

### REPAIR TECHNOLOGY DEVELOPED BY AN INTERNATIONAL TEAM OF ENGINEERS

#### EFFICIENCY

GC Wrap is the highest quality fiberglass and carbon fiber systems used to rehabilitate and restore the original working strength of damaged or corroded transmission pipelines and pressure vessels. With full compliance to ASME PCC-2 and ISO TS 24817 technical standards, service life extensions are possible up to 50 years.

#### PIPING PROTECTION

GC WRAP can be applied on tees, elbows, and, of course, straight runs of pipe, in confined spaces and on irregular surfaces – wherever structural reinforcement or leak containment is required. The adhesive properties of the urethane and the use of an epoxy primer allow it to be applied to most substrates.

#### COMPLIANT TECHNOLOGY

GC Wrap is compliant to the ISO TS 24817 technical standard, ASME B31, .8, .4, .G and PCC-2 Art. 4.1, 4.2, as well as API 570. Please refer to: API 570, Section 8.1.4 – Non-welding repairs (on stream). The repair technology with composite materials is approved by the UDT.

### PROBLEM

Reinforcement of degraded welded joints in transmission pipelines is a very extensive topic. Here we are often faced with a situation where 100% degradation of the weld is detected in the inspection, but there is no active leakage/relief at the joint in question. Manufacturers of composite materials conduct numerous destructive tests to prove how the composite material behaves when applied to a weld where 100% wall/weld perforation appears. A separate issue is the appearance of cracks in the region of welded joints. Here Gascontrol Polska sp. z o.o. has a database of tests carried out on sections of transmission pipes of both low, medium and high pressure of both liquids and gases.

Designing a suitable composite repair involves taking into account the possibility of perforation already occurring after the composite material has been applied. There is also a lack of certainty about how large the defect will be. In the case in issue, the operator of the high-pressure gas network requested the design of a repair muffle for the DN500 mm pipeline, where the design and working pressure was 5.4 MPa

### APPLIED SOLUTION

Before applying the composite material, the specialists conducted an additional test of the pipeline wall thickness in the welded joint area using an ultrasonic method. In addition, using a digital meter, the level of surface roughness necessary for the application of the composite material was checked. Next, an epoxy filler, primer and then fiberglass material were used, which was wound over a length of 540 mm in 28 layers.

### RESULT

A team of four technicians, who had previously received training in the application of composite materials in accordance with ISO TS 24817, performed the protection of two welds on the gas pipeline in one working day. Thanks to the efficiently carried out repair, the useful life of the pipeline sections designated for repair has been extended by 50 years.

