

## **Quick Flex elastomeric couplings reduce roller table downtime at steel mills**

*Werdohl, Germany, January 2023.* The harsh environmental conditions in steel mills place extreme requirements on components. Quick Flex elastomeric couplings from Lovejoy, manufactured by R+L Hydraulics GmbH in Werdohl, Germany, are used by a well-known European steelmaker to drastically reduce downtime. The couplings transmit torque to drive the roller tables in a hot rolling mill. The thermally stable couplings are low-wear, low-maintenance, and help minimise downtime.

In the steelmaking process, molten pig iron produced in the blast furnace is transformed into crude steel in converters. The crude steel is then cast into long strips called slabs in continuous casting lines. The slabs, up to 10 m long and weighing as much as 25 tons, are rolled and shaped to form strip steel or steel wire rolls. Glowing from heat, these slabs are transported on roller tables. To avoid high heat damage to the conveying rollers, the slabs must move continuously on the rollers until they cool down or are ready to enter the next processing step.

Surrounding equipment component reliability is crucial: "If a roller table coupling fails, it may be possible to continue working until the next planned stoppage, but this risks damaging the roller," says Detlef Peick, Business Development Manager for the couplings division at R+L Hydraulics in Werdohl. "This leads to longer downtimes for subsequent repairs, and high roller replacement costs. Stopping the roller table avoids damage to the roller, but creates a production bottleneck for the downstream line operations."

Typically in the past, this application has used gear couplings that are good at handling shaft displacements that occur due to the regular temperature fluctuations. Simultaneously, gear couplings safely transmit high turning moments. "However, gear couplings have disadvantages," says Detlef Peick. "They need frequent lubrication, and must be opened regularly for inspection at high cost and inconvenience. When the coupling hubs or sleeve bodies need replacement, the gearbox must be removed from the drive shaft and possibly even the electric motor must be removed from its base first. After replacement, the gear mechanism and the electric motor must be realigned to ensure proper functioning. These activities take a lot of time – time which in steelmaking is very expensive."

This is where Quick Flex elastomeric couplings help. Their torque transmission capabilities equal those of gear couplings. But the elastomer inserts used in Quick Flex couplings eliminates metal-on-metal contact that can cause damage and wear to the hubs. The coupling's design allows easy access to the elastomer insert. After loosening a few screws on the easy-to-remove covers, inserts can be inspected or replaced in a matter of moments. Different cover options meet a range of application needs.

"It's easy to inspect and maintain the couplings without taking the line out of service for long periods," says Detlef Peick. "Expensive stocks of spare metallic coupling components are no longer needed. Only elastomer inserts must be held in stock. Should a failure occur despite the ease of inspection and servicing, it may still be possible to continue production without jeopardising the roller, because a ruptured elastomer insert interrupts the flow of forces, so the roller table can continue to operate by using the adjacent rolls to move the slabs. The insert can be replaced later in just a few minutes, without removing the gearbox or drives."

Since Quick Flex couplings do not require lubrication, regular oil checks and relubrication are no longer needed. The elastomer inserts are available in three degrees of hardness and a high temperature-resistant material that protects against overheating if a slab stays on the roller table longer than planned.

The Quick Flex coupling series was designed specifically to withstand harsh operating conditions and require only minimal service. In addition to steelmaking, the couplings are ideal for use in mining, oil and gas, food processing, and pulp and paper applications – wherever tough environments place extreme demands on components.

**Photos:**

Photo 1: The Quick Flex elastomeric coupling's design allows easy access to the elastomer insert

Photo 2: Example from a hot rolling mill: A glowing slab is transported on a roller table

## **About R+L Hydraulics GmbH / Lovejoy, LLC:**

Lovejoy, LLC is a US-based manufacturer of couplings and power transmission components. In Europe, Lovejoy is represented by their local subsidiary R+L Hydraulics GmbH, based in Werdohl, Germany. In July 2016, The Timken Company (NYSE: TKR; [www.timken.com](http://www.timken.com)) acquired Lovejoy. Timken engineers, manufactures and markets bearings, gear drives, belts and industrial chains and other industrial motion and power transmission components. In addition to Lovejoy and R+L Hydraulics, the Timken product and services portfolio includes the brand names of Groeneveld, Rollon, Cone Drive, ABC Bearings, EDT, PT Tech, Torsion Control Products, and Diamond Chain.

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