

Risk Analysis for CORRESIC SE Type Heat Exchanger according to PED 2014/68/EU

Works Standard

1. Hazard determination

- 1.1 Pressure equipment and accessories, e.g. PTFE bellows, gaskets between blocks, etc. may leak or burst if the permitted operating conditions are exceeded (cf. 4.1 and 4.2).
- 1.2 The following risks may occur:
 - 1.2.1 Due to leaking pressure equipment and accessories
 - a) hazardous gases or liquids may leak
 - b) media may mix, and might react with each other, which may lead to additional pressure increases and risks due to media leaking under pressure
 - 1.2.2 Bursting pressure equipment, may cause risks such as a) and b) to occur. Additional risks may occur due to bursting pressure equipment parts.

2. Risk assessment

Due to leaking or bursting pressure equipment

- 2.1 operating personnel and / or third parties may be injured or poisoned.
- 2.2 the environment, including air, water, soil and buildings / facilities may be contaminated or poisoned.

3. Protection targets

The aforementioned risks must be identified using the appropriate calculations, construction and operation, and by respecting the assembly and operating instructions. Risks can be avoided or eliminated by respecting handling guidelines.

4. Analysis

Because of the aforementioned risks, the calculations, construction, manufacturing and testing must be carried out in compliance with the recognized technological guidelines, e.g. in compliance with the AD Code, DIN standards, Pressure Equipment Directive or TÜV rules.

- 4.1 The heat exchanger must only be operated within the scope of the allowed conditions of use:
 - 4.1.1 Maximum allowed pressure / vacuum according to the drawing, nameplate, and heat exchanger manual.
 - 4.1.2 Maximum allowed temperature according to the with the drawing, nameplate, and heat exchanger manual.
 - 4.1.3 Chemical load: this is universal as long as no restrictions have been set for the process side. On the service side, the corresponding service media.
 - 4.1.4 SiC ceramics and PTFE thermoplastic are non-aging materials. Regular pressure testing can ensure the required safety.
- 4.2 For CORRESIC® SE heat exchangers, the process side (axial) connection should always be made using PTFE or steel/PTFE bellows.
- 4.3 The assembly and operating instructions must be respected.



Risk Analysis for CORRESIC SE Type Heat Exchanger according to PED 2014/68/EU

- 4.4 If this pressure equipment is manufactured in compliance with the aforementioned regulations and directives, and operated within the scope of the allowed operating conditions, hazards and risks can be avoided as much as possible.
- 4.5 All remaining risks inherent in technical equipment must be minimized by adapting operation measures. This includes e.g. employment of trained personnel, protective work clothing where necessary, consistent pressure and temperature monitoring, etc.

5. Concluding remarks

CORRESIC® SE heat exchangers with ceramic SiC blocks have been in use for about a decade, and the safety of these heat exchangers has been thoroughly tested through experience. By respecting the conclusions presented in this risk analysis, along with the regulations in the assembly and operating instructions, the equipment can be operated safely.



Maulburg, 19 July 2016

Tobias Schnurpfeil

