the static load capacity of the radial bearings by up to 18 percent. Additional strength advantage: Voith is the only heavy-duty universal joint shaft manufacturer without additional screw connections in the bearing unit. There are only two bolts on the bearing cover – without a load-bearing function. This substantially contributes to operational reliability because, under a torque load, elastic deformation occurs in the joint, which promotes loosening of the screw connections accompanied by bolt fractures.

Page 2 of 3

Finally, Voith relies on one more improvement – the purity of the flange yoke blanks. The problems poor casting quality causes is only too familiar in the industry. For this reason, Voith opted for a forged version of the universal joint shafts. Forged steel increases the fatigue strength under vibration by 20 to 30 percent over the cast version. Machining provides decided advantages with regard to dimensional accuracy and flexibility in shaping. Complex, cost-intensive wood models – essential for casting – are replaced by the flexible transmission of CAD data to the milling machine.

Many operators of steel plants and rolling mills worldwide have relied on the advantages of the new CH series for over three years, including Capital Steel in China, Posco in Korea, Bokaro in India, TMK in Russia, Habas in Turkey, the Thüringen Steel Works and Nucor Hertford in the USA. The universal joint shafts used at these sites have rotation diameters between 590 mm and 1,300 mm.

They all prize the benefits of the new CH series, for which Voith also developed the special WearCare 500 lubricant. Its property: It produces a non-metallic separation layer, consequently reducing friction and contributing to increased component lifetime.

Voith will be presenting its coupling technologies and high-performance universal joint shafts at METEC, the international metallurgical trade fair, in Düsseldorf from June 16-20, 2015. For information on Voith's appearance at METEC, see: www.metec.voith.com/



Voith CH series joints using a newly designed internal bearing ring.



Voith CH series universal joint shafts.

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Page 3 of 3

Voith Turbo, a Group Division of Voith GmbH, is a specialist for intelligent drive solutions and systems. Customers from highly diverse industries such as oil and gas, energy, mining and metal processing, mechanical engineering, ship technology, rail and commercial vehicles rely on advanced technologies from Voith Turbo.

Voith sets standards in the markets energy, oil & gas, paper, raw materials and transportation & automotive. Founded in 1867, Voith employs almost 39 000 people, generates € 5.3 billion in sales, operates in about 50 countries around the world and is today one of the biggest family-owned companies in Europe.

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