

Press Release

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Voith CPC 1600 fluid coupling doubles productivity in a Chinese coal mine

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An additional 350,000 metric tons of coal production per month has been made possible at the Chinese Sandaogou coal mine in Shaanxi province thanks to the powerful CPC 1600 AFC (armored face conveyor) coupling. This fluid coupling can continuously transmit up to 1600 kW. That represents 60 percent more power than with standard fluid couplings of comparable installation space. With the CPC 1600 coupling, Voith can offer its mining customers a robust but compact design. Voith engineers achieved this increase in power density with the innovative XL profile design turbine wheel.

To be able to efficiently mine a coal face measuring seven meters high, 350 meters wide and more than three kilometers long, the operator of the Sandaogou coal mine needed equipment that is considerably more powerful. The challenge was that the existing drive system was not able to transfer the necessary power to the conveyor. The China Coal Zhangjiakou Coal Mining Machinery Co., Ltd., one of the largest Chinese OEMs and equipment supplier to the Sandaogou coal mine, chose a drive system with the Voith CPC 1600. The couplings combine maximum power transmission and small size. Orders for three CPC 1600s have been delivered and are currently in use in the Chinese Sandaogou coal mine.

Tong Xiangyang, team leader of a coal face in the Sandaogou coal mine, is very satisfied with the power and reliability of the Voith hydrodynamic coupling. As a result of using the new CPC 1600, the coal mine can turn out an incredible 350,000 additional metric tons of coal per month.

The CPC 1600 protects motors and drive components against damage

"Since there is no mechanical connection between the input side and the output side of the coupling, we can run our motors up to speed without load. We switch the motors on one after another to avoid high current demands that would place an unnecessary load on our grid power system", says Tong. The CPC 1600 fluid coupling also protects the motors against overload. This overload protection is possible since the fill-controlled fluid couplings simply slip because of the hydrodynamic principle. This slip protects the drive components and the chain of the AFC against damage. Consequently, the fluid coupling maximizes the availability of the entire system and its productivity.

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Start-up the AFC in any situation

Tong's team can start its AFC in any situation. "With the CPC 1600, users in Sandaogou can perform as many startups in a row as they wish", explains Tang Min, General Manager of Startup Components at Voith in China. "This is important, for example, in order to break free a heavily loaded conveyor. In this way, the personnel avoid needing to manually clear the overloaded system, which is time-consuming and results in costly, unplanned downtime."

Improved performance, no unplanned downtime

Zhiangjiakou Coal Mining Machinery had good reasons for choosing the Voith CPC 1600. The coupling scored well with its impressive performance data, small size and robust design. Tong and his team are extremely satisfied with the improved performance of their AFC thanks to the couplings from Voith, the German manufacturer of fluid couplings. The miners can appreciate this day after day since there have been no unplanned downtimes and production is running at considerably higher efficiency since the new AFC was commissioned in May 2012.

The CPC 1600: maintenance-free with a long service life

The Voith CPC 1600 hydrodynamic fluid coupling uses water as the operating medium. As a result, users avoid expensive explosion protection measures. Moreover, water is environmentally-friendly and almost always available underground in coal mines. The fluid coupling power transmission is wear-free and requires little maintenance. These features result in extremely long life cycles. Voith fluid couplings are insensitive to environmental effects such as dust,

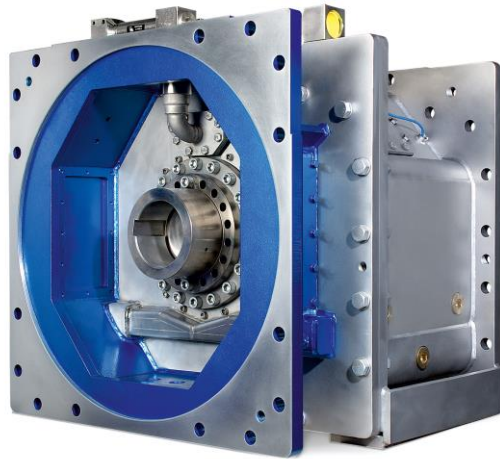
dirt and moisture and are ideally suited for rough use in the underground coal mining industry.

Annual increase in output of 4.2 million metric tons of coal

The Chinese coal mine at Sandaogou is located in Shaanxi province, roughly 700 kilometers west of Beijing. Currently, the mine has an annual output of ten million metric tons from two longwall coal faces. Before using Voith fluid couplings at one of the coal faces, the mine produced 5.8 million metric tons of coal annually. Thanks to the new couplings on one AFC, output has now risen by an additional 350,000 metric tons per month. Taken over a year, this translates into an annual production increase of 4.2 million metric tons of coal. Production at the face concerned has thus more than doubled.

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Figure 1: The CPC 1600 hydrodynamic fluid coupling for armored face conveyors can continuously transmit up to 1600 kW at 1500 rpm. That represents 60 percent more power than with standard couplings of comparable installation space.



Figure 2: The Chinese coal mine near Sandaogou in Shaanxi province, roughly 700 kilometers west of Beijing. Thanks to the new Voith CPC 1600 armored face conveyor coupling, the mine produces an additional 350,000 metric tons of coal per month.

Voith Turbo, the specialist for hydrodynamic drive, coupling and braking systems for road, rail and industrial applications, as well as for ship propulsion systems, is a Group Division of Voith GmbH.

Voith sets standards in the markets energy, oil & gas, paper, raw materials and transportation & automotive. Founded in 1867, Voith employs more than 42,000 people, generates €5.7 billion in sales, operates in over 50 countries around the world and is today one of the biggest family-owned companies in Europe.

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