

Calculations

With an extensive experience in the field, combined with use of modern tools, Vibratec are able to custom design cushion isolators that meets your requirements of vibration isolation. Necessary calculations to ensure the performance of the system are regularly carried out. This can include:

- Mechanical strength analysis by Finite Element Methods (FEM).
- Modal analysis by use of Statistical Energy Analysis (SEA) or Finite Element Methods (FEM).
- Load distribution calculations.
- Fatigue calculations.
- Resonance frequency and attenuation calculations.
- Calculation of fastening bolts or welds.

Heavy duty cushion isolators

ALL METAL VIBRATION ISOLATORS

Description

The custom made cushion vibration isolators are designed for outdoor offshore and marine installations. The cushion vibration isolators are typically used as a trade-off between price and performance. The steel structure are usually manufactured in steel S355J2G3 and painted according to offshore specifications. All other steel parts are typically in stainless steel AISI 316 covered with wax OKS2000.

Characteristics

The cushion isolators are optimized for medium to high resonance frequency, high environmental demands and external forces such as wind, waves, accidental loads etc.

Depending on the choice of cushions, resonance frequencies from 8 to 15 Hz can be achieved.

The stiffness can be tuned by pre-compressing the builtin snubbers. This will also add damping to the isolators resulting in a lower amplification factor.

Maximum excitation amplitude: ± 1 mm.

Temperature range: -90 °C to +300 °C.

Technical documentation

We provide extensive technical support in the use of our products and systems. This can include:

- Material certificates (related to project requirements, labtests etc.)
- Engineering results (computer calculations, on-site support etc.)
- Drawings in AutoCAD or Inventor (2D installation plans, 3D presentations etc.)
- Tests to evaluate mechanical and long-term behavior.
- Manuals for maintenance and installation.
- Welding licenses and weighting certificates.

Application

Elastic suspension of rotating machinery at >1200 rpm - fans, compressors, generator sets, reciprocating machinery etc.

Protection of turbines, accommodation and office modules from vibrations and impacts.

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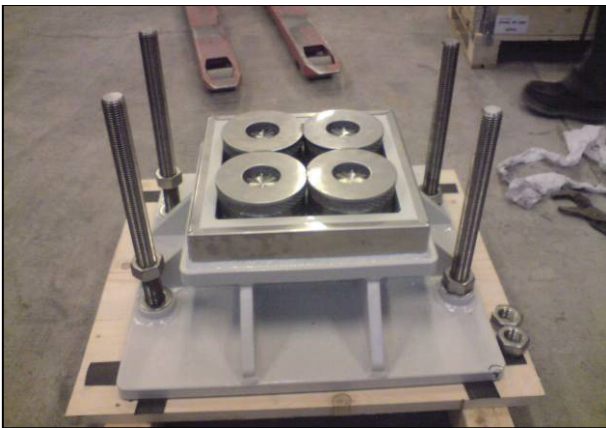
Selection of reference



Dresser Rand - KMZ Bergensen 2006

Two sets of isolators were delivered to Dresser-Rand for a 3-point elastic suspension of 160 tons generator packages on FPSO KMZ Bergesen. The FPSO is flagged in Bahamas and operates in the Gulf of Mexico. The design was to comply with DNV Offshore Standards and to withstand forces due to 100-year storm tide, 100-year waves and 100-year wind. The AVMs' had resonance frequency of 12 Hz and were prepared for welding to deck and bolting to frame. Due to take-outs in the frame the vertical adjustable snubbers could be placed towards the upper plate of the AVM, which also resulted in the low built-in height of only 130 mm.

Dresser Rand - Gjõa Semi EPHC 2008



One set of isolators for 3-point elastic suspension of an Export Compressor Package weighing 100 tons (Vectra 40G package). The AVMs' were designed to comply with DNV Offshore Standards and to withstand motion accelerations due to 10 000-years wind, turbine unbalance, 27 degrees tilt, blast loads, compressor extreme unbalance etc. The resonance frequency of the AVMs' was 12 Hz and they were prepared for welding to deck and bolting to frame. The loaded height was 300 mm and the end user Statoil.

Siemens Industrial Turbo Machinery B.V. – CWLH Redevelopment 2009



3-point elastic suspension customized for two Export Gas Compressors (93 tons each) and one Flash gas Compressor (67 tons) located on a FPSO in Australia. Resonance frequencies for all degrees of freedom were calculated; the axial resonance frequency of the AVMs' was 9-11 Hz. Affects of blast loads or ship impacts were applied in all directions when FEM-calculating the AVM to avoid plastic deformation of the structure. The AVMs' were prepared for bolting to frame and deck. The loaded height was 238 mm and the end user Woodside Energy Ltd.