



1. Suitability of metal expansion joints

Expansion joints with corrugated metal bellows are basically suitable for the transport of critical fluids under pressure and temperature.

The required flexibility of the corrugated bellows of expansion joints generally results in a wall thickness considerably smaller than that of all other parts of the system in which they are installed. Therefore, increasing the bellows wall thickness to prevent damages caused by corrosion is not reasonable and it becomes essential to select a suitable material for the bellows element which is sufficiently resistant against all corrosive media that may occur during the entire lifetime. In many cases, the bellows has to be manufactured out of a material with even higher corrosion resistance than those of the system parts it is connected to.

In addition, possible corrosive environmental effects must be considered.

The material selection must take into account all possible kinds of corrosion, especially pitting corrosion, intergranular corrosion, crevice corrosion and stress corrosion cracking (SCC).

2. Selection of a suitable material

The material for the bellows layers is to be selected according to the specific aggressiveness of the operating fluid or of the surrounding atmosphere.

Recommendations for the selection of materials are given under www.euroqualiflex.com.

3. Prevention of corrosive effects during operation of the plant

Any uncertainties concerning the exact composition of the working fluid, differing operating states, and other peripheral service conditions may additionally increase the danger of corrosion; e.g.:

– Steam

Materials for pure steam are only suitable in case the feedwater is purified (pure water) in accordance with EN 12952-12:2003 “Water-tube boilers and auxiliary installations – Part 12: Requirements for boiler feedwater and boiler water quality”. The same requirements should apply to water injected to reduce the steam temperature.

The danger of corrosion is however given though “pure steam” is used in operation when caused by interrupted operation a concentration - especially of chlorides - is build up within the condensate remaining in the pipe system.

– Cleaning or rinsing media

The aggressiveness of the media used for short-time cleaning or rinsing is to be considered, especially possible remainders within the system, which may be detrimental for the subsequent regular operation.

4. Responsibility of the expansion joint manufacturer

The responsibility of the expansion joint manufacturer covers the functional design of the expansion joint according to the given information, as pressures, temperatures, movements and additional loadings, and also the material concerning its formability and weldability.

In addition, the Euro-Qualiflex members contribute their wide scope of experience when assisting the user in selecting a suitable material for the special application.

But, with regard to the influences of the actual operating situation given in the plant (see point 3) only the user can take full responsibility for the selected material. The advice of the expansion joint manufacturer can only be given without obligation, i.e. without any liability for the material to be properly selected.