

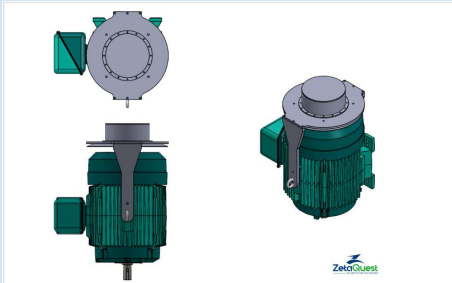


## ZetaQuest® Services: Engineering & Vibration Assessment

— On-site, Design & Technical Support

### Services Offered

- Vibration assessment
  - Field measurements vs. standards
  - Assessment of damper benefit
- Detail design for damper applications
  - Installation documentation
- Installation technical support
- Design reviews for new installations



Custom Connection for Vertical Pump Motor



Rohr Dampers Installed on Suction Scrubber

"Your search for damping stops here™"

6501 Navigation Blvd Ste Y126, Houston, TX 77011

### Vibration Assessment

On-site service to document existing vibration and/or natural frequencies. We document current vibration levels on specified piping and compare to known standards/guidelines to evaluate severity against generally accepted limits. The review provides evidence to support the client's risk review. We can also guide on-site personnel to complete measurements remotely if on-site work is restricted.

The information gathered is used to assess the benefits of using our Rohr or Starr line of dampers:

- Rohr line — piping vibration from ~10 Hz and higher
- Starr line — low frequency swaying up to ~60 Hz

Target: 10%+ damping on problem lines for excitable modes; 2–3% may be sufficient to mitigate elevated vibration to acceptable limits.

**Deliverable:** Written report covering field measurements, comparison to standards, and applicable ZetaQuest® hardware recommendations, typically accompanied by a hardware proposal.

### Detail Design for Applications

Some applications require specific design review — particularly larger Rohr dampers or the Starr line, which often requires custom mounting hardware. Offered on proposals when needed.

**Deliverable:** CAD drawings for layout, installation instructions, and all documentation required for the project.

### Field Technical Support

One of our technical personnel comes on-site to provide guidance during installation. Includes field review of project documents, guidance during installation, and vibration/natural frequency/damping measurements before and after installation.

### Design Reviews for New Installations

For applications with known vibration issues on similar equipment. Includes review of layout, natural frequencies, equipment flexibility, and assessment of likely risks based on experience. Complex reviews requiring analytical tools may be subcontracted.

**Deliverable:** Detailed report documenting natural frequencies, mode shapes, and vibration damping hardware required to achieve specified damping levels for excitable frequencies.

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Email: [sales@zetaquest.com](mailto:sales@zetaquest.com)

713-360-0386