

Replacement of bellows

In some situations it is not necessary to replace the entire compensator. If only the bellows are at the end of their service life and the other components are still in good working order, it is usually more economical to just replace the bellows.

This was the case for 25 angular compensators installed in a district heating system in Germany.

Cost-effective

The operating pressure was high in this case, which means that the hinges and welding ends were sturdy and clearly represented the highest value in the construction. The customer therefore inquired whether it would be possible to reuse these parts and simply replace the bellows. After inspecting the compensators on-site and finding that the hinges and welding ends had not been damaged by corrosion after many years' operation (the compensators were about 35 years old), Belman was able to inform the customer that the components were fit for reuse and simply required surface treatment. Being able to just replace the bellows and recondition the fittings resulted in large savings for the customer compared to buying brand new compensators.

The replacement

The compensators were removed during a planned shutdown and shipped to Belman. In some cases the replacement can take place on-site, but in most cases it is preferable to have this carried out at the manufacturer's premises.

The replacement involved dismantling the old compensators, cutting out the old bellows and removing the pins. The old welded parts (welding ends with hinges and pins) were sandblasted and the old welds were cut off. Following this, they were ultrasonic inspected for stratification and checked for ovalization. The new bellows were welded in and the compensators were reassembled. All the old steel parts were then surface treated. Selected compensators were pressure tested at 48.8 bar (corresponding to a reaction force of over 234 tons). Finally, the compensators were packed and returned to the customer for refitting.

Inspection

If the customer is unsure of the required scope of a replacement, Belman's installation and inspection team can inspect and assess the compensators on-site and subsequently make recommendations on the required scope of the replacement. This primarily involves an assessment of the state of the fittings and whether or not they are subject to corrosion.

Compensator data

Dimension: **DN 800** | Installation length: **1430 and 1630 mm** | Design temperature: **+185°C** | Design pressure: **32.5 bar** | AN: **+/- 2.25°, +/- 4.5°** | Bellows: **1.4571**.



The compensators prior to repair

Further information

For further information about this project or on repair tasks in general, please contact your daily contact person. Information about our compensators is available on our website: www.belman.dk