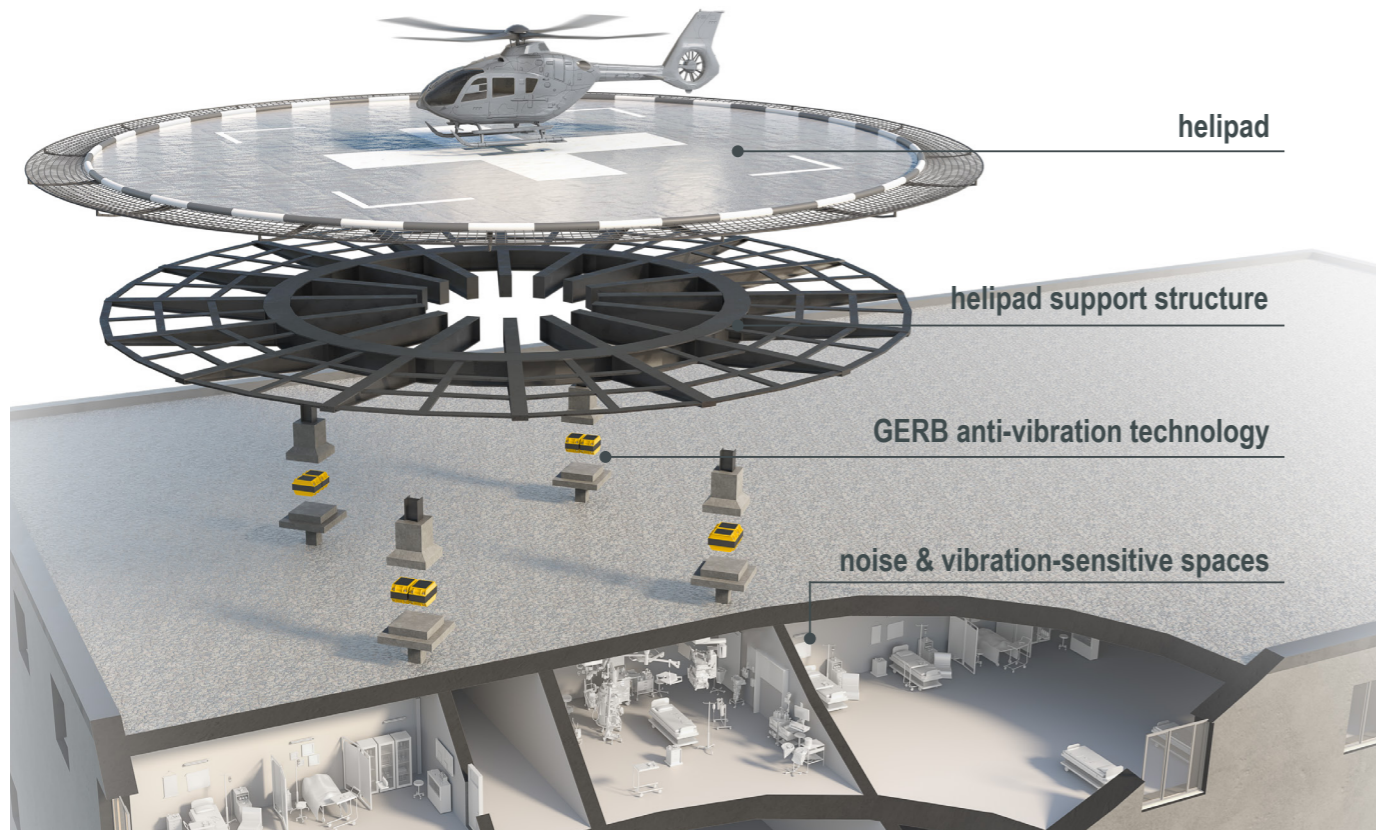


Vibration Isolation of Rooftop Helipads



Elastically isolated rooftop helipads with GERB anti-vibration technology



Mitigation of structure-borne noise and vibrations caused by helicopter approach, landing, takeoff, and idling.

Helipads on buildings are a critical feature of modern infrastructure, providing essential services in various sectors, including healthcare, hospitality, and corporate facilities. However, rooftop helipads are subject to helicopter-induced vibrations, which are transmitted into the building structure and its noise-sensitive spaces (such as operating rooms, hotel and guest rooms, luxury residential or corporate offices).

Helipads are designed to ensure seamless helicopter operations while minimizing disruption to surrounding spaces and activities.

For rooftop helipads, it is important to consider proper vibration protection of the sensitive spaces below and nearby during the design phase - though GERB also offers retrofit solutions for vibration isolation of existing helipads.

Significant levels of vibration in the helipad structure are caused during helicopter approach, touchdown, takeoff, and idling.

Established in 1908, GERB is a global leader in vibration control solutions and provides state-of-the-art solutions to address the challenges of helicopter-induced vibrations, ensuring safe and functional building operations.

GERB offers a wide range of vibration isolation solutions and engineering services

Helicopter operations generate strong downwash and vibrations that can resonate with the structural components of a building. The intensity and frequency of these vibrations depend on several factors:

- » Rotor blade speed and quantity of blades: Helicopters with two rotor blades can generate excitations up to 11 Hz.
- » Altitude of helicopter: The altitude at which the helicopter hovers or lands influences the vibration patterns.

The resulting vibration can drastically impact the functionality of the building beneath the helipad, making effective vibration isolation necessary.

To ensure the usability of spaces beneath helipads and to prevent disturbances to nearby operations, GERB offers advanced vibration isolation solutions through elastic mounting systems.

GERB offers:

- » Standard & tailored solutions
- » Installation and supervision service worldwide
- » Site measurements and verification
- » Static and dynamic structural engineering support

Key Performance Characteristics:

- » Effective vibration isolation: A tuning ratio of at least 3.0 is recommended to achieve 87.5 % or more isolation efficiency. For example: To counter an 11 Hz excitation frequency, an isolator support frequency of approximately 3.5 Hz is required.
- » Tailored solutions: Our solutions are adaptable to different structural designs, suitable for both new construction and retrofit of existing helipads, and ensure optimal vibration isolation regardless of the specific design or construction method.

Benefits

- » Highest attenuation performance
- » Highest reliability and durability
- » Maintenance-free
- » Prestressable for easy installation
- » Replaceable



Installed GERB spring elements on a hospital roof

Versatile solutions for any platform design



Rooftop hospital helipad supported by GERB isolators

GERB spring elements prevent the transmission of vibrations by elastically supporting the platform and decoupling it from the building structure



Effective vibration isolation:

GERB provides tailored solutions for any type of helipad structure or condition: from lightweight aluminum to heavy concrete platforms, from new construction to retrofit, and suitable for various geographical climates.

Common rooftop helipad types:

- » Concrete Platforms
- » Steel Platforms
- » Aluminum Decks
- » Composite Structures

Design considerations:

For proper vibration isolation design of helipads, the following considerations are critical (not limited to):

- » **Weight Sensitivity:** Lighter platforms are more wind-sensitive, potentially causing tensile forces that need to be managed through secure bolting.
- » **Mass and Stiffness of Helipad:** Lightweight helipads typically present multiple vibration modes that need to be considered when designing the vibration isolators
- » **Damping Requirements:** GERB provides a range of damping solutions tailored to the specific needs of each project, offering flexibility in selecting the most effective method for optimal vibration control.

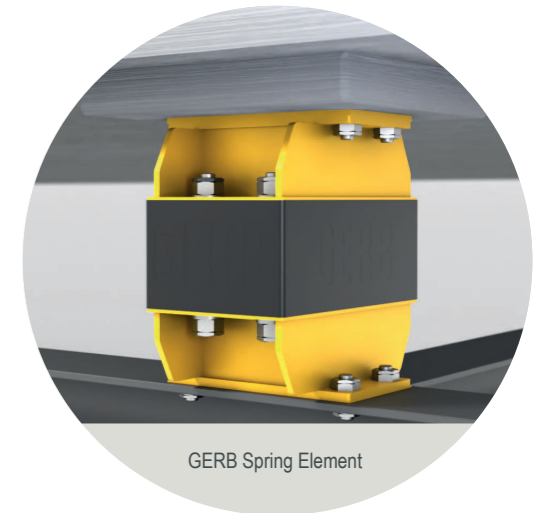
GERB's Custom Solutions

Helical steel springs

Ideal for achieving natural frequencies as low as 1 Hz, GERB steel springs provide resilient support and exceptional isolation. Depending on the project's design and performance requirements, GERB spring isolators can be provided in a variety of different sizes, formats, and with varying features.

Steel spring elements can absorb forces from all spatial directions. GERB's prestressable spring bearings can be factory-preloaded to the project's design load, which results in virtually no vertical displacement during construction of the helipad and also makes them suitable for retrofit applications. Preloaded elements can be considered as „fixed bearings“ during installation.

Even after installation, GERB's prestressable spring elements remain height-adjustable and replaceable. For protection of uplift or lateral forces, these elements can be bolted to the building structure and helipad structure for a secure connection.



GERB Spring Element

NOVODAMP®

Typically used for higher tuning frequencies, NOVODAMP® is a flexible and effective isolation solution. Contrary to steel coil springs, NOVODAMP® is an elastomeric material and provides different static and dynamic characteristics. Whether a GERB solution with steel coil springs or with NOVODAMP® is the better choice, depends on the project-specific requirements, such as targeted isolation efficiency, damping, replaceability, climate conditions, and others.

NOVODAMP® takes the lead in pad solutions being unrivalled with 15 different options, precision cuts and 5 mm splits. Each material type is a testament to our commitment to innovation.



GERB NOVODAMP® pads



Helipad under construction on a hospital roof

Spring-supported rooftop helipad on a hospital in Bydgoszcz, Poland



Spring supported helipad in Bydgoszcz

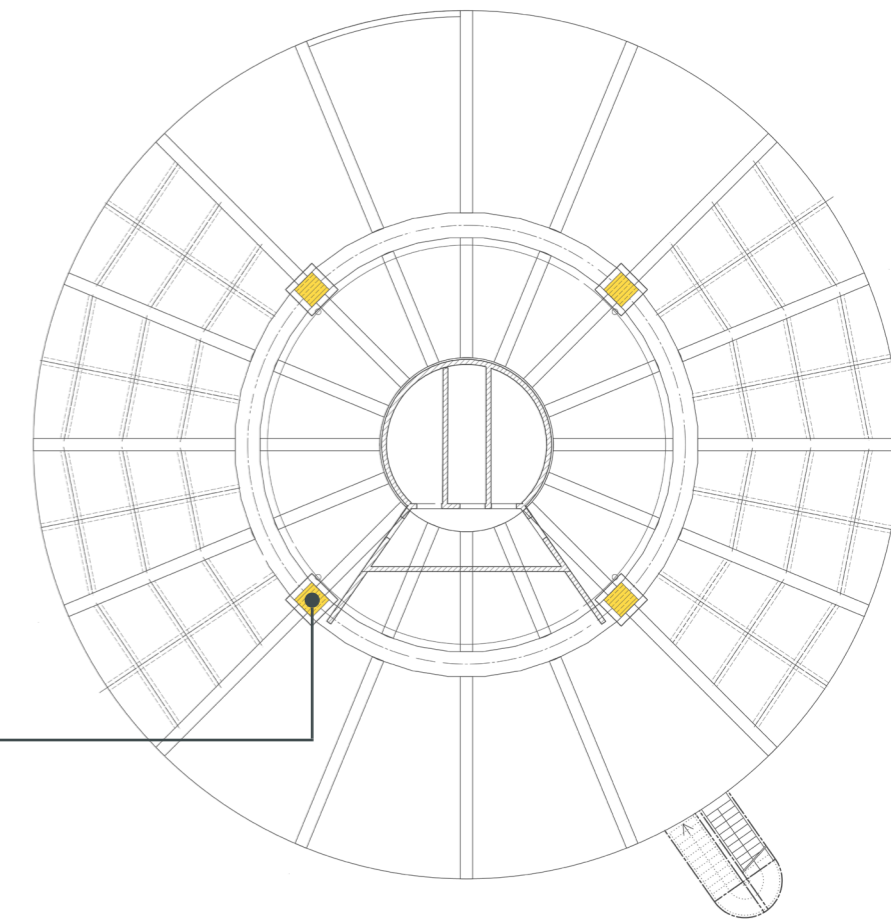
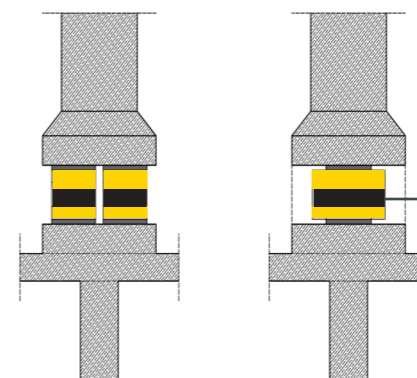
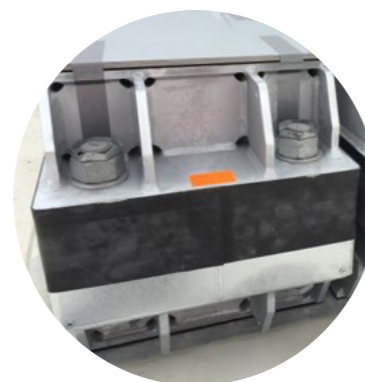


GERB Spring Element in detail



Rooftop helipad in a hospital in Bydgoszcz

Spring-supported rooftop helipad on a surgical clinic in Heidelberg, Germany

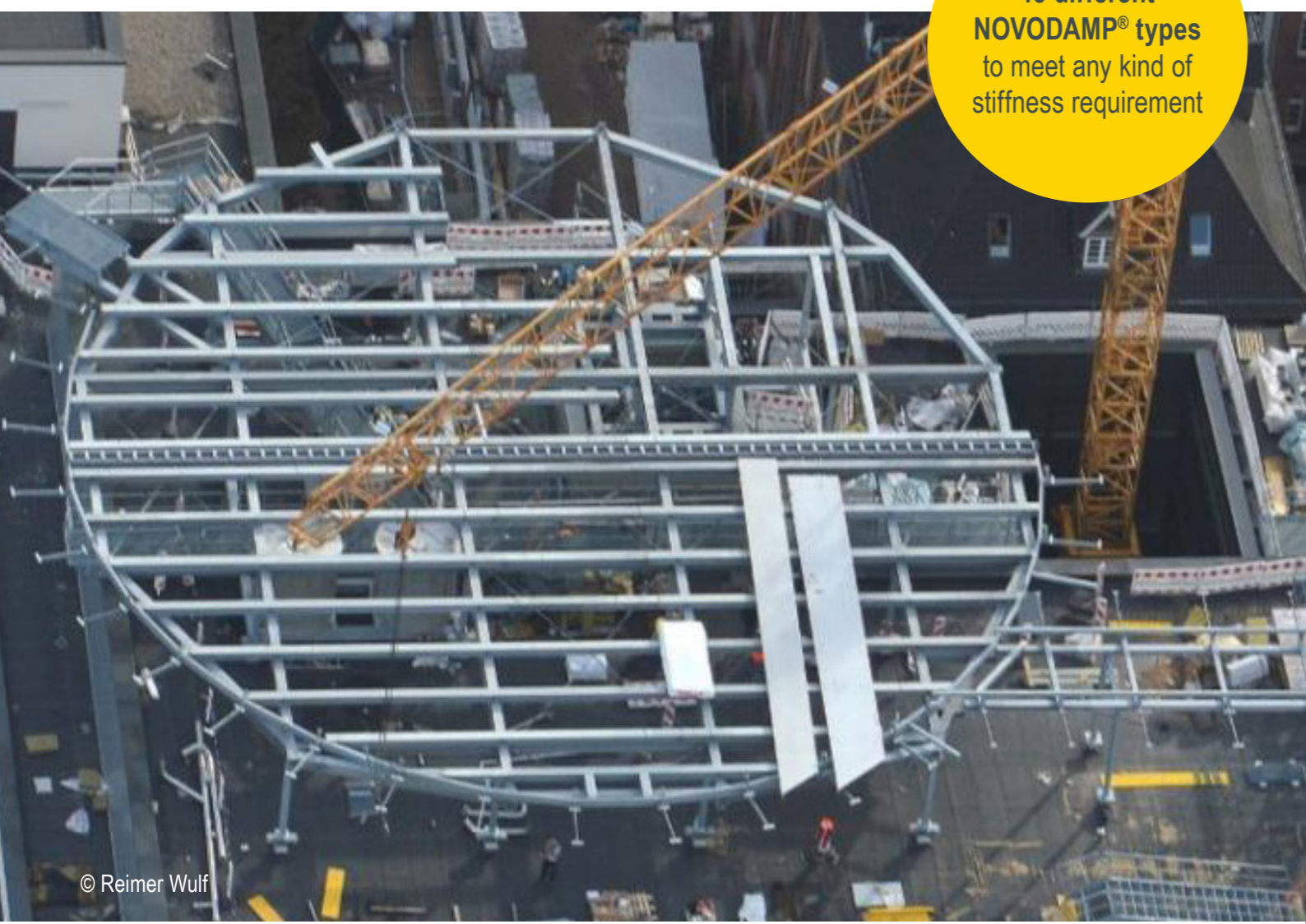


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Rooftop helipad in a surgical clinic in Heidelberg

NOVODAMP® for rooftop helipad in Neumünster, Germany

15 different NOVODAMP® types to meet any kind of stiffness requirement



© Reimer Wulf

Excerpt of helipad projects:

Country	Project	Location	Platform Structure
China	Helicopter transfer	Macau	Steel
Finland	Hospital	Helsinki	Steel / Concrete
	Hospital	Jyväskylä	Steel / Concrete
	Hospital	Espoo	Steel / Concrete
France	Hospital	Dunkerque	Concrete
	Hospital	St. Tropez	Steel / Concrete
	Hospital	Nantes	Steel / Concrete
	Hospital	Caen	Concrete
	Hospital	Corbeil-Essonne	Concrete
	Hospital	Chalon sur Saone	Steel / Concrete
	Hospital	Vichy	Steel / Concrete
	Hospital	Lorient	Steel / Concrete
	Hospital	Bagnols sur Ceze	Steel / Concrete
	Hospital	Marseille	Steel / Concrete
	Hospital	Cannes	Steel / Concrete
	Hospital	Grenoble	Steel / Concrete
	Hospital	Meaux	Steel / Concrete
Germany	Hospital	Valence	Steel / Aluminium
	Hospital	Hannover	Concrete
	Hospital	Braunschweig	Concrete
	Hospital	Heidelberg	Concrete
Poland	Hospital	Neumünster	Concrete
	Hospital	Bydgoszcz	Concrete
	Hospital	Olsztyn	Steel
Switzerland	Hospital	Torun	Concrete
	Hospital	Sion	Steel / Aluminium
Turkmenistan	Hotel	Ashgabat	Steel / Concrete



Rooftop helipad in a hospital

Source: Visualisierung FEK

novodamp.gerb.com/app/home



Discover our online NOVODAMP® Designer for your design and more product data:

About GERB

– Your single source of expertise

With locations worldwide, GERB is a full-range provider and your professional partner for engineering, manufacturing and supplying vibration isolation solutions. Our service covers all phases of your project, from structural dynamic analyses, dynamic measurements, project-specific product development, to the installation of our products and inspections.



Consulting

We offer comprehensive consulting: from simplified dynamic calculations and measurements to complete calculations with numerical models.



Engineering

Our **GERB Engineering** division is at your disposal for further structural dynamic analyses. Our specialist engineers deal with all problems of vibrational dynamics: From feasibility studies to execution design, drawings, planning and construction supervision.



Research & Development

In addition to a wide range of standard elements, our products are tailor-made to project- or customer-specific requirements. New developments are constantly advanced and project-specific tests are carried out. We also accompany you in the approval process through in-house or third-party testing.



Manufacturing

We maintain the highest quality standards in all of our 5 production facilities. We are able to produce according to various standards and requirements and hold the necessary quality certificates.



Installation Supervision & Assembly

We offer installation of our elements and on-site supervision, as well as inspections of existing installations.



Made in Germany.
Since 1908.
Worldwide.



Interested in detailed information
or individual consulting service?

Please contact us!

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VIBRATIONS CAN BE CONTROLLED
– WHEREVER THEY OCCUR