Rohr Damper Application

Description

Application of Rohr dampers is accomplished using one of two methods: a) known natural frequency and b) expected natural frequency based on vibration response. The known natural frequency approach is the preferred method but may be impractical for operating piping systems.

Known Natural Frequency

The known natural frequency approach is preferred when possible. These are the recommended steps:

1. With the pipe in service (and vibrating), measure overall vibration velocity from one support to the next and identify the location with highest overall vibration velocity. This is normally at the middle of the span.
2. With the pipe out of service (not vibrating), perform a "bump" test to determine the natural frequency near the location of highest vibration identified above. Measure in two or three directions (natural frequencies may be different in different directions) and document the natural frequencies. If using an instrumented hammer and measuring using a FRF (frequency response function), identify the location of highest modal response and place the damper there.
3. Using the measured natural frequency (or frequencies), select the damper(s) to address the natural frequency and mount near the highest modal response.
4. Impact after installation to confirm improvement.

Expected Natural Frequency from Vibration

When pipes vibrate excessively there will generally be some (significant) amplification due to natural frequencies. The damper(s) can be selected from the selection chart using a vibration response spectrum (FFT plot) as follows:

1. With the pipe in service (and vibrating), measure overall vibration velocity from one support to the next and identify the location with highest overall vibration velocity. This is normally at the middle of the span.
2. Using a vibration analyzer (i.e. CSI-2140 or similar), use an FFT plot to see what the frequency is for the highest velocity peak in the spectrum.
3. Select the damper(s) using the provided chart and mount near the location of highest vibration.
4. Monitor vibration during installation and determine if adequate vibration reduction has been achieved. If not, additional dampers may be required.
    a. If other frequencies are dominant after addressing the original peak, another damper with different target frequency can be applied to address the next peak.