

n e s i t e



# DATA CENTER FLOOR

NESITE.COM

# THE RAISED FLOOR FOR DATA CENTER

The floor for technical rooms is designed for spaces with the presence of electrical panels or other equipment of considerable weight or with a high connection requirement (e.g., server rooms, data centers). The distinctive aspect of the system is given by the supporting structure, an element with high load capacity and highly flexible in configuration, according to the specific situations (encumbrances, obstacles) present in the underfloor plenum.





# APPLICATIONS

### SERVER ROOMS

Supports high density IT racks. Adaptable accessories for air distribution and cable management. Safe and easy access for maintenance. Options for seismic resistance.

### SERVICE CORRIDORS

Robust design to support heavy equipment handling. Flexible pedestal placement eliminates interference with piping and wiring.

### UPS AND ELECTRICAL ROOMS

Configurable open frames for large electrical cables. Cable management accessories.

### OFFICES AND CONTROL ROOMS

Designed for the demanding work environment. Supports comfort cooling and network cabling. Countless floor finish options.

# ADVANTAGES

## HIGH MECHANICAL PERFORMANCE

The special underfloor structure, together with the choice of panel, allow for high-performance systems that meet the most stringent mechanical restrictions.

## OPTIMIZATION OF AIR DISTRIBUTION

The structure of the raised floor and the space beneath the panels offer support for the assembly of perfectly integrated and modular equipment for controlling the flow of air or pressure, in suitably identified strategic points, with maximum freedom.

## EASY CONNECTION TO TECHNOLOGICAL AND FUNCTIONAL NETWORKS

The availability of a wide range of electrical devices, combined with the maximum flexibility and adaptability of the system, allow the complete connection and control of all systems and data distribution networks.

## SECURITY AND RELIABILITY

The underfloor plenum keeps chilled water flows separate from wiring and sensitive equipment, minimizing the risk of damage in the event of leaks, condensation, breakdowns or malfunctions.

## ADAPTABILITY TO DIFFERENT COOLING SOLUTIONS

The underfloor space offers the ideal and optimal location for all cooling systems, from direct air distribution to the possible path of air pipes or chilled water pipes.

## OPTIMAL PLANT DISTRIBUTION

The raised floor module features a grid with sides of 60 cm: the minimum obstruction of the floating floor structure allows for maximum flexibility and is the best solution for distributing the various functional systems up to the points of use.

## FLEXIBILITY OVER TIME

In the space under the floor, all the systems necessary for the functioning of the room are ready for future needs: from the connection network to that for the energy supply, from the direct distribution of the air to the possible path of the chilled water pipes, they can all be easily adapted.

## COST SAVING

Operating costs are reduced to a minimum and access to the systems in the event of breakdown or routine maintenance is easy and direct. The operator can access the underfloor plenum from practically anywhere in the room, flexibly and with maximum safety, without the aid of ladders or special tools.

# THE SYSTEM

## PANELS

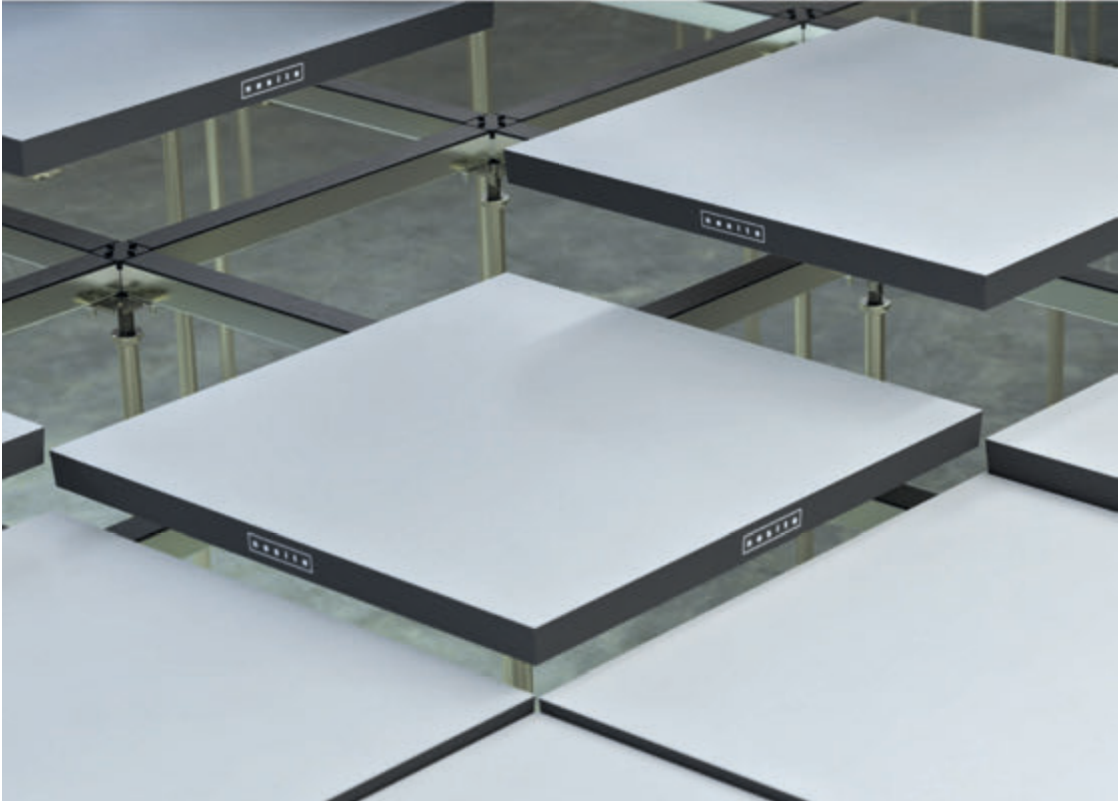
The panels used in the data center floor system can have either a chipboard core or a calcium sulphate core, both with high density.

The chipboard panel combines good mechanical properties and low weight with greater cost-effectiveness. The calcium sulphate panel, on the other hand, not only benefits from better mechanical properties and resistance to fire and humidity, but also has strong sound absorption characteristics for improved footfall comfort.

On the bottom surface, the core can be clad in aluminium (0.05 mm thick) or galvanised steel (0.4 mm thick) in order to increase the thermo-hygrometric stability of the entire panel and improve its mechanical properties. The covers used are made of HPL laminate, vinyl, linoleum or rubber, in both antistatic and static-dissipative versions.



### Panel types available



- **PLTMM**, panel consist of a 38 mm thick high density particle board core, the backing is a nominal 0.05 mm thick aluminium foil. The panel is provided with anti-squeak plastic edge band, 0,5 mm thick.

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- **PLTML**, panel consist of a 38 mm thick high density particle board core, the backing is a nominal 0.4 mm thick sheet of zincplated steel. The panel is provided with anti-squeak plastic edge band, 0,5 mm thick.

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- **PG6AM**, panel consist of a 30 mm thick high density calcium sulphate core, the backing is a nominal 0.05 mm thick aluminium foil. The panel is provided with anti-squeak plastic edge band, 0,5 mm thick.

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- **PG6AL**, panel consist of a 30 mm thick high density calcium sulphate core, the backing is a nominal 0.4 mm thick sheet of zincplated steel. The panel is provided with anti-squeak plastic edge band, 0,5 mm thick.

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- **PG3AM**, panel consist of a 34 mm thick high density calcium sulphate core, the backing is a nominal 0.05 mm thick aluminium foil. The panel is provided with anti-squeak plastic edge band, 0,5 mm thick.

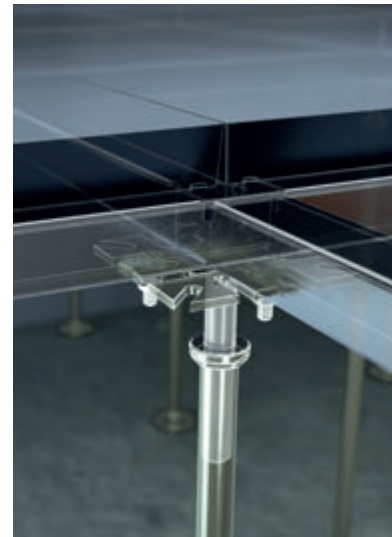
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- **PG3AL**, panel consist of a 34 mm thick high density calcium sulphate core, the backing is a nominal 0.4 mm thick sheet of zincplated steel. The panel is provided with anti-squeak plastic edge band, 0,5 mm thick.

## 02. STRUCTURE

The galvanized steel pedestals, available in different heights starting from 30 cm up to 150 cm and beyond, consist of a circular base fixed to a tube, coupled to a head connected to a threaded rod; a special nut allows you to easily adjust the height. Above the pedestals are fixed the steel profiles which constitute the support mesh for the panels and allow to increase the mechanical resistance and the overall stability of the flooring.

The heads of the pedestals and the profiles are shaped so that they can be mechanically fixed together at any point along the entire profile, using hammer screws, thus allowing both the arrangement of the pedestals even at distances greater than 60 cm and more freedom of positioning each Data Center's functional system in the underfloor plenum. Finally, special gaskets with an anti-noise function are positioned on the profiles, for greater adherence of the panels to the structure.



### Structure elements

#### A) PEDESTAL

The pedestal is made of a base assembly, constituted by the base plate and the tube, and a head assembly constituted by the threaded crossbar and the head with 4 branches. Exactly:

- **base assembly** composed by a circular base plate, 98 mm diameter, 2.5 mm thick, featuring stiffening ribs and 8 radial holes (4 holes  $\varnothing 6.5$  mm and 4 holes  $\varnothing 10.5$  mm) for mechanical anchoring to the ground, if required. The tube is tightly fixed to the base plate, available in the following versions depending on its length:
  - outside diameter 24 mm, 2 mm thick, for pedestal height from 225 mm to 925 mm;
  - outside diameter 26 mm, 3 mm thick, for pedestal height from 975 mm to 1175 mm;
- **head assembly** composed by a flat head, 120x120 mm overall dimension, 5 mm thick, featuring radial slotted holes for positioning and fastening the stringers. On the lower face of the head a M20 threaded bar is fixed, 130 mm length, with a nut with locking notches for height regulation and a plastic ring with locking function.

*optional: head assembly composed by a cross head, 120x120 mm overall dimension, 3 mm thick, featuring 4 branches for positioning and fastening the stringers. Each branch is provided with a slotted hole for fixing the stringer by a bolt with hammer head screw M8x25 mm and flange nut. On the lower face of the head a M20 threaded bar is fixed, 130 mm length, with a nut with locking notches for height regulation and a plastic ring with locking function.*

All the parts of pedestal are made of galvanized steel (white passivated treatment).

#### B) STRINGERS

The TR Crosshead structure is available with connecting stringers made from open "C" sections (hot dip galvanized steel), bent at the bottom to increase flexural strength. Available in the following versions:

- **section 40X40 mm**, 2 mm thick, lengths 558 mm and 2400 mm, for standard module (600x600 mm);
- **section 40X80 mm**, 2 mm thick, lengths 558 mm and 2400 mm, for bridge solution, rack frames or solutions according to particular needs.

### C) GASKETS

The TR Crosshead structure is supplied with the following types of gasket:

- **cross gasket**, 49x49 mm overall dimension, made from conductive black plastic material. It has sound-proofing function and coupling teeth for centering and connection, to be positioned at the intersections between stringers. On the upper surface, there are 4 sharp teeth for positioning and centering the panels;
- **self-extinguishing gasket** for stringer in extruded black plastic material, dimension 547x40 mm and 1.5 mm thick, with sound-proofing and air tight functions, to be placed on the stringer with a simple manual pressure.

All the parts described are free of burrs and all other sharp elements that would be dangerous when handling and assembling and potentially cause damage to other parts (sheaths, cables, etc.) under the floor.

The nominal heights, steps and range of adjustment of the individual support pedestals for the various models are shown in the Table 1.

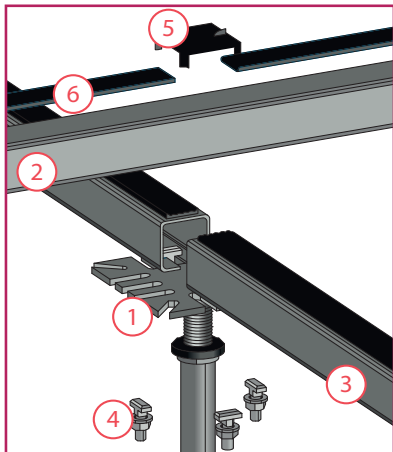
TABLE 1 - AVAILABLE PEDESTAL MODEL				
Pedestal nominal height	Pedestal nominal height with stringer 40x40	Tube	Nominal adjustment	Axial working load <sup>(1)</sup>
[mm]	[mm]	[mm]	[mm]	[kN]
from 225 to 925 (50 mm step)	from 265 to 965 (50 mm step)	Ø24x2	±40	≥15
from 975 to 1175 (50 mm step)	from 1015 to 1215 (50 mm step)	Ø26x3		

(1) The ultimate load is determined multiplying the working axial load by the safety factor 2.

The Table 2 shows the weight and number of components required per square metre.

TABLE 2 - COMPONENTS REQUIRED AND WEIGHT		
Component	Weight g/piece	Pieces/m2
Pedestal with tube Ø24x2	from 870 (pedestal 225) to 1710 (pedestal 925) increasing 55 g per height step	3.3
Pedestal with tube Ø26x2	from 2260 (pedestal 975) to 2600 (pedestal 1175) increasing 70 g per height step	
Cross gasket	5.5	
Stringer 558 mm length	1200 (40x40 mm) / 1900 (40x80 mm)	3
Stringer 2400 mm length	5200 (40x40 mm) / 8200 (40x80 mm)	0.9
Stringer gasket	41	6.6
Bolt (hammer head screw M8x25 mm with flange nut)	25	13.2

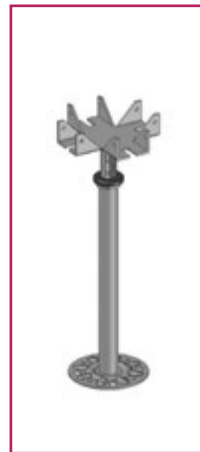




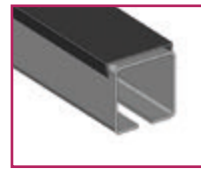
Stringer assembly detail



TR Flathead pedestal



TR Crosshead pedestal (optional)



40x40 stringer with gasket



Cross gasket

**Legend:**

- 1) TR flat head pedestal
- 2) 40x40 stringer L.2400 mm
- 3) 40x40 stringer L.558 mm
- 4) Hammer head screw M8x25
- 5) Cross gasket
- 6) Stringer gasket

### 03. ACCESSORIES

The raised floor for data centres can be integrated with ventilation accessories, used when the underfloor plenum is used for air distribution. The solution includes the following possibilities:

- **linear grid**, composed of a set of longitudinal fins in natural aluminum connected by drawing, through the use of a set of cross-oriented rods. Four threaded dowels are fitted at the ends to enable thickness to be adjusted according to the thickness of the panel.
- **grid panel**, dimension 600x600 mm constituted by a pressed grid with 66x15 mm mesh, welded to a perimeter frame 4 mm thick, two heights available: 30 mm and 38 mm. The panel is totally made of steel with electroplating zinc surface treatment and then polyester powder coated. The free surface is approximately 80%;
- **perforated metal panel**, dimensions 600x600mm with different % free air and possibility of airflow adjustments. All metal parts are painted. Can be supplied with the same finish as the flooring.



# COMPANY

The Nesite raised floor is manufactured in Italy in a factory with a production capacity of 500,000 m<sup>2</sup>/year. The research for innovative solutions, the excellent characteristics of the materials and the meticulous attention to detail determine the technical-aesthetic qualities of the product and guarantee an excellent result to our customers. Each panel is manufactured within dimensional tolerances to ensure easy installation and precise joints between panels.

Choosing Nesite raised floors means to benefit from the experience of an expert company, where the care in the manufacturing of finished products, combined with the highest quality, make Nesite proposal a reference in the international market. An experience that takes concrete form in the identification of technical solutions that allow to face and manage even the most complex projects, thanks to the technical consultancy service that also includes the possibility of integrating BIM design.

With the acquisition of the Uniflair flooring branch, Nesite has strengthened its presence in the world of data centres, the sector for which the raised floor was born and that over time has become increasingly complex in terms of technical performance, due to its constant and rapid evolution.

Today, the Nesite brand is the exclusive property of Transpack Group, which operates in the industrial packaging and logistics sector and is positioned in the medium-high segment of its market, with a high focus on quality and customer service.



# SUSTAINABILITY

Nesite raised floor is produced in full compliance with the standards indicated in EN 12825, the European regulatory reference relating to raised floors, which provides a series of performance parameters such as mechanical resistance, reaction and resistance to fire, thermal insulation and acoustic comfort. Nesite has certifications for its product range that guarantee compliance with these regulations.

Nesite accompanies the best architectural projects at an international level, collaborating in the creation of real monuments of contemporary cities: from the Nuvola by Fuksas, to the Louvre in Abu Dhabi by Jean Nouvel up to some great works in Milan such as WPP, Gioia 22 and the Blue Metro line.

In Nesite, versatility and quality are combined with the sustainability of the products. Associated with the Green Building Council Italia and equipped with FSC® Chain of Custody certification to guarantee supplies from certified forests, the company embraces a 'green' philosophy, transparently declaring in the sustainability brochure the content of its products, for which it uses exclusively recycled and recyclable materials, certified by accredited authorities.

Choosing Nesite flooring therefore means choosing a product made according to environmental sustainability criteria and with certified materials and, above all, communicating with a company capable of adequately responding to the requests of the parties involved in a LEED or BREEAM project.

To this end, Nesite has drawn up its own EPD declaration, an environmental label based on international standards such as ISO 14025 and EN 15804, standards verified by independent bodies and recognized by the most important LEED protocols. The declaration reports the environmental impact of all systems with a calcium sulphate core, available in different finishes, evaluated over the entire life cycle according to the "from cradle to gate" model.

Nesite has also introduced the CE marking in the raised flooring sector, one of the most authoritative labels guaranteeing high production, performance, safety and health standards. The first markings released concern the uncoated calcium sulphate solutions in the various thicknesses, a process that will continue for the most used categories on the market.

Finally, Nesite has started the process for Cradle to Cradle certification for calcium sulphate panels, a further important step in the sustainability path undertaken by the company.



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