The construction of the new coking plant in Schwelgern marked a special milestone for the steel-making environs of Duisburg. After a construction time of three years, the biggest, most modern, and one of the cleanest coking plants in the world had been completed.

VAG’s Plunger Valves are used in the modern, low-emission coke stabilizing quenching process, which replaces the conventional wet quenching process.

**Project overview**

**Project:** Coking plant in Schwelgern near Duisburg

**Valves:**
- 4 VAG RIKO® Plunger Valves DN 300, PN 10 with Auma electrical actuator
- 4 VAG RIKO® Plunger Valves DN 500, PN 10 with Auma electrical actuator

**Project duration:** 2004 / 2005

**Contractor:** Schwietzke Armaturen GmbH

**Customer:** KBS Kokereibetriebsgesellschaft Schwelgern GmbH, a ThyssenKrupp Steel AG company
The construction of the new, modern coking plant in Schwelgern set new standards for size, capacity and environmental protection. The new plant’s predecessor, coking plant August Thyssen, was decommissioned in 2003.

Two batteries, each equipped with 70 coke ovens (the largest in the world), produce 2.5 million tons of coke a year solely for the production of steel at ThyssenKrupp Steel AG.

The quenching tower, at the foot of which the VAG valves are installed.

After a cooking time of 25 hours, the red-hot coking coal is pushed out of the oven in the waiting quench car. The quench car positions the coke under the quenching tower, where it is quenched in 70 seconds with over 100 m³ of quench water. This process is repeated every 10 minutes, or 135 times a day, 7 days a week, the whole year round.

This extreme stress, and the 60°C temperature of the quench water, put very high demands on the valves.

The previously used butterfly valves were neither capable of withstanding abrasion and cavitation, nor did they fulfill the required control tasks. Their closing times were also too long. Operations were occasionally interrupted.

KBS Kokereibetriebsgesellschaft Schwelgern called upon Schweitzke Armaturen, which is renowned for its expertise in this area. Their process-oriented advice and their strong recommendation to use VAG Plunger Valves enabled all of the problems to be solved.

VAG’s Plunger Valves in the nominal dimensions DN 300 and DN 500 were deemed to be the most suitable for this task because of their excellent cavitation behaviour. Eight of these valves were needed.

As a customisation, the valves were equipped with inner parts made of stainless steel 1.4313. This, and the shape that was especially adapted for this process, means that there is very little abrasion, even in continuous operation.

‘The plant has been running continuously and without failure since it was put into operation in September 2005. Our customer, KBS Kokereibetriebsgesellschaft Schwelgern, and we, as a consulting company and wholesaler, are extremely satisfied. The quality and the functionality of VAG’s RIKO Plunger Valve make it the ideal valve for such extreme stress.’

‘Even after 22,000 continuous hours of operation, the abrasion is so minimal that the valves could be put back into operation without maintenance,’ boasts Artur Güttler, Technical Manager at Schweitzke Armaturen. ‘The adapted shape of VAG’s plunger valves makes them less susceptible to abrasion.’