

Shell Pernis:

## A product that ticked all the boxes and was technically perfect

VDL KTI has successfully worked on numerous exciting projects for customers, including Europe's largest refinery, Shell Pernis. The refinery processes crude oil to make usable products such as petrol, kerosene, diesel and raw materials for the chemical industry. One of the projects involved building two convection banks, which have the same function as a heat exchanger.

Convection banks are used in many areas at a refinery. The hot combustion air of a furnace is captured in a convection bank and is then used to heat up the pipes, which helps saving energy. Shell Pernis commissioned VDL KTI to replace two existing old convection banks with new versions. "We scanned the existing installation on site in 3D," Bert Van Riel of VDL KTI explains. "Everything was calculated using the latest software. The next step was to recreate the entire system at our plant in Mol. Temperatures inside the system can reach 400 to 600 degrees Celsius, so we added a fireproof, 150-millimetre concrete lining which limits the thermal radiation to the exterior to 80 degrees." Upon completion, the entire system was transported by boat from Mol to Pernis in one piece. "That was a huge challenge," says Van Riel. "The installation is 7.7 metres long, 4 metres wide, 8 metres high and weighs 60 tonnes. We even encountered a storm on the way of the transportation."

Joris Wondergem



Bert Van Riel



Project leader at Shell Pernis, Joris Wondergem: "VDL KTI measured, plotted and scanned everything on site. They then took the exact same points and used the exact same coordinates in their workshop in Mol. Starting from the connection points, they made sure everything fitted properly. They knew precisely which points needed to be fitted together and therefore did not have to base their work solely on drawings. The new convection bank fitted perfectly on the first attempt on site and also connected securely to numerous furnaces, pipes and other equipment. Replacing the convection bank took place during a turnaround and had to be done quickly. Every minute the factory is not operational costs a lot of money."

There were also technical challenges. "During the design process, the furnace turned out to be heavier than we

anticipated and we had to arrange for a bigger crane to put the bank in position," says Wondergem. "The design process and the detailed engineering challenged our team to come up with ingenious solutions, considering the existing drawings were outdated and some of the designs and standards had changed over time. Thanks to the intensive collaboration between the engineering contractor Worley, Shell and VDL KTI, we were able to create a product that ticked all the boxes and was technically perfect. The team had to pay extra attention to the step-by-step plan in order to flawlessly build this convection bank, which includes the whole pipe system, the connecting pipes in between and the refractory concrete."

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The cooperation and communication with VDL KTI was very smooth. "We can see that this is a close-knit team who know each other well," says Joris Wondergem. "They act quickly when faced with challenges and the lines of communication are very short. We will definitely contact them again for future contracts."

