



Building Systems



Facts & Figures

Offices and Warehouse:

Rho (MI), Italia

Year of establishment:

1968

Ownership:

Fatigati family

Employees:

32

Associated companies:

1

Turnover 2020:

≈ € 10,0 mio



Quality Management System



MANAGEMENT SYSTEM CERTIFICATE

Certificate no.: CERT08910-2001-AG-ML-SINCERT Initial certification date: 18 July 2001 Valid: 24 July 2021 – 23 July 2024

This is to certify that the management system of
PANTECNICA S.p.A.
Via Magenta, 77/14 A - 20017 Rho (MI) - Italy

has been found to conform to the Quality Management System standard:
ISO 9001:2015

This certificate is valid for the following scope:
Design and trade, also under own trademark, of anti-vibration Systems, fluid seal systems and technical industrial items (IAF 29, 14, 17)

Place and date:
Vimercate (MB), 04 February 2022



ACCREDIA
CONFERMAZIONE ACCREDITAMENTO

For the issuing office:
DNV - Business Assurance
Via Energy Park, 14 - 20871 Vimercate (MB) - Italy

Claudia Baricelli
Claudia Baricelli
Management Representative

Lack of fulfillment of conditions as set out in the Certification Agreement may render this Certificate invalid.
ACCREDITED UNIT: DNV Business Assurance Italy S.r.l., Via Energy Park, 14 - 20871 Vimercate (MB) - Italy - TEL: +39 03 99 9105 - www.dnv.it



MANAGEMENT SYSTEM CERTIFICATE

Certificate no.: 119652-2012-AG-ITA-ACCREDIA Initial certification date: 19 July 2012 Issue Date: 19 July 2021 Expiry Date: 18 July 2024

This is to certify that the management system of
PANTECNICA S.p.A.
Via Magenta, 77/14 A - 20017 Rho (MI) - Italy

has been found to conform to the Quality Management System standards:
EN 9120:2018 and ISO 9001:2015
(technically equivalent to AS9120B and SJAC9120:A)

and has been audited in accordance with the requirements of EN 9104-001:2013 and ACCREDIA Technical Regulation RT-18.

Type of certification structure: Single Site

This certificate is valid for the following scope:
Parts and materials marketing for aviation, space and defense industry.
Commercializzazione di parti e materiali per l'industria aeronautica, dello spazio e della difesa.

IAF Sector(s) : 29, 14, 17

Place and (re-)issue date:
Vimercate (MB), 16 July 2021



ACCREDIA
CONFERMAZIONE ACCREDITAMENTO

For the accredited unit:
DNV - Business Assurance
Via Energy Park, 14 - 20871 Vimercate (MB) - Italy

Zeno Beltrami
Zeno Beltrami
Management Representative

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Cluster & Associations



ADERENTE AL SISTEMA
CONFEDERALE



Corporate Social Responsibility



Who we are what we do

Technical and application engineering consultancy for the design, development, production and supply of systems and components for the isolation and damping of vibrations and impacts in any type of industrial application, in addition to some specialized civil environments, and fluid sealing systems and components, also with a certification of materials and process systems



Application know-how

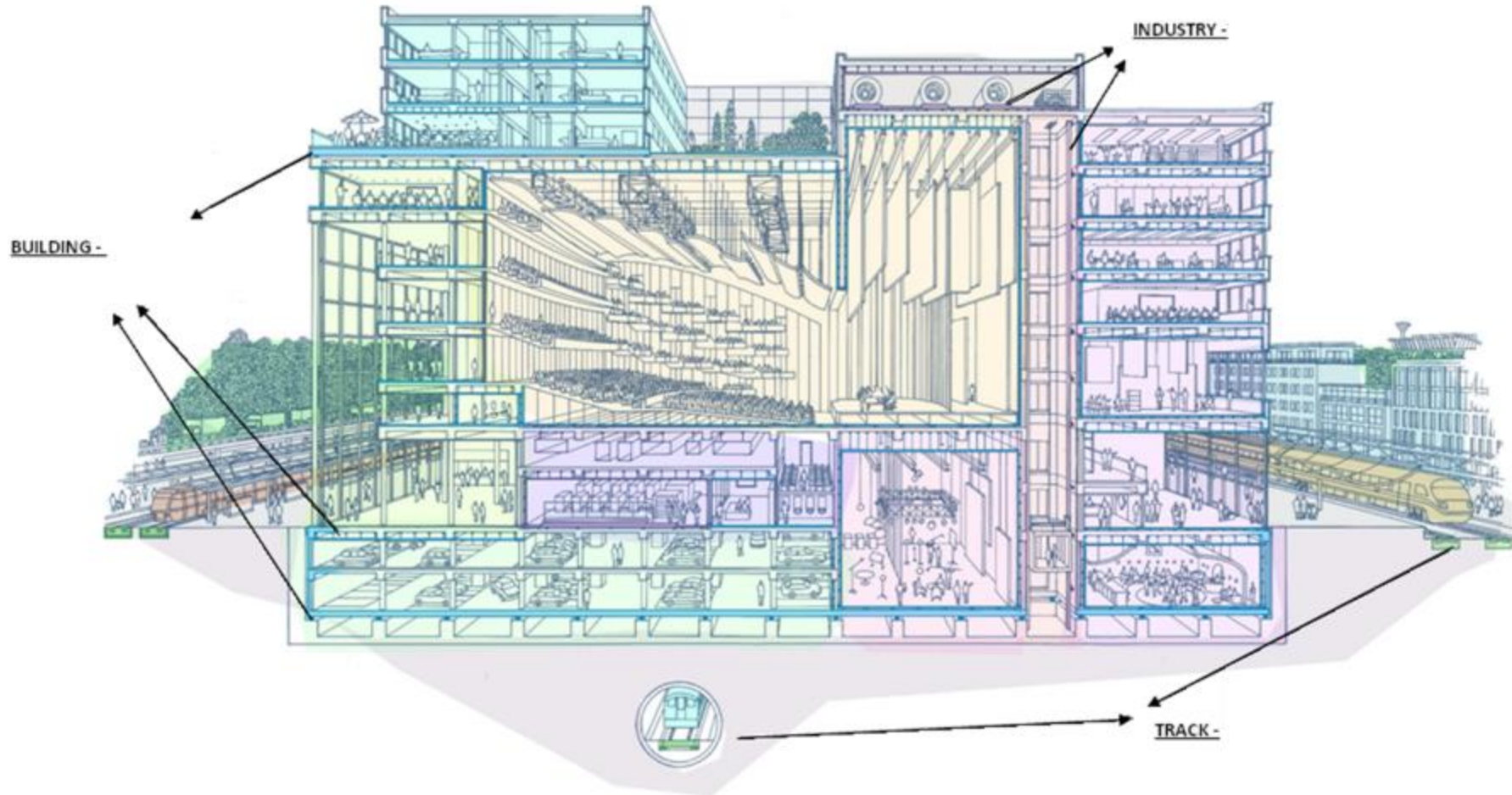


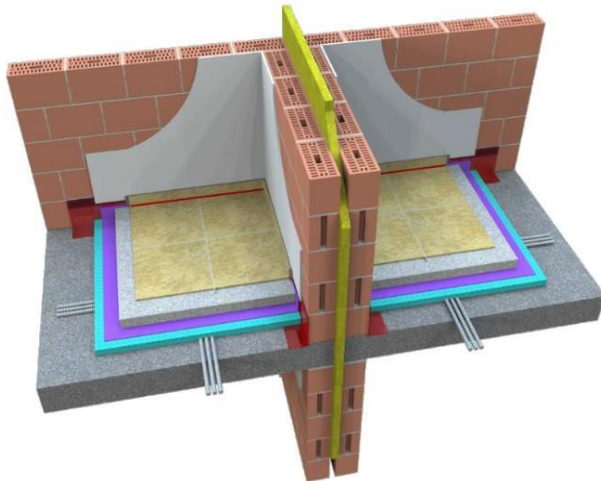
TABLE OF CONTENTS

- *Floor solutions*
- *Wall solutions*
- *Ceiling solutions*
- *Case studies*

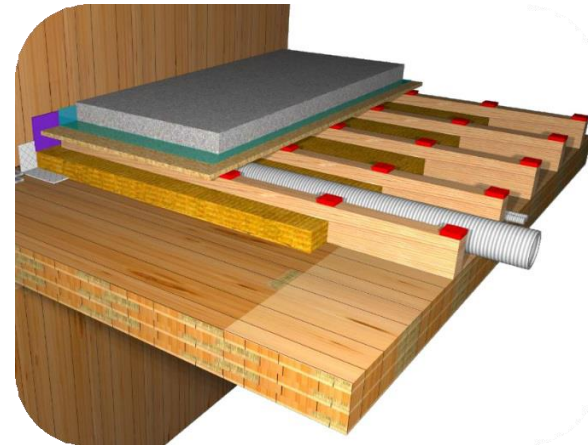


Floor solutions

Full surface solutions



Discrete solutions



Floor solutions Characteristics

Full surface solutions

- Elastic layer is continuous under floating floor = every m² of elastic layer is loaded with a m² of floating floor mass
- Natural frequencies above 20Hz
- Simple and fast
- Low risk of errors

Discrete solutions

- Upper floor mass is “assembled” to point loads that are put on elastic pads
- Lowest natural frequencies (4Hz to 15Hz)
- Best performances
- Careful installation required
- Applicable for most critical situations

Floor solutions Products

Full surface solutions

- **StraviFloor Mats**
- **StraviGym**

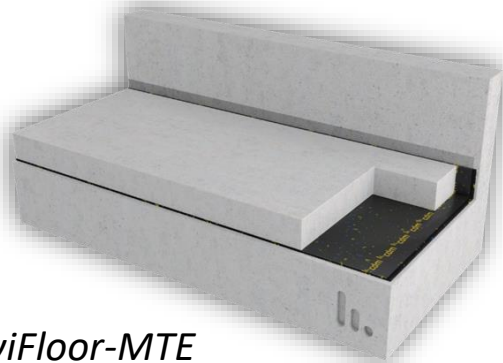
Discrete solutions

- **StraviFloor Jackup-R**
- **StraviFloor Deck**
- **StraviGym**

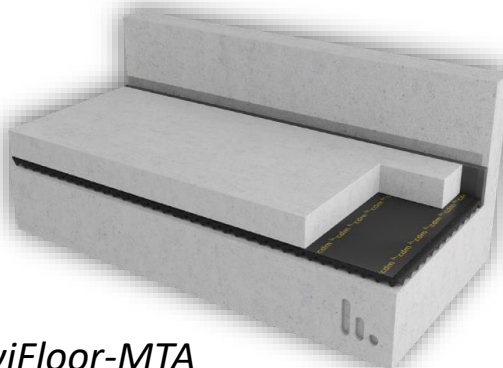


Floor solutions

StraviFloor Mats



StraviFloor-MTE



StraviFloor-MTA

- StraviFloor Mats come in many material types and thicknesses
- Some of the standard materials used in the residential and hotel marketplace:
 - StraviFloor-MTE-3: 3mm regenerated crumb rubber, an extremely thin layer
 - StraviFloor-MTE-4.5: 4.5 regenerated crumb rubber
 - StraviFloor-MTA/X-8/4: 8mm thick profiled resin-bonded rubber mat usually used for isolating screeds
 - StraviFloor-MTA/X-15/7: 15mm thick profiled resin-bonded rubber/poliurethane mat usually used for isolating screeds where high isolation performance is needed

Floor solutions

StraviFloor Mats

- Features:
 - Cost effective
 - Quick and easy to install – no gluing to structural floor is needed
 - Effective over the entire load range
 - Low creep and good performance over lifetime
 - Very low installation height – applicable in renovation works



StraviFloor-MTX

Floor solutions

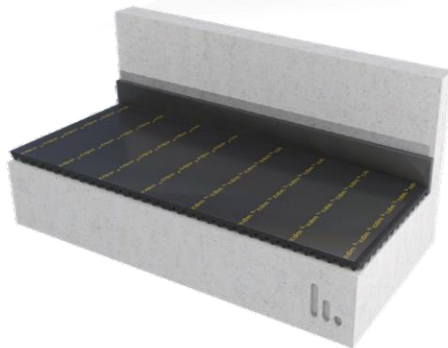
StraviFloor Mats



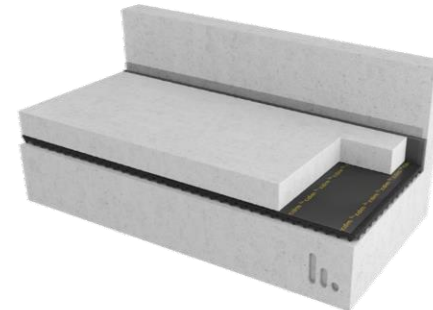
Step 1: install perimeter strip



Step 2: Install StraviFloor Mat with minimal gaps



Step 3: install protection foil with taped seams or overlap zones (> 100mm)



Step 4: pour screed over PE foil

Floor solutions

StraviFloor Deck



- For concrete and light wooden construction
- Can be changed to meet the project specifications (natural frequency, damping requirements, L_{nw} (IIC) or R_w (STC))
- High bending stiffness specifically for both restricted build-up height and limited extra weight applications
- Very thin concrete floating slabs without extra reinforcement can be made
- Formwork and reinforcement in one single plate



Floor solutions

StraviFloor Deck



Step 1: install Perimeter strip



Step 2: Install StraviFloor Deck profiles



Step 3: Lay down mineral wool in
between profiles – no wool under lats!



Step 4: install metal profiles around
perimeter



Step 5: lay down steel deck profiles
and seal perimeter

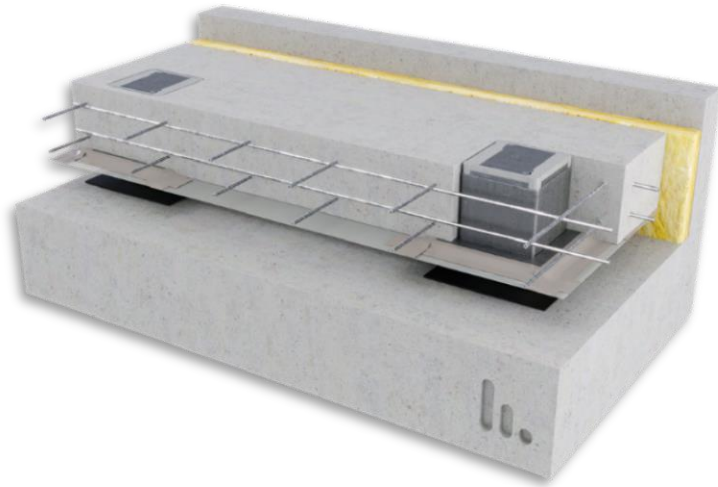


Step 6: pour concrete

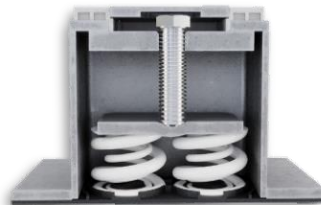
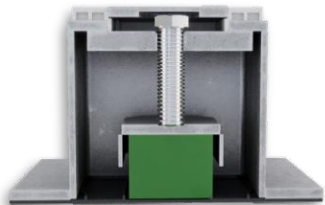


Floor solutions

StraviFloor Jackup-R

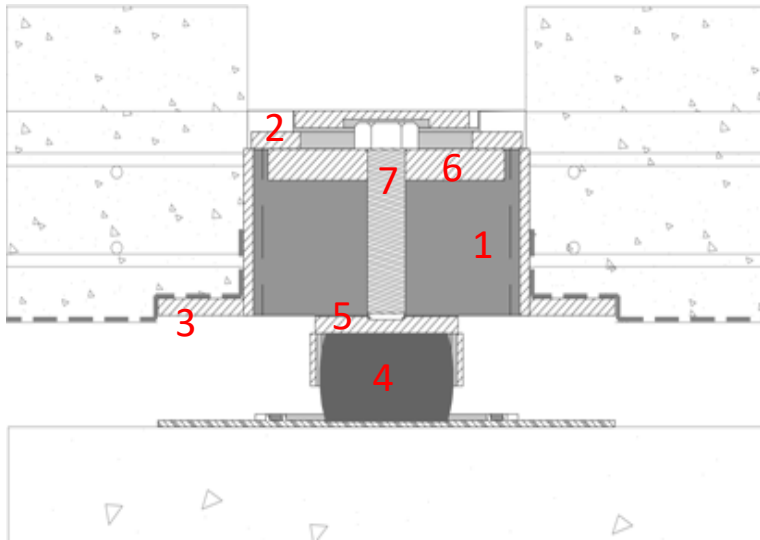


- Can be provided with elastomer bearings giving a natural frequency of <10Hz, or spring mounts giving a natural frequency of 4.5Hz at design load
- Isolators can be adapted per box to cope with different loads (surface/line/point)
- Standard box heights of 100mm, 150mm and 200mm
- Jack-up heights from 20mm to 300mm possible
- Springs or elastomers are easily accessible after installation
- All adjustments can be made without lowering the floor slab
- Steel elements are centrifugal hot dip galvanised



Floor solutions

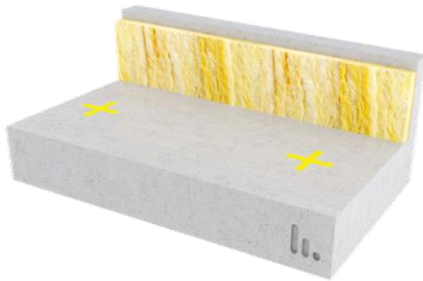
StraviFloor Jackup-R



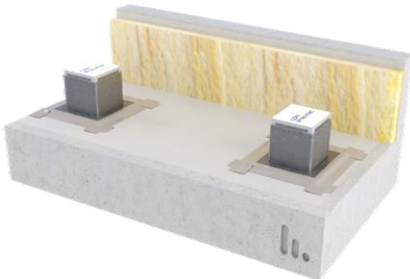
1. StraviFloor Jackup-R box
2. Cover plate
3. Bottom plate
4. Isolator = elastomer or spring
5. Spring plate or bearing cap
6. Adjustment plate
7. Bolt

Floor solutions

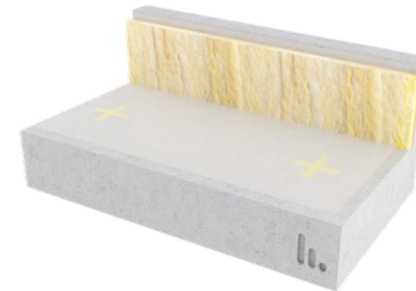
StaviFloor Jackup-R



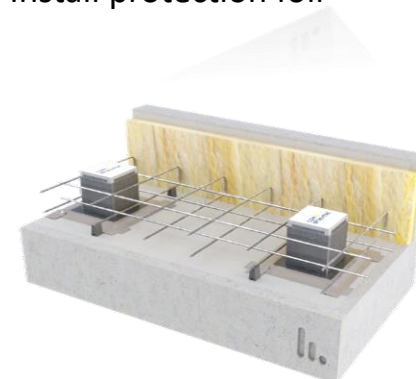
Step 1: install Perimeter Strip strip and set out StaviFloor Jackup-R positions



Step 3: install StaviFloor Jackup-R boxes and tape protection foil over the boxes



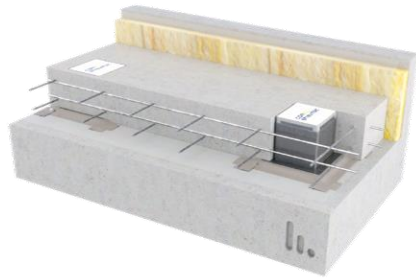
Step 2: Install protection foil



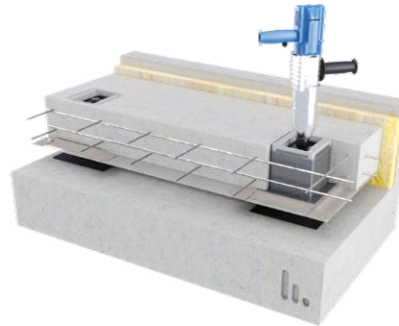
Step 4: silicone cover plates and install reinforcement grid

Floor solutions

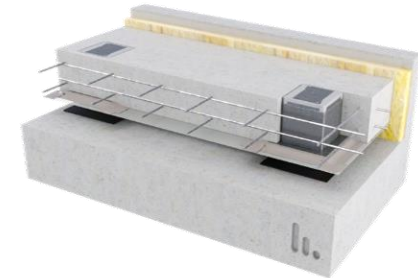
StaviFloor Jackup-R



Step 5: pour concrete



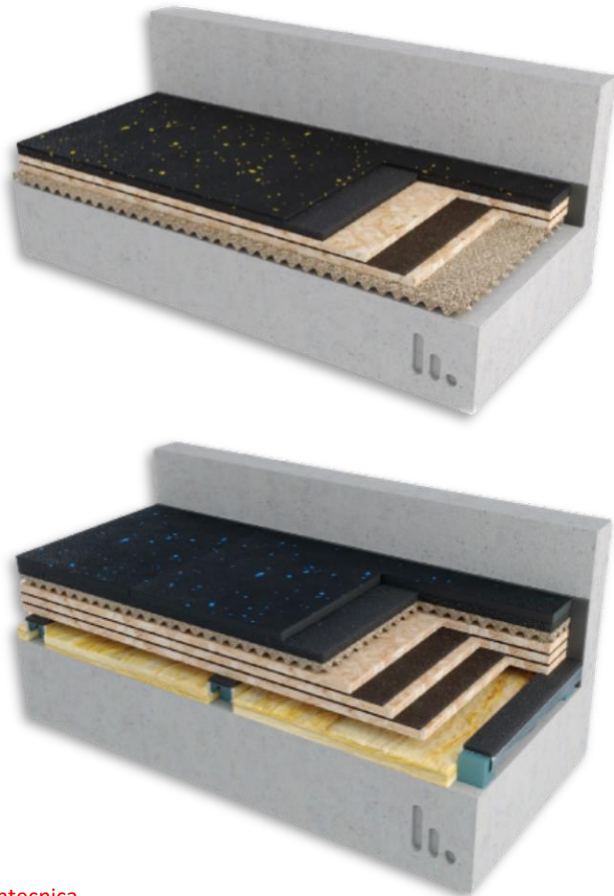
Step 6: open boxes and jack the floor by using grease on the bolts (sequence to be planned with our advice and potential supervision)



Step 7: close the StraviFloor Jackup-R boxes

Floor solutions

StraviGym



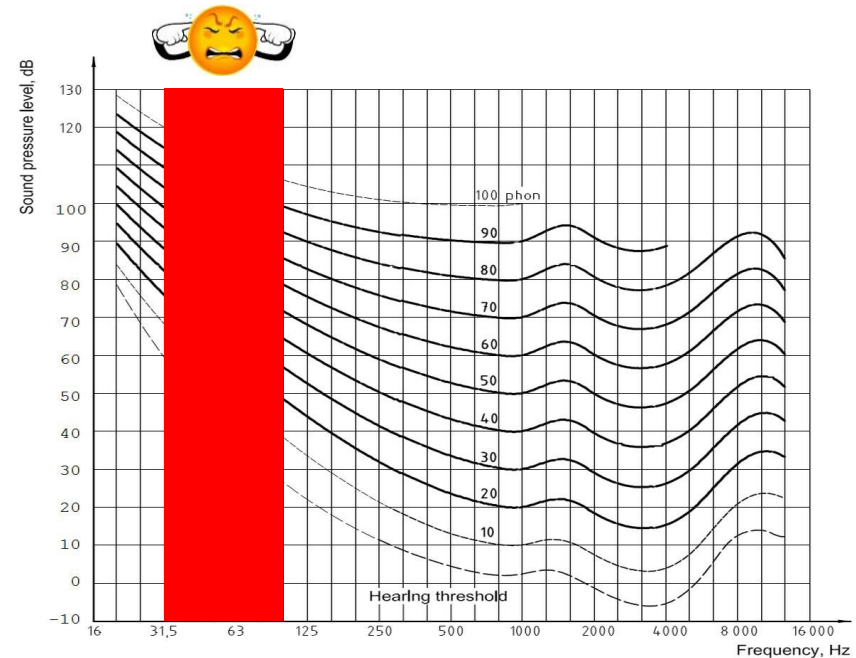
- Continuous support floating floor or discrete support floating floor
- Extremely high performances with dry floating floors possible
- Installation depths ranging from 100mm to 160mm
- Quick and easy installation
- Compatible with all floor covering types, especially roll-out and seamless PUR systems
- Cost effective high performance solution
- If required StraviGym can be easily dismantled and reinstalled at another venue



Floor solutions

StraviGym

- Gym applications = low-frequent noise
- Low frequent noise = annoying
- Gym applications: present acoustic norms and guidelines and present testing devices do not cover this frequency range

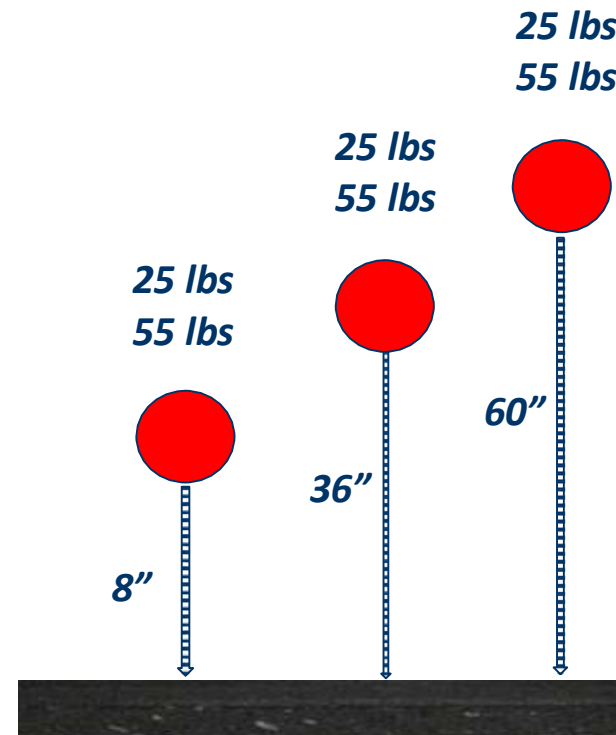




Floor solutions

StraviGym

- Riverbank tests:
 - Tests performed on ± 10 full system setups (resilient layer, floating floor, finishing)
 - IIC evaluation (STC was not possible)
 - Weight drop tests (different energy levels / lower frequencies):
 - Noise evaluation in RR
 - vibration levels on structural slab



Floor solutions

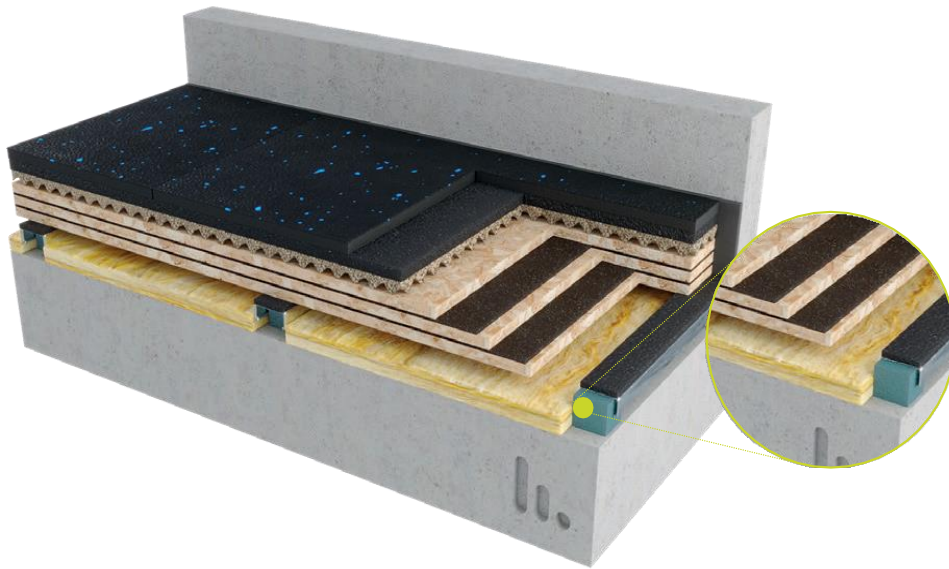
StraviGym

- Influence of some factors:
 - Floor covering (impact tile versus no impact tile) → 14dB
 - Support type (pads versus mat) → 4dB
 - Pads thickness 30mm versus 50mm → 2dB
 - dBooster vs no dBooster → 2dB
- **dBooster™** is not specially relevant on IIC but on weight drop tests showed a better performance and a more homogeneous behavior for the different energy levels

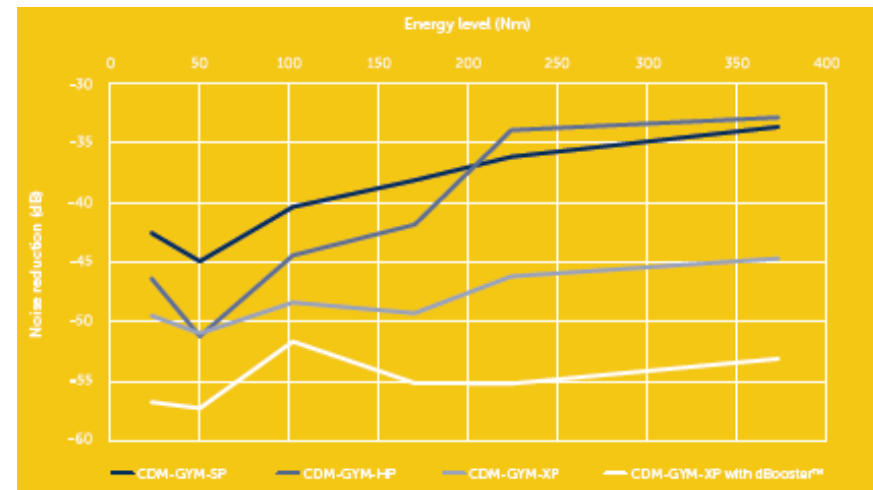


Floor solutions


StraviGym



- **dBooster™ Technology**
 - Innovative concept
 - Makes gym floor performance less dependent on energy impact level

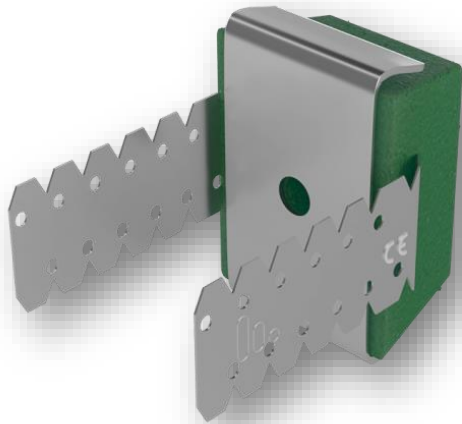


Wall Solutions

- 
- **StraviLink QR**
 - **StraviLink QRW**
 - **StraviLink WH**
 - **StraviLink WALLBATTEN**
 - **StraviLink RHD**
 - **StraviLink Wall-Strip**
 - **StraviLink Wall-Fix**

Wall solutions

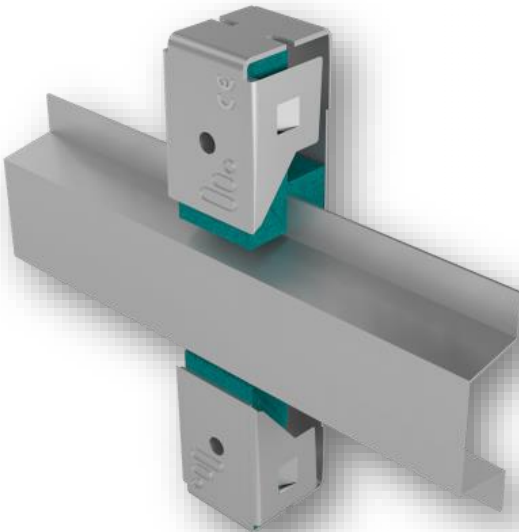
StraviLink QR



- Can be used for supporting walls and ceilings
- Minimum void depth 50mm
- Standard wall fixing (StraviLink QR-150) designed to take maximum 10kg lateral force per fixed leg
- Steel elements are Zinc plated
- Resilient strips are available to decouple the isolated wall from the supporting floor and adjacent walls

Wall solutions

StraviLink QRW

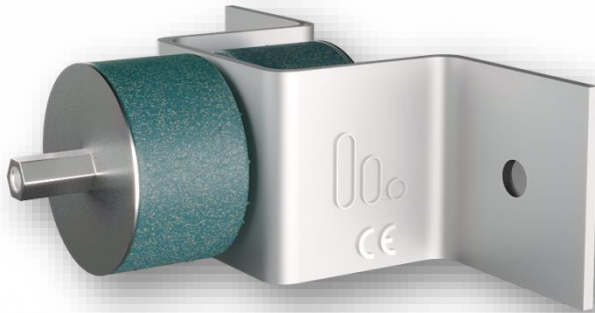


- Suited to decouple drywall furring channel from supporting structure
- Profiles are mechanically fixed to wall to ensure that furring channel cannot escape
- Steel elements are Zinc plated
- System comes optionally with perimeter isolation strip to isolate the perimeter of the wall from the surrounding structures



Wall solutions

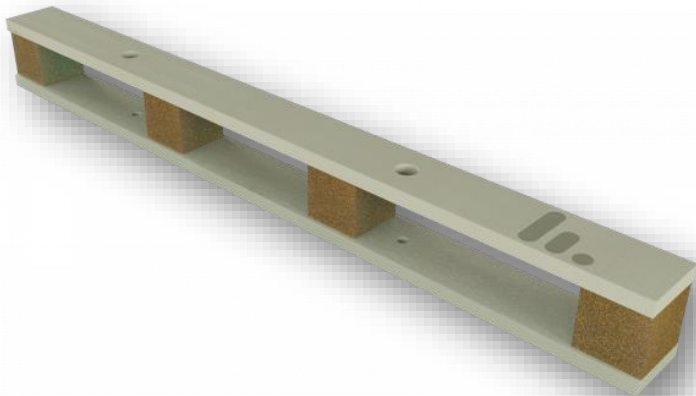
StraviLink WH



- Fixings can be adapted to wall type
- Minimum void depth between walls is 60mm
- Standard wall tie (StraviLink WH-350) is designed to take maximum 50kg lateral force
- Can be adapted to meet different void depths and lateral forces
- Steel parts are Zinc plated
- For optimum results resilient strips should be used to provide isolation between the decoupled wall and the non-isolated structure

Wall solutions

StraviLink WALLBATTEN



- Standard thicknesses are 56mm and 96mm
- Other thicknesses available to order
- A resilient strip should be installed to support the base of the wall and to decouple the perimeter of the wall

Wall solutions

StraviLink RHD



- Can be designed to provide head restraint for any type of wall construction
- Can be designed not to compromise the natural frequency of the isolation strip supporting the base of the wall
- Can be used in combination with floating floors, wall isolation and isolated ceilings to create box-in-box constructions
- Steel parts are hot dip galvanized



Wall solutions

StraviLink WALL-STRIP



- High load capacity, offering a wide range of workloads
- Tuned dynamic performance versus static stiffness
- Structural function by decreasing cracks effects on the wall
- Excellent resistance to alkaline water environment (direct contact with wet concrete)
- Excellent adhesion to materials such as gypsum and concrete due to its rugged surface, ensuring an excellent lateral stiffness
- Excellent long term behaviour (low creep / differential deflection)
- Standard thicknesses of 5 and 10mm
- Standard widths of 130 and 200 mm (other widths available on request)


Wall solutions

StraviLink WALL-FIX



- Natural frequencies of >10Hz achievable
- Can be used in combination with floating floors and isolated ceilings to create box-in-box constructions
- Can be used at the top of studwork walls to provide an isolated top restraint
- Holes that are at least twice the diameter of the fixings used to fix the base stud down are required to allow the fixings to be installed without touching the base stud and bridging the isolation

Ceiling Solutions

- 
- A thick red vertical line.
- **StraviLink PHS-S**
 - **StraviLink PHS-S**
 - **StraviLink PHR**
 - **StraviLink CC40-CC60**
 - **StraviLink QRC**
 - **StraviLink PSJ & PRJ**

Ceiling solutions

StraviLink PHS-S



- Standard hangers are:
 - StraviLink PHS-S-150: 10-20kg per hanger
 - StraviLink PHS-S-350: 20-45kg per hanger
 - StraviLink PHS-S-600: 40-90kg per hanger
- Natural frequency between 12 and 18Hz
- Can be used to support most suspended ceiling systems
- Variable void depths are achievable, hanger depth is 50mm
- Steel elements are Zinc plated
- For optimum results a resilient perimeter strip should be used to provide lateral isolation between the suspended ceiling and adjacent walls



Ceiling solutions

StraviLink PHS



- Standard elastomer hangers are as follows:
 - StraviLink PHS-150: 100-250N per hanger (10-25kg)
 - StraviLink PHS-500: 250-600N per hanger (25-60kg)
 - StraviLink PHS-1000: 500-1500N per hanger (50-150kg)
 - StraviLink PHS-1500: 1000-2000N per hanger (100-200kg)
- Natural frequency at design load between 8 and 10Hz
- Can be used to hang down most suspended ceiling systems
- Steel elements are Zinc plated
- To be used perimeter isolation strip to isolate the perimeter of the ceiling from the surrounding structures



Ceiling solutions

StraviLink PHR



- Standard spring hangers are as follows:
 - StraviLink PHR-80: 50-100N per hanger (5-10kg)
 - StraviLink PHR-250: 150-350N per hanger (15-35kg)
 - StraviLink PHR-500: 250-600N per hanger (25-60kg)
 - StraviLink PHR-1000: 500-1500N per hanger (50-150kg)
 - StraviLink PHR-2000: 1500-2500N per hanger (150-250kg)
- Natural frequency at design load 4Hz for spring hangers
- Can be used to hang down most suspended ceiling systems
- Steel elements are Zinc plated, springs are powder coated
- To be used perimeter isolation strip to isolate the perimeter of the ceiling from the surrounding structures



Ceiling solutions

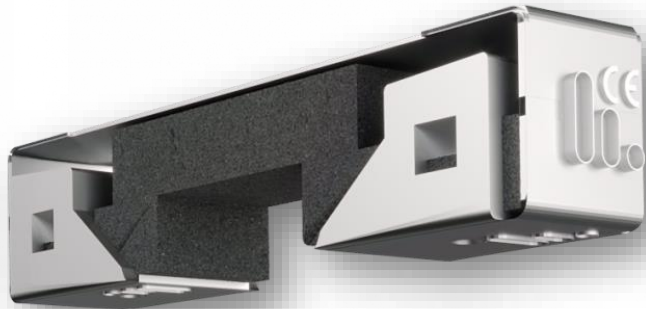
StraviLink CC40 & CC60



- Hangers can be ordered in two different stiffnesses:
 - StraviLink CC60-150/ StraviLink CC40-150: 10-20kg per hanger
 - StraviLink CC60-350/ StraviLink CC40-350: 20-45kg per hanger
- Natural frequency between 12 and 18Hz
- System comes optional with an elastomer washer to allow direct fixation to the ceiling
- Variable void depths are achievable; StraviLink CC60 hanger depth is 47mm, StraviLink CC40 hanger depth is 40mm
- Steel elements are Zinc plated
- For optimum results resilient perimeter strips should be used to provide lateral isolation between the suspended ceiling and adjacent walls

Ceiling solutions

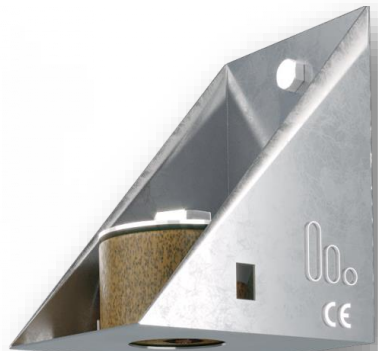
StraviLink QRC



- Profiles are mechanically fixed to ceiling to ensure that ceiling profile cannot escape
- Steel elements are Zinc plated
- System comes optionally with perimeter isolation strip to isolate the perimeter of the ceiling from the surrounding structures

Ceiling solutions

StraviLink PSJ & PRJ



- Standard elastomer hangers are:
 - CDM-PSJ-150: 10-20kg per hanger
 - CDM-PSJ-350: 20-45kg per hanger
- Standard hangers spring hangers are:
 - CDM-PRJ-80: 5-10kg per hanger
 - CDM-PRJ-250: 10-35kg per hanger
 - CDM-PRJ-500: 25-60kg per hanger
- Natural frequency at design load between 12 and 18Hz (elastomers) and 4Hz (springs)
- Can be used to hang down most suspended ceiling systems
- Steel elements are Zinc plated, springs are powder coated
- System comes with perimeter isolation strip

Case study

StraviFloor MAT – KATTENDIJKDOD ANTWERP

- 3000m² StraviFloor Mat

Careful installation of perimeter strip around all columns, pipes, ...



Fully covered by PE-foil



Installation with minimal gaps

Case study

StraviFloor Mat – MYRIAD



- StraviFloor MTE-4.5

Perimeter strip can be PERIMETER or StraviFloor Mat pulled up against wall

PE-foil can be replaced by taped joints for dense materials

Case study

StraviFloor Deck – BBC W1 TECHNICAL BOXES

- 1500 m² StraviFloor Deck studios



Carefull shimming of each pad (by using CDM-71 pads)

Installation of metal angle profile to pour concrete

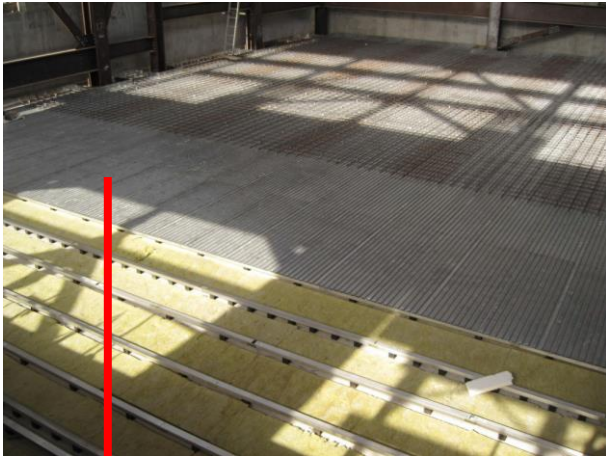


Installation of mineral wool to avoid standing waves in void

Case study

StraviFloor Deck – NYU ABU DHABI

- 2000 m² StraviFloor Deck in 3 auditoria



Installation of decking (one side up, next one down)



Installation of mineral wool to avoid standing waves in void

Installation of extra reinforcement grid for 150mm thick floating floor



Case study

StraviFloor Jackup-R – GOLDRING

- Gym facility – 50mm deflection



Thick floating floor for ultimate performance
– 50mm void to reduce air stiffness in void



Concrete poured – ready for jacking

Case study

StraviFloor Jackup-R – DATA CENTER MURCIA

- StraviFloor Jackup-R for micro-seismic protection



Installation of perimeter isolation and lateral buffers



PE foil on structural slab + taped around boxes

Case Study

StraviFloor Jackup-R – DATA CENTER MURCIA

- StraviFloor Jackup-R for micro-seismic protection



Reinforcement grid (double layer) installed



Floating floor jacked up

Design info

- Design of structural floor
- Thickness of floating floor
- Permanent and variable loads – surface/line/point
- Required sound isolation/impact sound isolation/resonance frequency of the floor
- Available height
- Dimensions of the rooms + use of the rooms

Critical points of attention

- maximize the masses m_1 and m_2
- minimize the connection stiffness K_c
- minimize the contact surface of the connectors: pads vs. mat
- maximize the air layer thickness when discrete setup
- eliminate all possible rigid contacts (perimeter, pipes, columns,...)
- insert void absorption to eliminate standing waves (at $f=n*c/4d$)

Critical points of attention

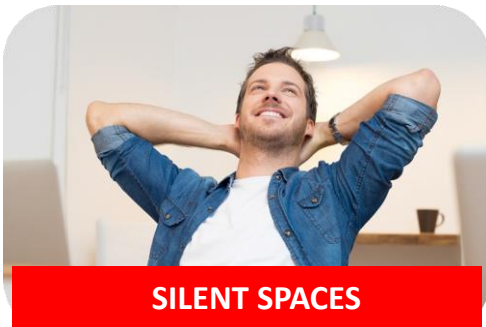
- uniform deflection under m_{ADL} (pads to follow load distribution)
- check existing structural resonances
- Efficiency might be affected by the flexibility of the structural floor. The SDOF spring-mass model is not valid for all cases, especially not when the structural floor has a resonance frequency close to that of the floating floor

Design rules

- Distribution of pads:
 - Take distance of 2 x floating floor thickness from perimeter to place first row of pads – better load distribution and better performance (can be more for StraviFloor Jackup-R)
 - Check always the construction/installation phases
 - Avoid stiff and soft pads next to each other since stiff floating floor will redistribute the loads
 - Avoid using more pads at the corner of the slab even if side walls are supported by floating floor
- Avoid using a floating floor on a flexible or light structure



Applications



1. 1. **WARRANTY**

- 1.1 The content of this document refers expressly to «Pantecnica S.p.A. - Technical Documents Disclaimer - EN -Rev.01» published online, and it is provided for general information purposes only and should not be considered as a binding recommendation.
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2. **OPERATING CONDITIONS' LIMIT VALUES**

- 2.1 The limit values referred to the operating conditions are correlated with each other and must never be reached simultaneously. They are in close relationship both with the correct choice of the Products with respect to the specific application, and with its correct assembly.

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