

REPAIRING DENTS IN AN UNDERGROUND CARBON-STEEL PIPELINE

Thyssengas GmbH built the first long-distance gas transmission system in Germany, thereby supporting industrial development in the Ruhr district. They operate long-distance gas transmission systems with a total length of around 4,200 kilometers. Millions of people and the largest industrial area in Europe rely on Thyssengas to dependably supply them with energy, ensure access to affordable suppliers and thus promote competition. At the plant in Recklinghausen, a dent was found in an underground carbon-steel pipeline that needed urgent repair. CTE offered a qualified solution, which could be delivered fast.

CHALLENGE

The 16 inch carbon-steel pipe is designed to transport natural gas under 70 bar pressure. The affected area measured 200 mm axial and 300 mm circumferential with a depth of the dent of 13 mm. Repairing dents needs a different approach compared to corrosion damage, as the dent has to be flattened or pushed out before the strengthening layers can be applied. An extra challenge was presented by the underground location of the damaged part. Specialists were needed that are trained to work on these repairs, particularly in such a confined space.

Shutting down the pipeline was not an option as it is crucial to the process and would be significantly costly. Even more so, to repair the dent, maximized pressure was needed. Thyssengas needed a fast yet lasting solution.

REASONS TO CHOOSE CTE BV:

- Qualified product
- Experience and reputation
- Safety
- Fast tailor-made solution

SOLUTIONS USED

- CMF Putty
Compressive Modular Filler
- BD Wrap
carbon-fiber epoxy based system

REPAIR

Thyssengas chose CTE after delivering an immediate technical solution presentation. We were able to offer a tailor made solution with on-demand delivery of materials and certified installers at the site. As in every repair, surface preparation is key. Using the SSPC-SP3 hand cleaning tool procedure, the surface was cleaned and degreased, and an anchor profile was made for a better application of the wrap. After the pressure was slightly increased, the dent area was filled with the **CMF putty**. Next up was the **BD system**. First, the primer was applied, then a half meter wide carbon wrap impregnated with **BD wetout**. A blue compression film was used to cover the composite repair to contain the epoxies in the wrap and keep the heat for curing.

The repair involved several technicians from Thyssengas, one specialist from HSOS Industrial Services, a certified CTE partner, and one Dutch supervisory composite expert from HSOS. The total repair time, including preparation and post-cure checks took less than half a day (spread over two days). It was done without interruptions to the production process, and there was no need for hot work or the use of heavy equipment to replace the affected part.

Thanks to all of this, the solution resulted in a lasting repair and a high return on investment.

WANT TO KNOW MORE ABOUT OUR SOLUTIONS? PLEASE FEEL FREE TO CONTACT US.

+31 (0) 6 2347 6562 • contact@ctebv.eu • carbontech-composites.eu
Industrieweg 21c-d, 4214 KZ Vuren, The Netherlands