

14.c Industrial Acoustic Pipe Insulation

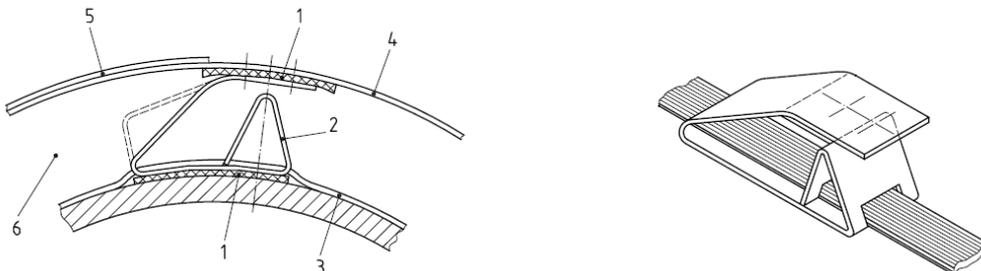
Question:

Can distance and support rings to support the cladding be used for acoustic pipe insulation?

Answer:

Distance and support rings to support the cladding should be avoided as far as possible, because of the risk of acoustic bridges and therefore reducing the performance of the sound insulation system. Where the porous insulation layer exists of pipe sections and is horizontal, normally support rings will not be necessary. But similar to thermal pipe insulation, where blankets are used or the orientation of the pipe is vertical it may be necessary to support the cladding by using a supporting element.

To avoid acoustic bridges between the pipe and the cladding, rigid spacers as used in distance rings for thermal insulation shall not be used in an acoustic pipe insulation system. Spacers must contain resilient elements. The resilient elements must have a built-in mechanical stop in order to limit its maximum deflection.



Key

- 1 resilient pad
- 2 spring + stop
- 3 retaining band
- 4 cladding support ring
- 5 cladding
- 6 air-gap (may be provided with porous layer)

Figure 1: example of ring with resilient elements with mechanical stop (ISO 15665)

Support rings which carries the weight of vertical stretches of acoustic insulation must contain resilient elements.

- 1 vibration-isolating pad
- 2 pipe wall
- 3 cladding
- 4 vulcanized layer
- 5 support on strapping band (or welded)

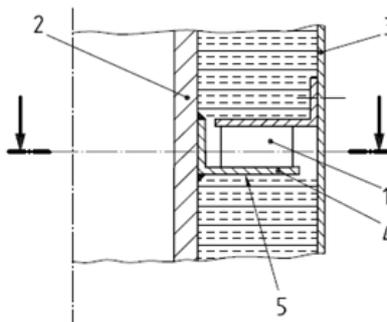


Figure 2: example of ring with resilient elements for vertical applications (ISO 15665)

Localized contact between the cladding material and the vibrating pipe wall must be avoided. For example by flanges. For this purpose an anti-vibration sealing material must be applied to close the gap and to prevent acoustic bridges. Examples of suitable sealing materials:

- Synthetic and natural rubber
- Non-flammable felt
- Compressed layer of porous material (depending of the operating temperature)

S-shaped fixing clamps as used by high temperature applications can be used as a resilient support in an acoustic pipe insulation system, but only by using contact protection elements. The contact protection element blocks the transmission of solid-borne vibrations and heat from the inner core (i.e. pipe or silencer shell) to the cladding.

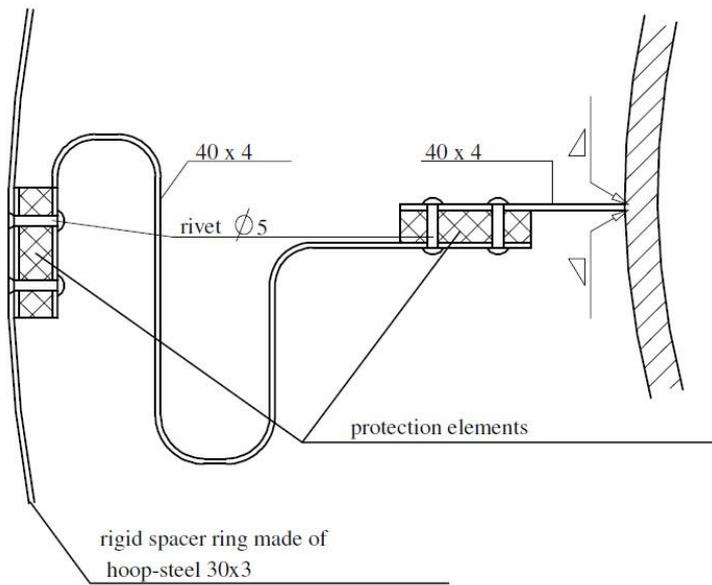


Figure: S-shaped fixing clamp for HT applications with protection elements

It is important that the stiffness of the support rings, spacers or other elements to support the cladding, is tuned as the best possible to the frequency spectrum of the source and to the noise emission requirements for the insulated pipe. Especially in the case of low frequency source spectra.