VIBRATEC

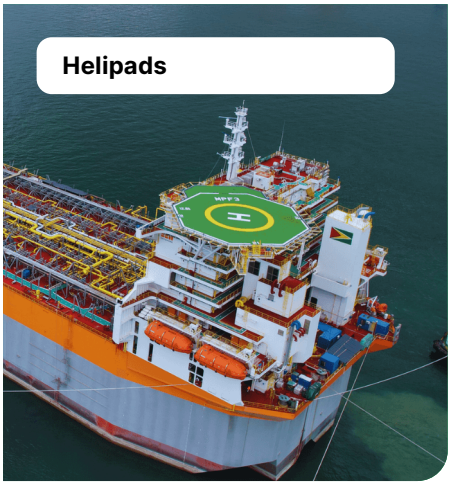
# Offshore

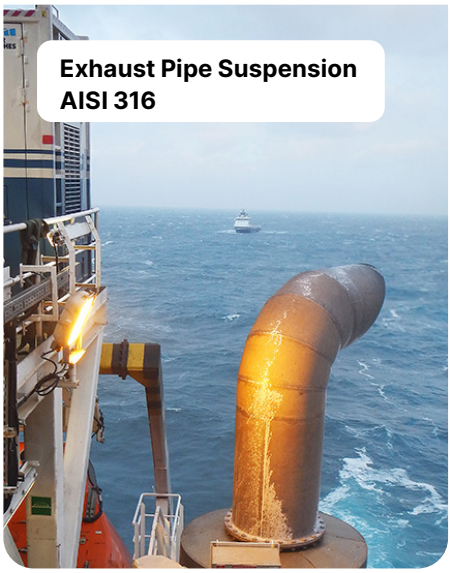
**Sound, Shock & Vibration Control for Extreme Environments**


**Quietly Improving Your Environment**

# Vibration Technology for
# Extreme Environments

Vibratec is specialized in anti-vibration, damping, noise and shock protection for different offshore applications. An example of these area are vibration isolation of turbo compressors, turbine generators, accomodation modules and piping.







**Read more about our products and solutions on our website!**

Using custom made Offshore isolators, Vibratec can suspend heavy turbine units up to several hundred tons. We also engineer and design AVMs – Anti Vibration Mounts – used for decoupling of accommodation modules, helipads, pumps and compressors.

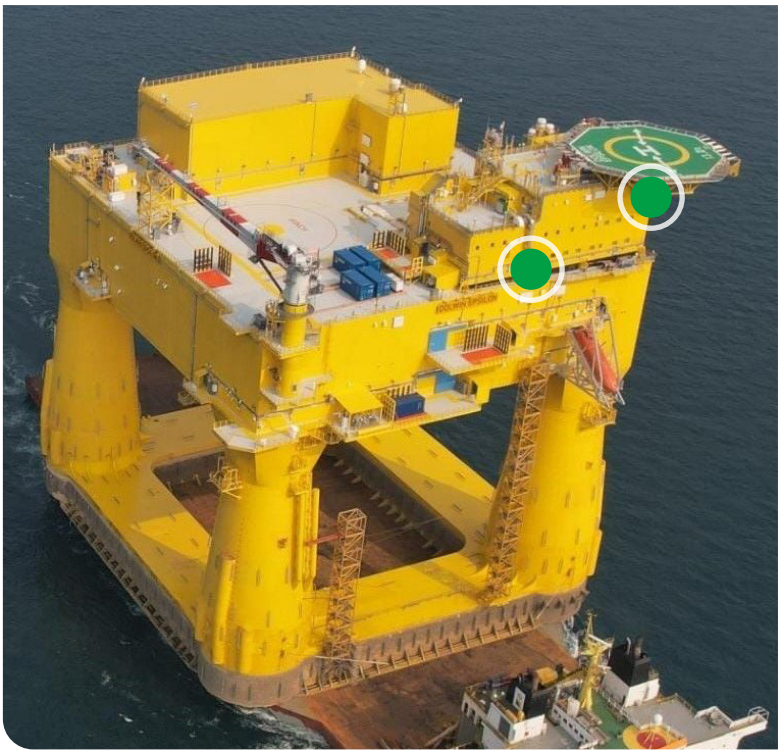
For the Offshore industry Vibratec manufacture and supply proven, weather-proof special isolators. We only use materials that are unaffected by factors such as temperature, light, oil and gases.

**Vibratec will provide you with:**

- Engineering
- Custom designs
- Manufacturing and stock
- Installations
- Documentation
- Control measurements

# Accommodation Modules

Using our Offshore isolators, Vibratec can suspend heavy accomodation modules up to several hundred tons.

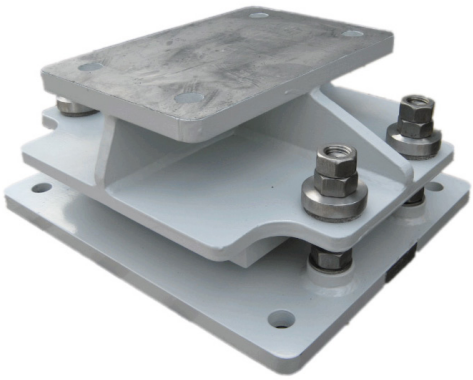


For the Offshore industry Vibratec manufacture and supply proven, weather-proof special isolators that utlasts any of our competitors. Isolators for offshore accommodation and office modules are normally customized for specific projects. The isolators should, in addition to excellent vibration isolation performance, endure accidental loads and harsh offshore environment conditions.

When engineering these isolators the steel structure is FE-modelled checking for instance, mechanical strength, fatigue, weld calculations and bolt calculations.

An extensive documentation is included in addition to the deliverance of the isolators.

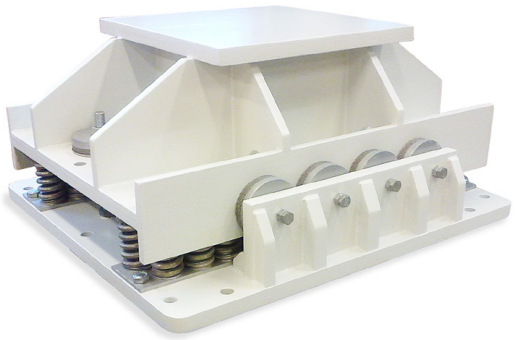
We have the expertise to deliver a solution that is tailored to your specific needs.



**Anti VIbration Mount - Steel Mount AVM**

The custom made cushion vibration isolators are designed for outdoor offshore and marine installations. 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.

Read more on our website



**Anti VIbration Mount - Spring Package AVM**

Our custom made spring vibration isolators are designed for outdoor offshore and marine installations. The steel structure is often 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.

Read more on our website

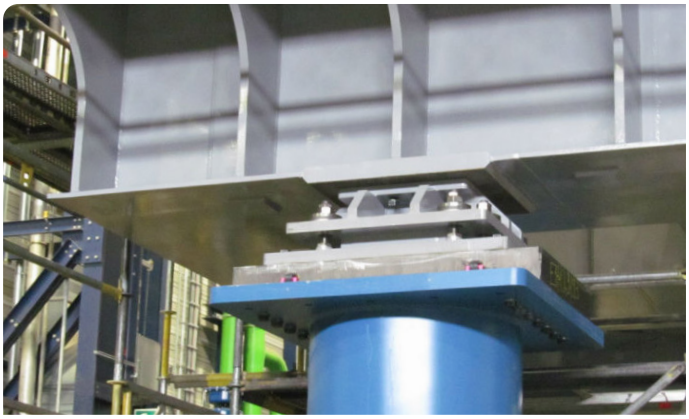
# Steel Mount AVM

Using our Offshore isolators, Vibratec's heavy duty AVMs with cushion isolators suspend applications weighting up to several hundred tons.

VIbratec's 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.



## Applications

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.

## 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 built-in 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, lab tests 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.

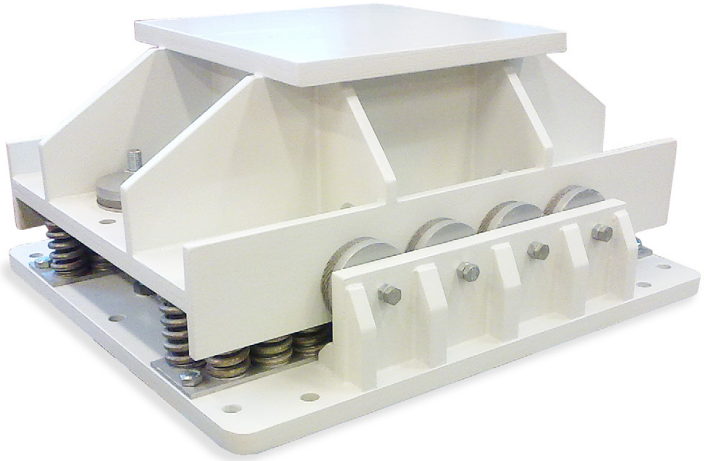
## Calculations

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

# Spring Package AVM

Vibratec's heavy duty AVMs with spring and cushion isolators suspend applications weighting up to several hundred tons.



Our custom made spring vibration isolators are designed for outdoor offshore and marine installations.

The steel structure is often 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.

## Applications

Elastic suspension of rotating machinery at >600 rpm - fans, compressors, generator sets, reciprocating machinery etc.

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

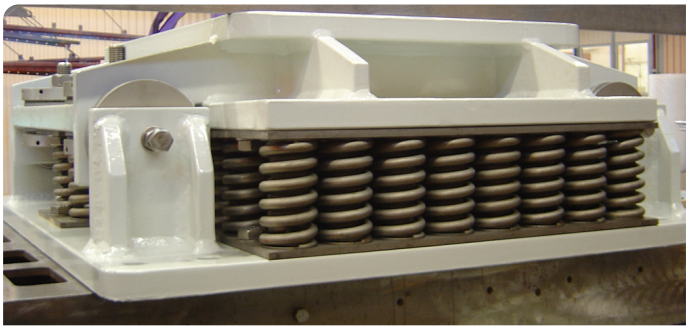
## Characteristics

The spring isolators are optimized for a very low resonance frequency, high environmental demands and external forces such as wind, waves, accidental loads etc.

**Depending on the choice of springs resonance frequencies from 3 to 6 Hz can be achieved.**

The stiffness can be tuned by pre-compressing the built- in 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



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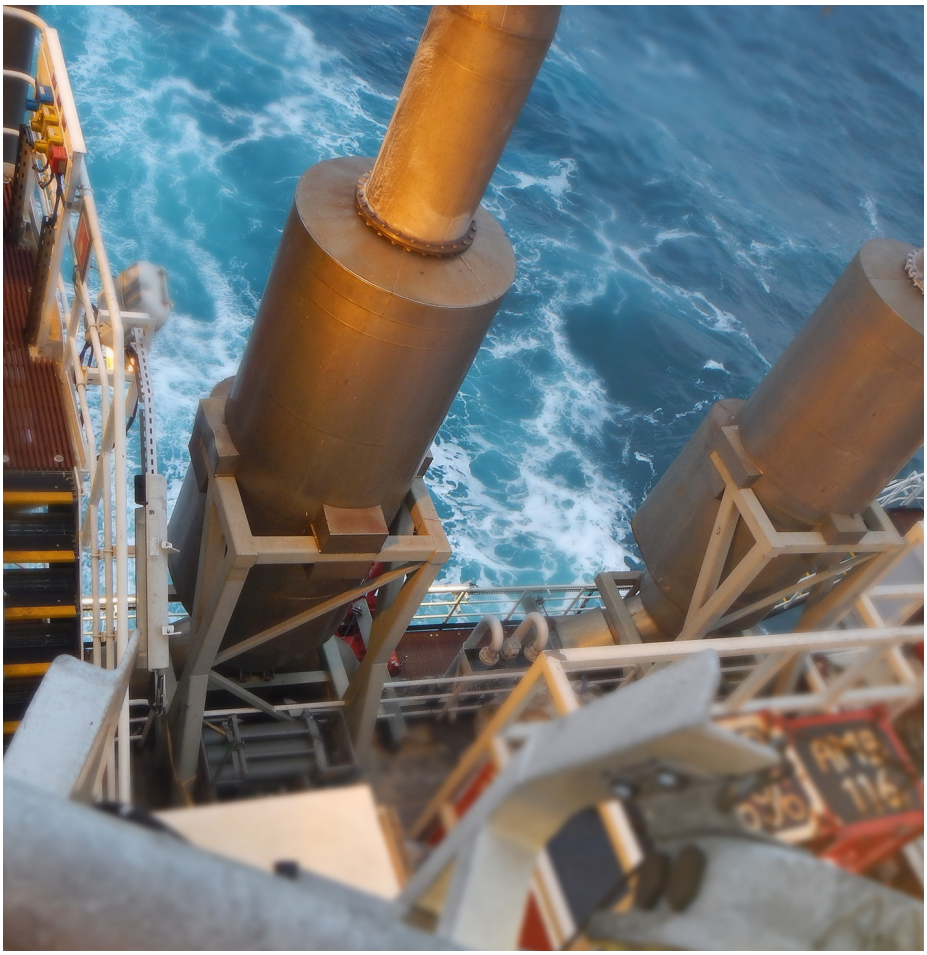
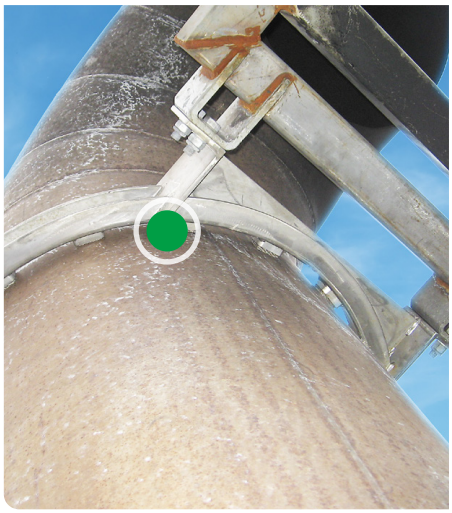
# Exhaust Pipe Suspension AISI 316





Vibratec's unique all-metal exhaust suspensions have been implemented in thousands of ships since the mid 1970:s.

A major reason for our success is the fact that all our products are so well adapted to their purpose; as the isolators are all metallic, they are insensitive to one of the main problems with exhaust suspensions – the heat.

The life-expectancy of Vibratec's solution is the same as that of the exhaust system itself so it does not need to be replaced during its life span.

## We provide complete technical proposals to our customers including:

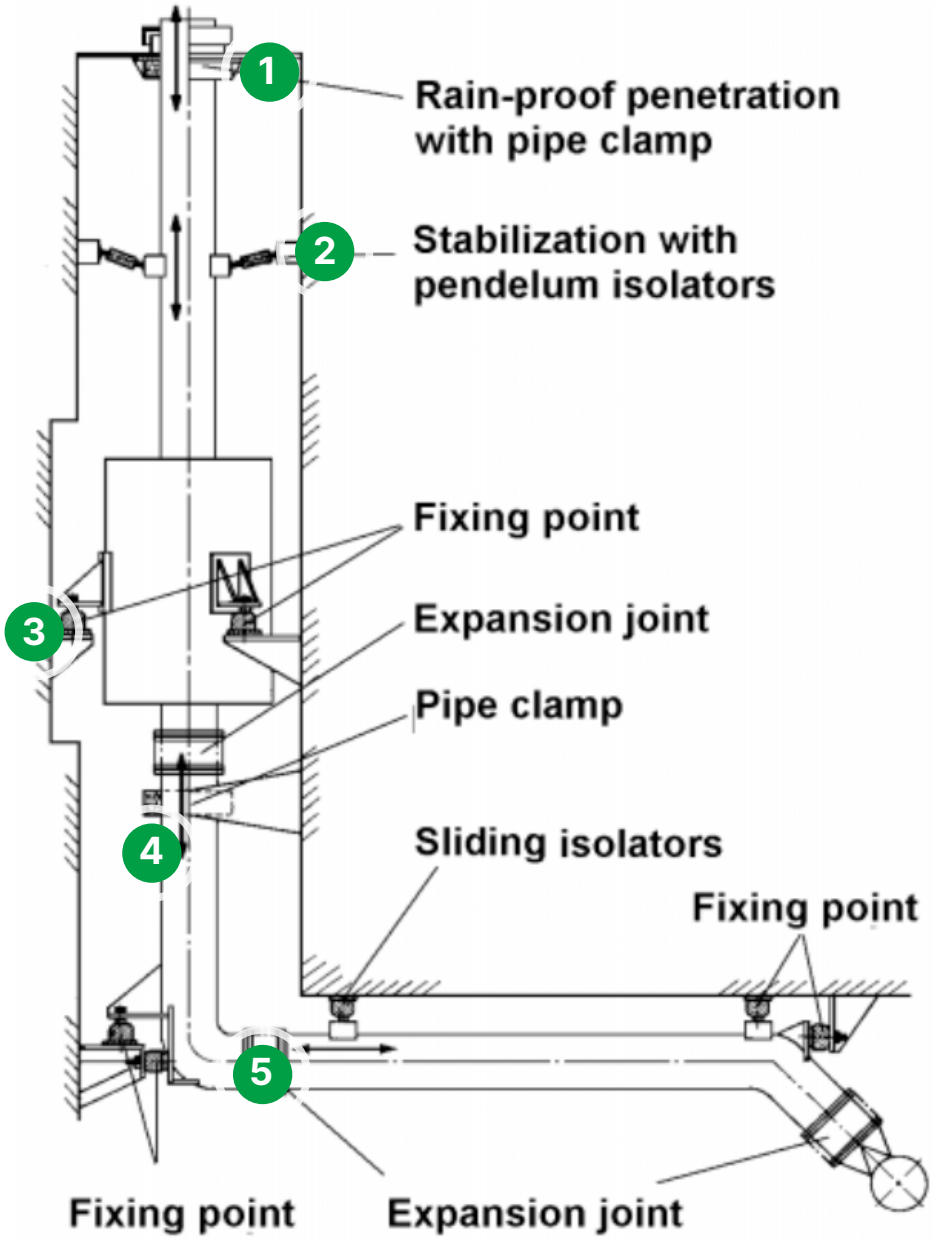
- Filled-in Auto-CAD drawings with proposed products and positionings
- Reaction force and noise calculations
- Expansion joint calculations with proposed pre-tension List of materials
- Principal installation instructions
- Quotation and product data sheets

**Metal Cushions**

Read more on our website

**Metal Mount VT3353 – VT3355**

Read more on our website

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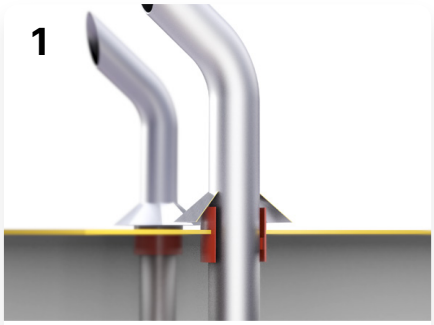
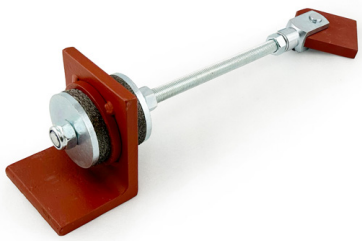


**Penetration Clamp VT-FTPC**

Read more on our website

2



**Metal Pendulum Mount 345P**

Read more on our website

3

**All Metal Mount VTCI-series**

Read more on our website

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**Expanison Joints**

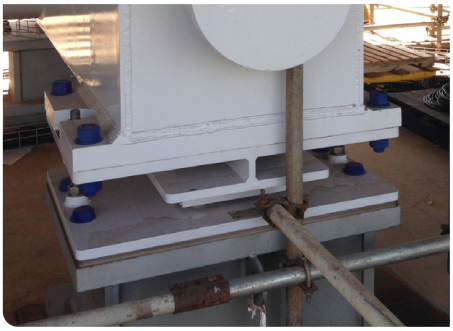
Read more on our website

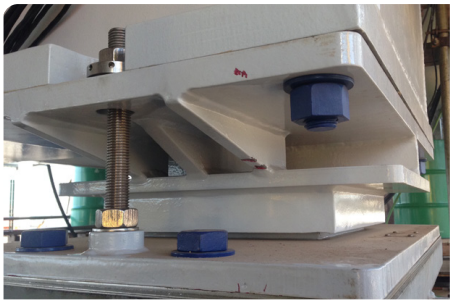
4

**Pipe Clamps VTPC-100-900**

Read more on our website

# Power Generation & Offshore Engine Mounts





## Vibration isolation is critical for ensuring the reliability and safety of power generation systems on offshore platforms.

Whether it's turbo-compressor sets, generator sets, or other machinery, the harsh marine environment demands robust solutions.

Vibratec offers advanced heavy duty vibration isolators specifically designed for offshore applications, utilizing durable materials such as stainless steel AISI 316. These isolators provide superior performance and longevity compared to traditional rubber alternatives, resisting corrosion and maintaining effectiveness in the most demanding conditions.

By minimizing vibrations, our products protect sensitive equipment, enhance operational efficiency, and contribute to the overall stability of offshore platforms.

# Gimbals

A gimbal has a spherical radial bearing free to slide on a pin – the gimbal's upper part is free to rotate and through the solid pin is free to translate sliding on the pin axis direction.

The gimbal thus allows one horizontal displacement and rotations around all axis. The spherical radial bearing do not require any special maintenance or lubrication during the entire life

## Characteristics

The size of the gimbal should be checked based on load combinations of constant, variable and rotational loads.

It is necessary to evaluate the load combination applicable to the specific job and combine foundation loads to evaluate the equivalent Shear and Vertical load applicable to each gimbal. The loads should be inside the load envelope for the specific gimbal size. Special bolting can be foreseen to increase the lateral load capability of Gimbal.

To validate the selection based on loads, it's also necessary to perform a wear verification. The wearing can be caused by continuous sliding or stick-slip effect - in both cases an equivalent speed is calculated to be used in the wearing formula.

Gimbals ready for transport. Seen here with transportation lock.

**Other factors that influence the wearing (and needed input for a wear calculation) are:**

- Angle of oscillation in bearing
- Frequency of oscillation
- Static load
- Temperature

Please contact Vibratec if a wear calculation is needed.

We have the expertise to deliver a solution that is tailored to your specific needs.

# Measurements & Surveys, Installation and Supervison

Vibratec has a number of employees that can undertake various installation jobs, measurements and surveys on offshore units. Thorough investigations and skilled personnel are vital for a correct design and installation, and in the end optimal function.

Typically Vibratec undertakes jobs within noise & vibration control as complete projects involving AVM's, exhaust & ventilation silencers, damping treatment of steel decks, pipe dampers, noise enclosures and TMD's (Tuned Mass Dampers).

A site survey prior to a project or preparation of budget for executing can also be performed by Vibratec. If additional measurements of noise and vibration are required Vibratec can perform vibration and sound measurements for internal use for engineering purposes or for control of obtained noise reduction.

# VIBRATEC

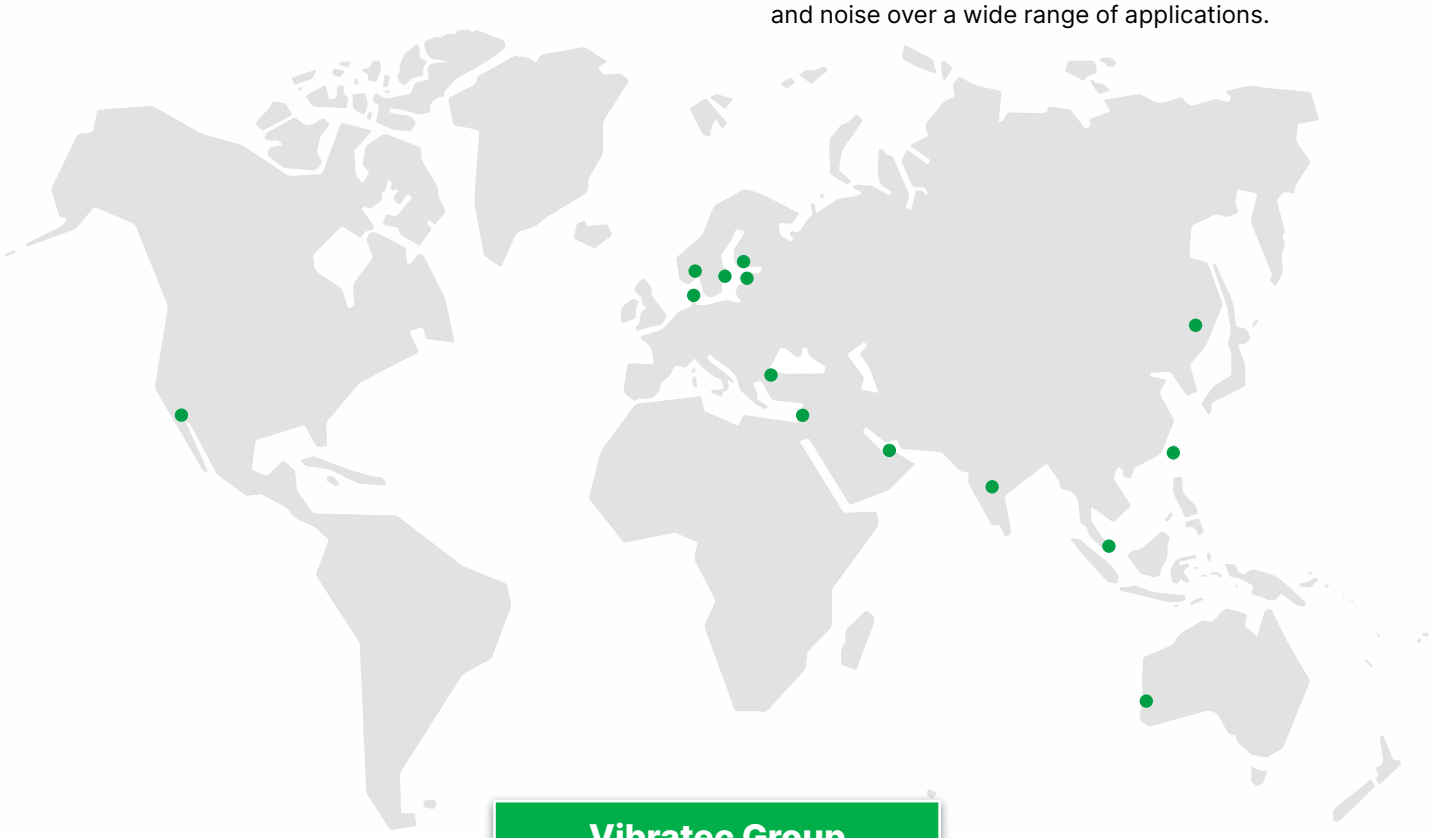
**Quiety Improving Your Environment**

## Engineering, Production and Installation

Vibratec has extensive experience, combined with the use of modern tools, when we design and manufacture tailor made solutions in all areas of vibration and noise reduction. Vibratec performs test to evaluate mechanical, physical and long term behaviour on materials as well as complete solutions.

## Construction, Defence, Industrial, Marine, Offshore and Railway

Vibratec Akustikprodukter is one of Scandinavia's leading suppliers of noise and vibration solutions. Vibratec´s ambition is to become the preferred choice for customers who need solutions to noise, vibration and shock problems. Vibratec produce and store many products for damping and isolation of vibration, shock and noise over a wide range of applications.



**Vibratec Group**

| Sweden 1988 | Norway 2000 | Estonia 2007 | Denmark 2008 | Finland 2018 | India 2020 |
|---|---|---|---|---|---|
| Sales<br>Engineering<br>R & D<br>Production | Sales<br>Engineering<br>R & D | Sales<br>Engineering<br>Production | Sales<br>Engineering<br>R & D | Sales | Sales<br>Production |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