

SIMONA® E-CTFE-GK in Composite System for Chimney Lining



Left: SIMONA® E-CTFE-GK/GRP/steel in-situ. Top right: Before assembly of the last part of the chimney. Bottom right: Completely assembled chimney

In 2007 the companies OIH and PLASTICON GERMANY secured a contract to line a steel chimney for the OMV AG refinery in Schwechat/Austria with a composite structure comprising E-CTFE-GK/GRP. PLASTICON GERMANY supplied four composite pipe sections made of SIMONA® E-CTFE-GK/GRP for the 88 m high chimney with an external diameter of 5.5 m.

The project at a glance

Project

Chimney lining with SIMONA® E-CTFE-GK

- Internal diameter: 5 m
- External diameter: 5.5 m
- Height (lining with E-CTFE-GK/GRP): 70 m
- Total height: 88 m
- Gas inlet cross-section: 6 x 4 m
- Sheet thickness: 2.3 mm (bottom), 1.5 mm (top)

Requirements

- Operating temperature 105 °C to 110 °C
- Design temperature 120 °C
- High chemical resistance
- High structural strength

Client

OMV AG, Austria

Contractor

- Ooms-Ittner-Hof GmbH (OIH)
- PLASTICON GERMANY

Technical support

- Technical Sales Service SIMONA AG
- PLASTICON GERMANY

Products used

- SIMONA® E-CTFE-GK
- GRP (glass-fibre reinforced plastic)
- Steel

Project time

2007–2008



From left to right: View into the lower pipe sections with gas inlet, transport of the SIMONA® E-CTFE-GK/GRP composite pipe sections, SIMONA® E-CTFE-GK/GRP/steel ready for transport

SIMONA® E-CTFE-GK: Superior versatility in plant engineering

Initial situation

Construction of an outdoor free-standing steel chimney for a refinery belonging to OMV AG, Schwechat, with a total height of 88 m and external diameter of 5.5 m, proven for operating temperatures of 105 °C to 110 °C and for a design temperature of 120 °C.

Task

The E-CTFE-GK/GRP composite system was manufactured by PLASTICON THE NETHERLANDS in Hengelo, Netherlands, which has both the necessary know-how and the ideal technical prerequisites for creating a composite system with an internal diameter of five metres from the two materials, E-CTFE-GK and GRP. The following criteria had to be taken into account in the material selection:

- High chemical resistance
- Excellent weather resistance
- Ability to withstand high structural loads
- Temperature resistance

Solution

Owing to its chemical resistance and its broad service temperature range, SIMONA® E-CTFE is suitable for various fields of application in plant engineering. SIMONA® E-CTFE is an ideal material for the present application on the basis of its chemical characteristics, but it does not meet the requirements with regard to structural properties. In such a case, the specified parameters can be met by using a composite system that combines the characteristics of several materials: SIMONA® E-CTFE-GK offers chemical protection from the flue gas, GRP as thermoset in combination with SIMONA® E-CTFE-GK meets structural loading requirements, while steel forms the outer envelope of the chimney. PLASTICON manufactured four composite pipe sections in SIMONA® E-CTFE-GK/GRP (three pipes 19 m long and one 13 m long), which were inserted into the corresponding steel pipes (external diameter 5.5 m) by a specialist company in Belgium. These four pipes comprising E-CTFE-GK/GRP/steel were then transported by waterway to Schwechat in Austria and completely assembled at their place of destination.

SIMONA® E-CTFE-GK

Properties

- Partially fluorinated high-performance material
- Low flammability
- Extreme chemical resistance, also in the alkaline range
- Lamination with glass fibre fabric
- Excellent weather resistance

Product range

- Extruded sheets and rolls

Further information

SIMONA AG

Technical Sales Service
Phone +49 (0) 67 52 14-718
Fax +49 (0) 67 52 14-60718
dieter.eulitz@simona.de