Rubber Design
vibration and noise control

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company profile

Innovative & Progressive

Since the start in 1979 Rubber Design has become one of the international leading specialists when it comes to offering solutions for vibration, noise and shock related problems. In the last decades Rubber Design also became a renowned specialist in propeller shaft installations for the exclusive yacht building industry.

With design, engineering, testing and production all taking place under one roof, Rubber Design offers a wide range of services: from the fast and accurate application of the latest standard products to the development of unique tailor-made solutions. To attend our clients all over the world we have agents in more than 20 different countries.

AVM Air Spring Ltd. – 100% subsidiary Rubber Design

AVM was established in 1975 and it became a subsidiary of Rubber Design BV in 1996. The AVM product range consists: circular spring isolators, low profile multiple spring isolators, heavy-duty spring isolators and viscous dampers.





Anti-Vibration Mountings

Rubber Design anti-vibration mountings find their way not only to the marine industry but to on shore industries as well.

As vibration and noise insulators they are suitable for a variety of vibration producing machinery like internal combustion engines, generator sets, pumps, compressors, centrifuges and also instrument panels, switch boxes and control cabins. Both on ships as in land based installations.

Using our vast experience we can advise on mounting numbers, rubber mix and mounting positions. The vibration calculations are carried out using our specially developed computer program. This enables us to deliver mountings on customer's specifications. But due to the compact standard range products we can also quickly deliver from the shelf. All mountings are tested and selected on stiffness before delivery to our customers.

Products:

MP Mountings • Steel Spring Isolators • Miscelaneous Mountings

Rubber Design offers among others two types of anti-vibration mountings: MP-mountings and steel spring isolators. Multi-purpose mountings allow mobile applications on trucks and on board of ships. They achieve an optimum result and are maintenance free. Steel spring isolators are designed for land based installations with high vibration isolation. Typical applications for the standard mountings are for example generator sets, air conditioning machines and electrical equipment. The medium and heavy duty mountings are designed for industrial machinery such as fans and shredders, boilers and even complete power plants.

Photography: Roger van der Kraan

Conical & Sandwich Mountings

Rubber Design's conical and sandwich mountings find their way to ships, trains and installations for land based use, including use in rough sea or earthquake areas.

Although originally designed for (medium speed diesel) main engines, auxiliary engine and generator installations, the mountings are particularly versatile and can be equally used for exhaust gas boilers and silencers. They are well accepted in the market and used by many engine manufacturers as a standard. Not surprisingly, considering the proven quality of the products.

The conical mountings and our calculation method have been approved on many applications by the major international classification societies. Serial numbers of all supplies are registered in one single database. Therefore we can supply the genuine parts in case a client needs spare parts.

Products:
Conical Mountings • Sandwich Mountings





The range of conical mountings is designed specially with medium speed engines in mind. The conical design provides high deflection and load capacity combined with long service life. Available with or without interleaf, the sandwich mountings are produced in a range of rubber mixes and sizes, in order to meet specific stiffness tolerances. This type of mounting can also be used in earthquake areas. Selection of the rubber hardness and the position of the sandwich mountings is done based on the weight of the installation and the disturbing frequencies that have to be isolated. All mountings are individually tested and selected on stiffness.

Photography: Van Oord

Bellows & Compensators

Flexibility in pipework is indispensable in today's technically advanced plant and machinery installations.

Rubber Design produces bellows and compensators of the highest quality standard that guarantee maximum safety and performance. Based on our years of experience we developed a wide range of products for cooling water, fuel and lubrication oil pipework systems. Not only tested in our labs but mainly in practice.

It's in the demanding conditions at sea that our products over the years have proven their quality and durability. But as there's always room for improvement we keep on developing new products. Using innovating techniques and new materials.

Products:

Rubber Bellows • Silicon Bellows • Stainless Steel Bellows • Fabric Compensators





Rubber Design manufactures a wide range of bellows and compensators that provide the compensation of thermal or mechanical movements, absorption and isolation of vibration, noise and shock, reduction of pressure pulses and compensation for pipework misalignment. Besides that our design team developed a fireproof sealing system to allow (exhaust) pipe constructions to pass decks without transmitting vibration, noise or heat to the surrounding structure of the ship. Our FiProTex® single pipe penetration combines the best quality fabrics and insulation materials to guarantee maximum safety and performance.

Shock Mountings

Rubber Design is one of the leading companies in the field of shock and vibration control on navy vessels. With specific products we protect the sensitive and essential equipment in case of extreme impacts.

We are continuously exploring innovative shock calculation methods, as well as developing new type of shock mountings by using finite element computer programs. Rubber Design sets the pace for answering international military demands by designing a new generation of shock mounts, with a minimum of shock transmission and a maximum of vibration isolation.

Thanks to our state-of-the-art testing facilities we are able to show and prove the performance of our solutions in a very early stage. Not having to test them afterwards saves our customers a lot of time and money.

Products:
Rubber Shock Mountings • Cable Mountings • EPM Mountings • Exhaust Shock Mountings





Our different shock mountings are developed to provide maximum protection to a particular group of equipment. The RDS shock mountings are very suitable for marine applications such as propulsion engines and diesel generator sets. The unique EPM mountings provide the ideal solution to protect small rotary equipment like water makers, pump sets, generator sets and hydro-packs. Our cable mountings combine the characteristics of all-metal multidirectional anti-vibration and anti-shock mountings and can be used for the isolation and protection of sensitive electronic equipment, generators, pumps and compressors.

Photography: Aker Yards

Exhaust Equipment

In every situation where diesel engines are used, noise and vibrations will be generated. Rubber Design has the experience and solutions to control these vibration and noise emissions from the exhaust system.

As well as through the engine foundation, engine disturbance will travel along the exhaust system to be transmitted into the vessel wherever the system is in contact with the ship's structure.

By flexibly mounting not only the engine but also the exhaust system, we can control most of these unwanted noise emissions.

Due to our wide range of products we are an expert in total-solutions, including flexible suspension, stainless steel bellows, deck penetrations and heat reducing bulkhead penetrations.

Products:

Flexibel Suspension • Stainless Steel Bellows • Fabric Compensators • Heat Reducing Bulkhead Penetration





Rubber Design combines the benefits of various products. We use hanging and standing flexible fixed points as well as stabilizers to reduce the noise and vibration transmission to the ship structure. They also control the thermal expansion to the stainless steel bellows in the exhaust system. We supply stainless steel bellows with a low stiffness, which in combination with our flexible suspension give the best results. With heat reducing (flexible) bulkhead penetrations we lead the exhaust gas pipe watertight through bulkheads or decks. Our unique FiProTex® single pipe penetration is a fireproof sealing system that allows (exhaust) pipes to pass decks without transmitting vibration, noise or heat to the surrounding structure of the ship.

Photography: Roger van der Kraan

Propulsion Equipment

Rescue vessels, patrol vessels, platform supply vessels and anchor vessels have to show 100 percent performance, even in the most extreme conditions. These so-called 'special seagoing conditions' require propulsion equipment that stands the test.

Rubber Design is a leading specialist when it comes to offering a range of anti-vibration solutions and associated marine propulsion equipment. Especially for the specific part of the marine industry that counts on performance, even running on top speed, in heavy weather and without compromising the comfort of the passengers.

We design, produce, test and deliver custom made solutions. In a very early stage of the development of the vessel we take part in the building process, enabling us to come up with solutions that respond to all the conditions a client may think of.

Products:

TT Mountings • Gearbox Mountings • Marine Couplings • Thrust Bearings





The range of propulsion equipment consists of TT (Thrust Torque) mountings, gearbox mountings, marine and flexible couplings and thrust bearings. Rubber Design can perform a complete dynamic analysis of a vessel's propulsion system in order to select the correct coupling and engine mountings for each application. CAD drawings (2D/3D) of the thrust blocks and ERD marine couplings are available in different formats and can be easily imported into the CAD drawing of the complete propeller shaft installation. All thrust blocks and ERD marine couplings can be delivered with the required classification approval.

Propeller Shaft Installations

Photography: Oceanco

The exclusive yacht building industry is renowned for being one of the most demanding markets when it comes to sound levels, vibration levels and specific needs and wishes of clients.

Our technical expertise, creativity and problem solving capability together with the high level of service make Rubber Design well known throughout the industry. Our team of engineers is usually involved in the early stages of design. This enables us to create unique solutions and incorporate innovative design features to meet the specific needs and requirements of the client as well as numerous classification societies.

Continuous investments in human resources, software and technical equipment allow us to satisfy the extremely high standards that are common in this segment of the maritime industry. Our outstanding track record and vast list of satisfied customers are witness to this.

Products:

Propeller Shaft Installations • Rudder Stock Installations

Rubber Design can supply custom-built propeller shaft installations in either water, oil or grease lubricated form. Together with our integrated thrust bearings, flexible shaft couplings, gearbox and engine mountings we can provide a complete propulsion solution. Our systems are cost effective and of the highest quality and once installed by our field engineers, we provide service and maintenance support throughout the world either by on site supervision or by completely carrying out all activities.

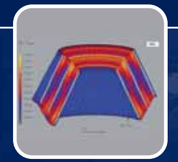
Research & Development

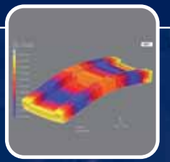
‘Any problem can be solved’, is our watch-word. If the existing products cannot solve the customer’s problem, then Rubber Design will develop a tailor-made solution.

In order to do so our research and development department has a state-of-the-art test lab at its disposal. The possibility to do all kinds of dynamic and acoustic tests in a very early stage of the design process gives us and our customers a great benefit. Because all the knowledge that we gain during the tests stays within the company, we continuously improve our problem solving capacity and our services. Setting new standards every day. The existing products are constantly tested and improved. By exploring new applications and rubber compounds we always keep ahead, pleasantly surprising the market with new and better solutions.

The R&D department works with the most sophisticated CAD and FEA software combined with enhanced computers for design and finite element calculations. Rubber compounds are all tested and the characteristics are implemented in FEA software for the best possible simulation of the characteristics of newly designed anti-vibration mountings.

To test prototypes at static, dynamic and acoustic properties we use static (tension and compression), servo hydraulic and acoustic testing machines. Simulating the real world surroundings as best as possible is done by testing prototypes in a special climate chamber in which tests are performed at different temperatures. Our engineers developed unique equipment to do on site real time measurements of vibration levels and structure borne noise isolation of resilient mounted systems. Another area in which we stand out is the optimation and design for engine rails and intermediate frames of double mounted systems.

Photography: Roger van der Kraan

Production

Due to the unique alliance with the specialized production and engineering company Biezepol, Rubber Design is able to offer the customer a total product.

In the river-based premises both companies have all disciplines under one roof. Design, testing and production through to assembly and logistics all take place in Heerjansdam, which contributes to an efficient running of all the processes. Especially in the case of more demanding products, tailor-made solutions and smaller production runs we strongly believe in the combination between machine, product and employee. Therefore we invest heavily in the skills of our employees and the possibilities and capacity of our machinery. Some products though, need to be produced in ever increasing numbers. That's why we also invest in automation to let computerized robots take care of parts of the production process.





In order to stay competitive Rubber Design constantly improves the quality of its services. Making sure that all our products conform to the high demands of our customers we count on the most modern techniques such as CAD, FE, CNC, laser-optical alignment equipment and vibration measurement and analyzing equipment. The different stages in the production process are accompanied by quality and safety checks as standard. In 1998 Rubber Design obtained ISO 9001 certification. This certification has been replaced by the new version EN - ISO 9001-2000 in January 2004. The certification is valid for the design, development, manufacture and service of all products.

Assembly

Rubber Design pays attention to the tiniest little detail. That's the reason why we do the assembly ourselves. To make sure that all our products are delivered exactly according the customer's demands.

The products we make consist of different components and rubber compounds. In-house assembly helps us to make sure that all products are being manufactured exactly as they were designed on the drawing table. It also increases our flexibility and our capacity to provide tailor-made solutions.

We work with various assembly lines, which are partly automated. But an important part of the process is still being done manually, because nothing replaces the accurateness and know-how of our employees. This goes for the administrative process as well. Rubber Design can take care of the issuing of all the relevant certificates, licenses and permits

In-house assembly helps us control the customer's specific demands as it comes to quality. Whether products are manufactured in large numbers, or tailor-made. Some products are so specific, that the assembly requires very special needs. The propeller shaft installations for example are only custom made. We design, prepare and test them within our premises. Final assembly and installation take place on-site all over the world.