



100% availability
in three-shift operation,
365 days a year

**Wide burner output
range**
for large fluctuations in volume
flow and concentrations

**Safety-related control
system**

TNV - Thermal exhaust air purification plant for incineration of process gases

Grillo-Werke AG, at the Industrial Park in Frankfurt-Höchst operates various production facility to produce inorganic and organic sulphur compounds, as well as a production plant for dimethyl ether.

In the year 2012 a thermal exhaust air purification plant for the incineration of process gases from SÜLZLE KOPF Anlagenbau GmbH was installed. The short construction period of only 12 weeks ended as scheduled with the successful start-up.

Our scope of delivery included:

- Combustion chamber
- Air quencher and following exhaust air stack
- Combustion air and quenched air ventilators
- Complete piping
- Alle armatures and measuring sensors for a safety-related and functioning combustion plant
- Safety-related control system
- Switching cabinet
- Integrating the plant in the production process and production system control

Plant description:

This thermal exhaust air purification plant consists of a combustion chamber and following air quencher and is designed for the interior and exterior ex zone areas. Flame-arresting fittings were installed and the gas regulating unit was delivered in compliance with a TÜV tested natural gas safety standard. The measuring and control line is equipped with a safety-related control system. The plant is designed for pressure relieves during normal operation and for critical incidents. To ensure safe operation and highest possible availability at all times this thermal exhaust air purification plant is equipped with a wide burner output range.



The picture above shows the manhole and the top-mounted quencher of this TNV plant.

Technical specifications:

Exhaust air volume flow: 2,500 to 6,500 m³/h
 Process gas volume flow: 0 to 40 Nm³/h
 Burner output range: 5 to 650 kW
 Combustion chamber: fiber-lined, temperature resistant up to 1,200 °C
 Plant availability: 100%, operating in three-shifts, 365 days a year

Our range of services included:

- 3D installation plan and layout including machine and apparatus drawings
- Process und P&ID diagram
- Technical specifications
- Electrical/I&C engineering
- Foundation and loading including static and dynamic loads and moments
- Thermal calculations
- Risk assessment and SIL-calculations

This thermal exhaust air purification plant at the Grillo-Werke AG in Frankfurt-Höchst Germany was designed and constructed in accordance to:

- DIN EN 746-2, Industrial thermoprocessing equipment - Part 2: Safety requirements for combustion and fuel handling systems
- Explosion Protection Directive ATEX 94/9/EC
- Compliance with the limit values of TA-Luft
- Design and realization of all flange connections according to TA-Luft
- VCI Guideline „The load case earthquake in plant engineering“ and DIN 4149 (Buildings in German earthquake areas - Design loads, analysis and structural design of buildings)
- Proof of safety according to DIN 4149 and DIN EN 1991 (Actions on structures) „wind loads“
- DIN EN 61511 Functional safety - Safety instrumented systems for the process industry sector
- DIN EN ISO 4871:2009, Acoustics - Declaration and verification of noise emission values of machinery and equipment
- DIN EN 27574-2, Acoustics; statistical methods for determining and verifying stated noise emission values of machinery and equipment
- Documentation according to AD 2000 and Directive 97/23/EG

SÜLZLE KOPF is your partner for thermal exhaust air purification plants with and without heat recovery, and also for solutions applying:

- catalytic technology
- regenerative technology
- adsorptive technology
- absorptive technology
- and for ozone destruction



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