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Uhde expands its technology portfolio

Uhde takes over the HTW coal gasification process from RWE Power

After 35 years of collaboration with RWE regarding the High-Temperature Winkler process (HTW process), Uhde has now taken over the technology developed by RWE Power and its predecessors, thus making Uhde the sole proprietor of the HTW process including all IP rights, know-how and patents. From this point on Uhde will act as the technology provider and licensor of this process.

“The HTW fluidised-bed gasification technology perfectly complements our PRENFLO entrained flow process, since it widens the feedstock spectrum for Uhde’s gasification business. Uhde now has in the HTW process a coal gasification method that is particularly suited to lignites, hard coals with a high ash melting point and biomasses, such as wood, peat and even household waste. We expect a specific market growth for these types of feedstocks in the near future,” said Karsten Radtke, Head of Uhde’s Gas Technologies division.

The cooperation between RWE and Uhde began back in 1975 when the two companies agreed to work together on developing a fluidised-bed gasification process for the utilisation of Rhenish brown coal in the wake of the first oil crisis. The HTW process is a further development of the Winkler coal gasification process which originally operated at ambient pressure and is the result of decades of systematic enhancement by the RWE Group in collaboration with Uhde as the engineering partner. Its main advantages are its improved feedstock utilisation, its much bigger gasifier capacities for large-scale plants and the avoidance of by-products.

“RWE Power has successfully completed the long development of the HTW technology. Even now that we have sold this process to Uhde, coal gasification will remain an important option for us with regard to power generation and the long-term production of a wide range of liquid and gaseous products that are now mainly produced from crude oil or natural gas. Utilising domestic lignite supplies via the coal gasification route will play a crucial role in all this,” stressed Dr. Johannes Heithoff, Head of Research and Development at RWE Power. In 1978 an HTW pilot plant came on-stream at RWE in Frechen near Cologne, Germany, following initial operating experience in an atmospheric HTW pilot plant at RWTH Aachen University. This pilot plant is still being used for gasification tests today. Proof of the industrial-scale maturity of the process was delivered through operation of the Uhde-designed HTW demonstration plant again at RWE, this time in Berrenrath near Cologne, between 1986 and 1997.

The plant processed a total 3.6 million tonnes of brown coal to generate synthesis gas for the production of methanol. At the same time, the use of plastics waste was also successfully demonstrated on an industrial scale.

A mere two years after this demonstration plant came on-stream, Uhde successfully commissioned the first commercial large-scale HTW plant for the gasification of biomasses in Oulu, Finland, in 1988. This Oulu plant used peat as feedstock for the production of ammonia. In addition, intensive testing and engineering work for application of the HTW process in modern IGCC (integrated gasification combined-cycle) power plants was carried out during the 1990s. In 2000 Uhde applied the HTW process for power generation from household waste for the first time in Japan.

The HTW process is meeting with growing interest throughout the world and is an ideal enhancement of Uhde’s gas technologies portfolio. Uhde is currently working on a new engineering contract for an HTW gasification plant in Sweden for VärmlandsMetanol AB. The aim of the plant will be to convert wood into methanol. Outside of Europe Uhde is currently pursuing additional HTW projects, for example in Australia and India.

Uhde has a workforce of more than 4,500 employees worldwide and is a company in the Plant Technology business area of the ThyssenKrupp Group. The company’s activities focus on the engineering and construction of chemical and other industrial plants in the following fields: fertilisers; electrolysis; gas technologies; oil, coal, and residue gasification; refining technologies; organic intermediates, polymers and synthetic fibres; and also coke plant and high-pressure technologies. We also provide our customers with professional services and comprehensive solutions in all areas of industrial plant operation. Details are available at www.uhde.eu