

RECYCLED PP SYSTEM FOR VENTILATED FOUNDATION PLATES IN R.C.



# modulo

the formwork for ventilated foundations



- VENTILATED CRAWL SPACE
- HIGH LOAD-BEARING CAPACITY
- ON-SITE SPEED





# VISION

*Humans have always felt the need to live in comfortable houses, experimenting since the beginning of history construction methods to separate the buildings from the ground: Neolithic pile dwellings answered this precise need.*

*Ancient Romans built elevated floorings to improve air circulation under their houses, eliminating rising damp and at the same time heating the rooms of the upper floor. Today, ventilated foundations are still the best solution to eliminate Radon Gas, a carcinogenic and very harmful gas which is naturally present in the subsoil.*

*Geoplast has improved these ancient methods to allow you to live in healthier and safer buildings.*

## ANCIENT METHODS FOR NEW NEEDS: HISTORY HAS TAUGHT US HOW TO BUILD WHILE PROTECTING OUR HEALTH

Not only we transform our ideas into innovative and successful products: we are committed also in the study and selection of the most suitable materials in order to guarantee high quality and respect of the environment.

Polypropylene (PP) is a recyclable material that can be obtained from plastic waste regeneration.

Solid and strong, very resistant to both breaking loads and abrasions: regenerated polypropylene is a chemically inert material, neutral to the environment and non-polluting when in contact with ground or water.

Geoplast S.p.A. in Green Building Council Italy,  
The Network for Green Building.







MODULO

# NON-REUSABLE FORMWORK SUITABLE FOR:

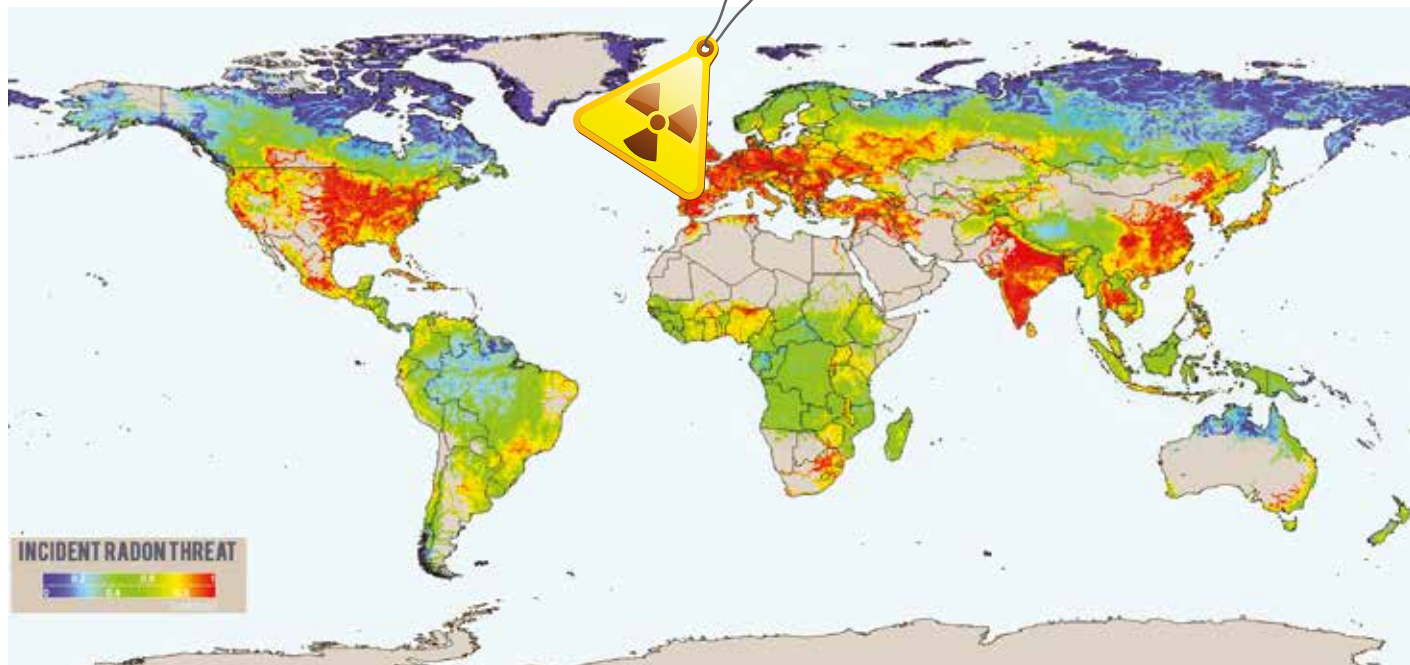


the creation of ventilated foundations, i.e. a void crawl space built under the flooring to improve the health and safety of the house. **MODULO** is a non-reusable formwork that eliminates rising damp and **RADON GAS**, which can naturally be found in the soil. **MODULO** allows the construction of a reinforced concrete structure provided with a slab and a series

of pillars placed at a fixed distance. Such a structure permits a uniform stress distribution all over the surface, thus producing an excellent load-bearing capacity, both static and dynamic. **MODULO** is made of regenerated and eco-friendly plastic materials, long-lasting and with a high mechanical resistance.



# ISSUES CAUSED BY RADON GAS

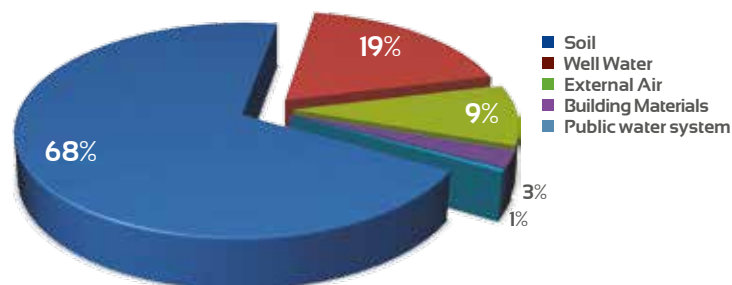


## WHAT IS IT?

**RADON** is an odourless and colourless radioactive gas that can be found in variable quantities in the Earth's crust. The main emission source of this gas in the environment is the soil. Radon tends to accumulate in closed rooms in

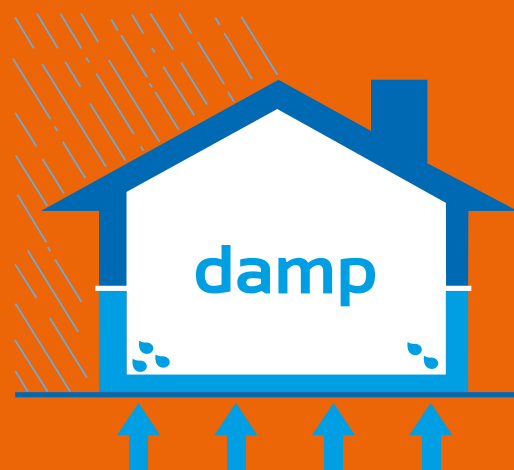
the buildings, especially in the ground floor. In these areas, **RADON** can reach high concentration levels, thus being very harmful for human health. The solution to this problem can already be solved during the planning stage.

The origin of Radon in our houses



Source: ©Bob's Radon Mitigation

# RISING DAMP



## Where does it come from?

The soil is a heterogeneous mixture of solid elements, air and water. The last one is the most subject to fluctuation, due to meteoric and groundwater contribution, evaporation and deep percolation. Water can cause serious issues when in contact with a traditional foundation: infiltrations, cold, humid and unhealthy environments, conden-

sation, fungi and mold, as well as the possibility of deterioration of the timber elements of the structure. The direct contact with the ground causes rising damp issues to people and buildings. Rising damp is the most common type of humidity and can be found both in old and new buildings.



# RISKS FOR YOUR HEALTH



**W.H.O.**  
World Health  
Organization

**RADON** is the second cause of lung cancer after cigarette smoking. The World Health Organization supports this statement and classifies **RADON GAS** as one of the most carcinogenic and harmful substances for humans.



World Health  
Organization

## WEIGHT REDUCTION



### and facilities management

During the construction of the foundation beams with traditional methods, the last phase is the **FILLING** step, which is usually made with expensive and difficult to store inert materials, such as sand or gravel. The same pro-

cess is used for the creation of **UPPER FLOOR SLABS**, for example using specific concrete, which can however cause many difficulties in the construction site.



# THE SOLUTION IS VENTILATION

## WHY?

It is possible to defend ourselves against **RADON GAS** and the problems related to rising damp and caused by the direct contact with the ground, only with a **VENTILATED FOUNDATION**. This in-

novative solution guarantees uniform and natural air circulation between the ground-level and the ground floor. When properly ventilated, crawl spaces avoid the contact of the building with the ground

by creating an **"EMPTY SPACE"** with many benefits to the health of the rooms. **GEOPLAST** suggests a specific system for the creation of a ventilated crawl space: **MODULO SYSTEM**.



## Innovation from history

Even the ancient Romans understood that the direct contact with the ground was not healthy: in fact, they built crawl spaces in order to eliminate rising damp from the building while heating their houses.

The concept of **VENTILATED FOUNDATION**, synonymous with healthy houses, developed in this way.



## TECHNICAL VOID SPACE

The void space can be used for the passage of pipes and other facilities as an alternative to the more expensive solutions, such as floating floors.



- FACILITIES PASSAGE 
- EASY INSTALLATION 
- TECHNICAL VOID SPACE 



# ADVANTAGES OF THE VENTILATED SYSTEM



## ADVANTAGES

■ RADON GAS MITIGATION

■ BARRIER GROUND/FLOORING

■ RISING DAMP ELIMINATION

■ NO MOLD

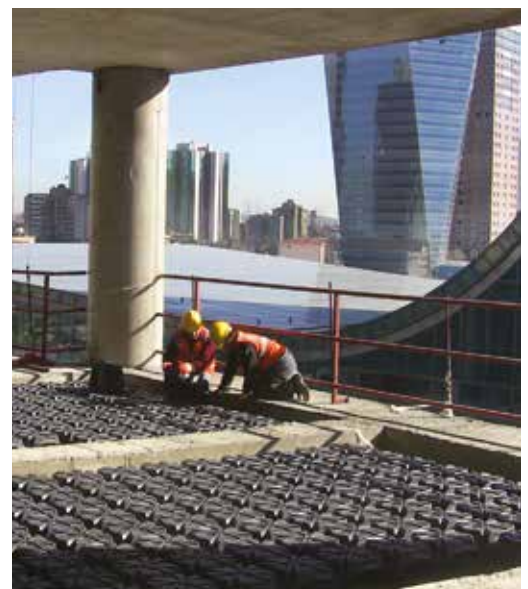
## STRUCTURAL VOID SPACE

The creation of the void space allows the weight reduction of the whole structure, thus significantly reducing the operating inert mass.

■ SLABS WEIGHT REDUCTION

■ EASY INSTALLATION

■ SIMPLIFIED LOGISTICS



# MODULO ADVANTAGES

Modular non-reusable system for the creation of ventilated crawl spaces used as a physical barrier between the ground and the building



## no radon

**MODULO** ventilated foundation allows the elimination of naturally accumulated **RADON GAS**



## fast

When compared with traditional systems, it guarantees a faster installation up to the 80% (in respect to the use of the traditional inert materials)



## savings

**MODULO** system allows savings compared to the use of traditional inert materials, especially in terms of transport and installation



## monolithic

**GEOBLOCK** allows the creation of monolithic foundation structures with an optimal structural behaviour



## fridge cells

It is possible to create a technical void space that avoids the direct contact of the fridge cell with the ground, thus eliminating the issues related to the freezing of the soil

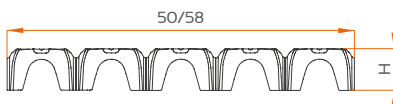
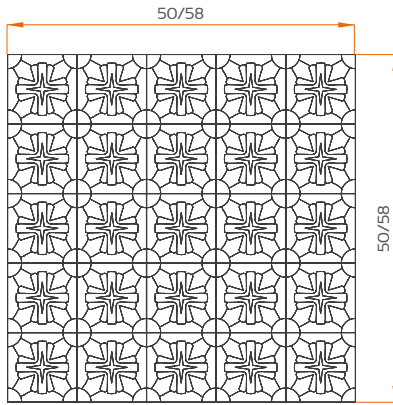


## facilities

The void space created under **MODULO** formwork allows the easy installation of pipes and other facilities

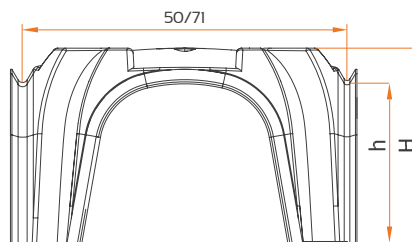
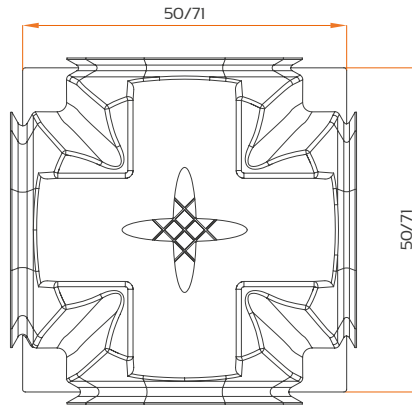


# SUMMARY OF THE TECHNICAL DATA



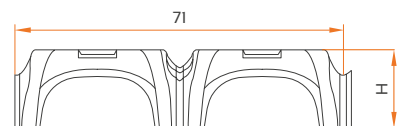
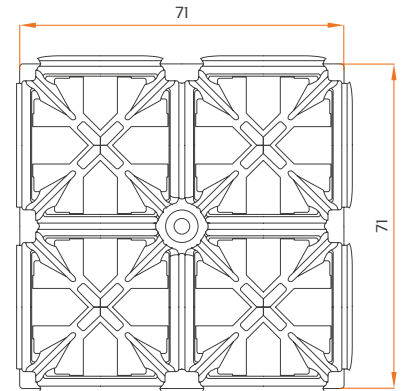
## MINI MODULO

**SIZE**  
from 50 x 50 to 58 x 58 cm  
**HEIGHT**  
from 3 to 9 cm  
**PCS. WEIGHT**  
from 0.76 to 1.11 kg



## MODULO

**SIZE**  
from 50 x 50 to 71 x 71 cm  
**HEIGHT**  
from 13 to 70 cm  
**PCS. WEIGHT**  
from 1.17 to 4.10 kg



## MULTI MODULO

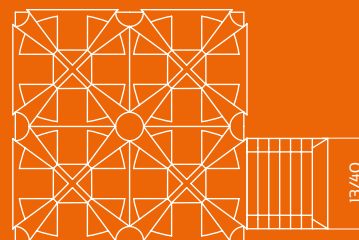
**SIZE**  
71 x 71 cm  
**HEIGHT**  
from 13 to 40 cm  
**PCS. WEIGHT**  
from 2.14 to 3.19 kg

## ACCESSORIES FOR VENTILATED FOUNDATIONS



### GEOBLOCK MODULO

**HEIGHT**  
from 13 to 70 cm  
**PCS. WEIGHT**  
from 0.55 to 4.29 kg



### GEOBLOCK MULTIMODULO

**HEIGHT**  
from 13 to 40 cm  
**PCS. WEIGHT**  
from 0.37 to 0.98 kg

# THE EXTENSION GEOBLOCK

The combination of **MODULO** and **GEOBLOCK** allows the creation of a monolithic slab without the risk of cracks or breakage. The extension is

an adjustable product, adaptable to any worksite situation and available for every **MODULO** height.



cutting



no **cutting**

## **I** The **planning**

**GEOPLAST** offers a planning service on the basis of a DWG analysis of the foundation, in order to ob-

tain a graphic file with an accurate counting of the pieces and a detailed installation scheme.

## GEOBLOCK



### WHAT ARE THE ADVANTAGES?

**A**

#### STRUCTURAL CONTINUITY

Single pour of crawl space and foundation beams

**B**

#### SAFETY IN THE WORKSITE

It is possible to walk over the formwork, especially along the perimeter, as there is always a complete element

**C**

#### ELIMINATION OF THE DOUBLE FORMWORK

**GEOBLOCK** avoids the need of internal formwork for the beams

**D**

#### COMPENSATION ADJUSTABILITY

Possibility to modify the depth of **GEOBLOCK** extension

**E**

#### NO CUTTING OF THE FORMWORK

Possibility to compensate the distances without cutting the formwork





# SINGLE CONCRETE POUR

The possibility to pour at the same time the crawl space slab and the foundation beams avoids the necessity of installing, pouring and dismantling the formwork for the foundation beams: the construction operations will be reduced to a

single pour, with various cost-effective advantages thanks to **GEOBLOCK**, which works as a side cap of the formwork. Moreover, the single pour produces a higher resistance for the fragile coupling point between the beam and the slab.



- ① Lean concrete
- ② **MODULO** formwork
- ③ **GEOBLOCK**
- ④ Wire mesh
- ⑤ Concrete slab



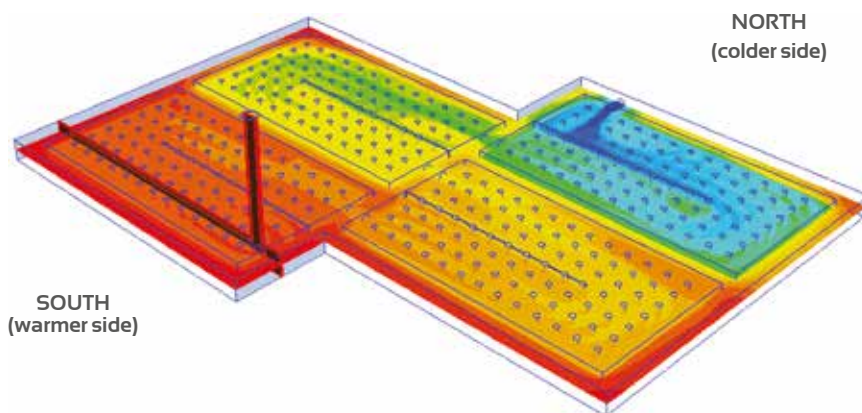
# VENTILATION OF THE CRAWL SPACE

## How is it created?

In order to improve the ventilation of the foundation created with **MODULO**, it would be useful to take advantage of the **CHIMNEY EFFECT**. For a proper ventilation, the system should be oriented from North to South (where not possible, from West to East). The greater the difference in height, the greater the

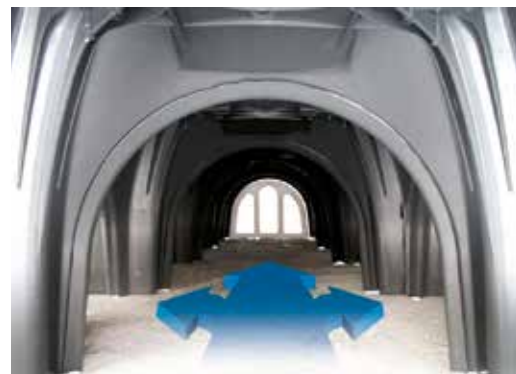
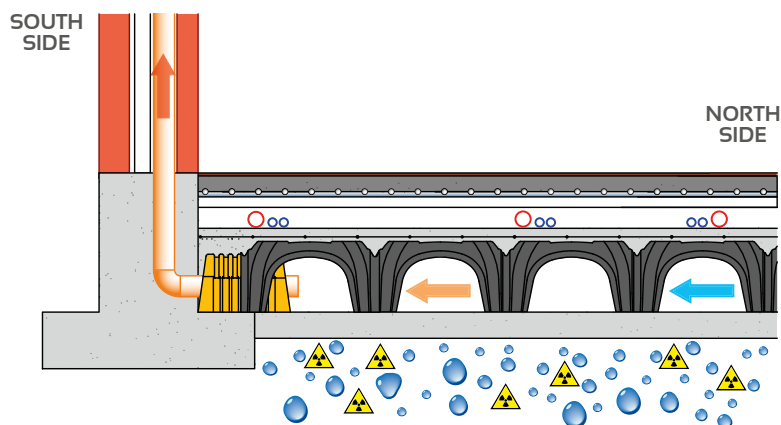
air draught. The inlet pipes must be placed with:

- **INLET**: colder side (**NORTH** or **WEST**) and close to the ground level (-50 cm)
- **OUTLET**: warmer side (**SOUTH** or **EAST**) and in a higher position (usually at the height of the interfloor, if possible).



The air flow can be obtained creating holes of 80/120 mm diameter over the perimetral beams, every 3,50/4,00 m, provided with the **PVC** pipe connection and external stainless steel grids with anti-intru-

sion net. The pipe with the lower inlet must reach half of the formwork in order to guarantee an efficient air channeling and to generate a chimney effect.



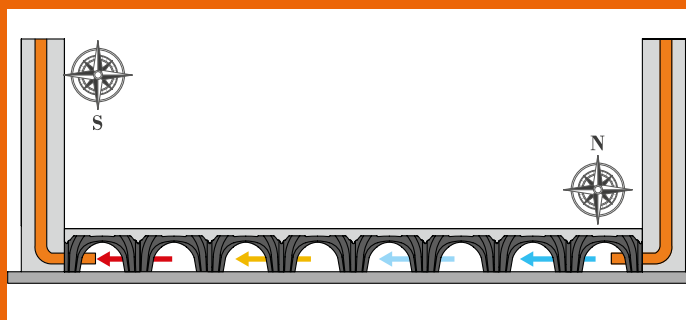
To guarantee a uniform air circulation, all the areas must be connected together even when interrupted by foundation beam or kerbs. When used, **GEOBLOCK** extensions need to be perforated in order to insert the pipe into the element to connect the crawl space with the outside. The connection must be made with worksite **PVC** pipes.



## \*The chimney effect

The chimney effect is a natural phenomenon generated within ventilated areas connected with the outside and it is produced by pressure differences. These are due to the air density and the fluids temperature. It is possible to

take advantage of this effect to improve the ventilation of a crawl space, thus creating the ideal air circulation for the elimination of rising damp and the dispersion of Radon Gas in the atmosphere.





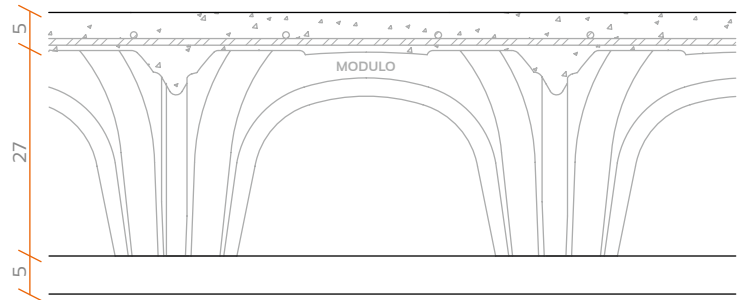
# PLANNING AND ASSISTANCE

From the pre-dimensioning to the loading tests

Our Technical Department is at your complete disposal.

OUR STRENGTHS ARE:

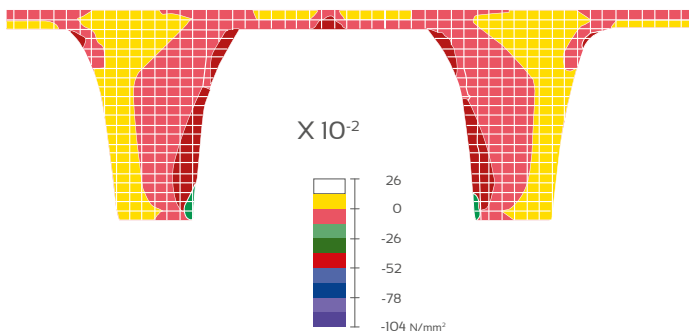
- FEASIBILITY ANALYSIS
- PRE-DIMENSIONING OF THE STRUCTURES
- ASSISTANCE DURING THE EXECUTIVE DESIGN



## F.E.M. ANALYSIS

The **F.E.M. analysis (Finite Element Method)** allows the study of structures built with **MODULO** system. The research shows

that the system's leg has a solid body behaviour: that means that the system is not subjected to bending nor torsional strains.



Tension stress diagram

## Study results

- SOLID BEHAVIOUR
- REDUCED SYSTEM DEFORMATION
- DOES NOT NEED FEET REINFORCEMENT

## Load tests

Geoplast tests strictly all its products, especially those of **MODULO** range, in order to guarantee an high quality control. Some products

were tested from external certifiers, too, who granted us a certificate with the obtained compression values.



# DIMENSIONS OF MODULO<sup>H3/H60</sup>



Height	Size cm	Weight kg	Concrete consum. m <sup>3</sup> /m <sup>2</sup>	Packaging size m <sup>3</sup> /m <sup>2</sup>	m <sup>2</sup> per pallet	No. pcs per pallet
3	50 x 50	0,76	0,004	120 x 102 x H220	180	720
6	50 x 50	0,99	0,009	120 x 102 x H220	180	720
9	58 x 58	1,11	0,010	120 x 120 x H240	240	720
13	50 x 50	1,17	0,028	102 x 102 x H235	90	360
15	50 x 50	1,18	0,030	102 x 102 x H240	90	360
17	50 x 50	1,35	0,035	102 x 102 x H235	90	360
20	50 x 50	1,38	0,037	102 x 102 x H240	90	360
25	50 x 50	1,40	0,038	102 x 102 x H235	90	360
27	50 x 50	1,44	0,040	102 x 102 x H235	75	300
30	50 x 50	1,55	0,044	102 x 102 x H240	75	300
35	50 x 50	1,61	0,052	107 x 107 x H230	75	300
40	50 x 50	1,78	0,056	107 x 107 x H230	75	300
45	71 x 71	2,97	0,064	151 x 151 x H230	150	300
50	71 x 71	3,50	0,076	151 x 151 x H230	150	300
55	71 x 71	3,55	0,078	151 x 151 x H225	120	240
60	71 x 71	4,05	0,079	153 x 153 x H230	120	240



# DIMENSIONS OF MODULO<sup>H65/H70</sup>



Height	Size cm	Weight kg	Concrete consum. m <sup>3</sup> /m <sup>2</sup>	Packaging size m <sup>3</sup> /m <sup>2</sup>	m <sup>2</sup> per pallet	No. pcs per pallet
65	71x71	4,25	0,084	153 x 153 x H230	120	240
70	71x71	4,10	0,083	153 x 153 x H240	120	240

# DIMENSIONS OF MULTIMODULO<sup>H13/H40</sup>



Height	Size cm	Weight kg	Concrete consum. m <sup>3</sup> /m <sup>2</sup>	Packaging size m <sup>3</sup> /m <sup>2</sup>	m <sup>2</sup> per pallet	No. pcs per pallet
13	71x71	2,14	0,020	151 x 151 x H225	180	360
15	71x71	2,19	0,027	151 x 151 x H225	180	360
17	71x71	2,24	0,028	151 x 151 x H226	180	360
20	71x71	2,45	0,032	151 x 151 x H250	150	300
25	71x71	2,62	0,033	151 x 151 x H235	180	360
27	71x71	2,59	0,035	151 x 151 x H235	180	360
30	71x71	2,99	0,042	151 x 151 x H250	150	300
35	71x71	2,73	0,045	151 x 151 x H240	180	360
40	71x71	3,19	0,050	151 x 151 x H265	150	300

# GEOBLOCK



## GEOBLOCK MODULO\*

GEOBLOCK Modulo	Min Ext. Max (cm)	Weight (kg)	Packaging size (cm)	No. pcs.
H13	3,5 - 25	0,55	110x110xH180	500
H15	3,5 - 25	0,64	110x100xH180	500
H17	3,5 - 25	0,71	110x120xH190	500
H20	3,5 - 25	0,78	110x120xH195	500
H25	3,5 - 25	0,97	110x120xH195	500
H27	3,5 - 25	1,13	115x120xH200	500
H30	3,5 - 25	1,22	115x120xH200	500
H35	3,5 - 26	1,48	115x120xH210	500
H40	3,5 - 26	1,61	120x130xH210	500
H45	3,5 - 36	2,71	100x120xH220	200
H50	3,5 - 37	2,98	100x120xH225	200
H55	3,5 - 39	3,72	106x120xH230	200
H60	3,5 - 38	3,81	106x120xH240	200
H65	3,5 - 39	4,15	110x120xH240	200
H70	3,5 - 39	4,29	110x120xH245	200

## GEOBLOCK MULTIMODULO\*

GEOBLOCK Multimodulo	Min Ext. Max (cm)	Distance (cm)	Packaging size (cm)	No. pcs
H13	2,4 - 23	0,37	120x100xH110	500
H15	2,4 - 23	0,40	110x93xH110	500
H17	2,4 - 23	0,48	121x93xH110	500
H20	2,4 - 23,5	0,49	110x97xH120	500
H25	2,4 - 24	0,66	122x100xH120	500
H27	2,4 - 24,5	0,69	120x102xH130	500
H30	2,4 - 25	0,75	120x102xH130	500
H35	2,4 - 25	0,92	124x103xH140	500
H40	2,4 - 26	0,98	125x107xH140	500

\*pitch: 3,5 CM

## ACCESSORIES SYSTEM MULTIMODULO

Fermagetto in **plastic paperboard**

Side closure element for MULTIMODULO heights (13 to 40 cm)



## MODULO SYSTEM ACCESSORIES

\*retaining ring

MODULO H65 & H70



Fermagetto **MODULO**

This element prevents the intrusion of concrete in the crawl space. It is available for MODULO heights from 13 to 40 cm

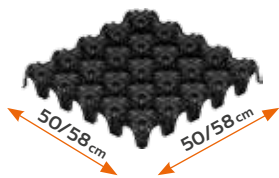


Fermagetto in **plastic paperboard**

Side closure element for MODULO heights from 45 to 70 cm



# LOAD TABLES



## MINIMODULO

LOAD (Kg/m <sup>2</sup> )	THICKNESS of the slab (cm)	WIRE MESH (mm)	THICKNESS lean concrete (cm)	THICKNESS gravel (cm)	PRESSURE ground (Kg/cm <sup>2</sup> )
500	5	Ø5/25x25	5		0,21
1,000	5	Ø6/20x20	5		0,42
2,500	5	Ø6/20x20	5		1,06
5,000	5	Ø8/20x20	10		0,76
10,000	6	Ø10/20x20	5	10	0,77
> 10,000	To evaluate each case, please contact Geoplast Technical Department				



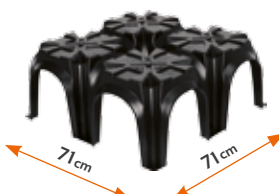
## MODULO 50x50

LOAD (Kg/m <sup>2</sup> )	THICKNESS of the slab (cm)	WIRE MESH (mm)	THICKNESS lean concrete (cm)	THICKNESS gravel (cm)	PRESSURE ground (Kg/cm <sup>2</sup> )
500	5	Ø5/25x25	5		0,29
1,000	5	Ø6/20x20	5		0,58
2,500	5	Ø8/20x20	10		0,72
5,000	7	Ø8/20x20	5	10	0,90
10,000	6	Ø10/20x20	5	15	1,10
> 10,000	To evaluate each case, please contact Geoplast Technical Department				



## MODULO 71x71

LOAD (Kg/m <sup>2</sup> )	THICKNESS of the slab (cm)	WIRE MESH (mm)	THICKNESS lean concrete (cm)	THICKNESS gravel (cm)	PRESSURE ground (Kg/cm <sup>2</sup> )
500	5	Ø5/25x25	5		0,42
1,000	6	Ø6/20x20	5		0,85
2,500	7	Ø8/20x20	10		1,14
5,000	8	Ø8/20x20	5	10	1,42
8,000	10	Ø10/20x20	5	15	1,35
> 10,000	To evaluate each case, please contact Geoplast Technical Department				



## MULTIMODULO

LOAD (Kg/m <sup>2</sup> )	THICKNESS of the slab (cm)	WIRE MESH (mm)	THICKNESS lean concrete (cm)	THICKNESS gravel (cm)	PRESSURE ground (Kg/cm <sup>2</sup> )
500	5	Ø5/25x25	5		0,21
1,000	5	Ø6/20x20	5		0,41
2,500	5	Ø6/20x20	5		1,03
5,000	6	Ø8/20x20	10		0,85
10,000	8	Ø8/20x20	5	15	1,07
> 10,000	To evaluate each case, please contact Geoplast Technical Department				



# MODULO + GEOBLOCK INSTALLATION



## ① PREPARATION

Creation of a laying surface with lean concrete and installation of the external formwork and the reinforcements of the perimetral beams.



## ② FACILITIES

Installation of the pipes to place them into the perimetral ventilation holes and then eventual place of channeling systems for the pipes.



## ③ FORMWORK

Installation of **MODULO** formwork following the instructions, from right to left as marked in the formwork, without any cutting.



## ④ GEOBLOCK

Installation of **GEOBLOCK** to get closer to the reinforcement cages: **GEOBLOCK** allows the formworking of the beams.



## ⑤ REINFORCEMENT

Installation of the load distribution mesh on **MODULO** formwork and connect it to the foundation beams reinforcement.



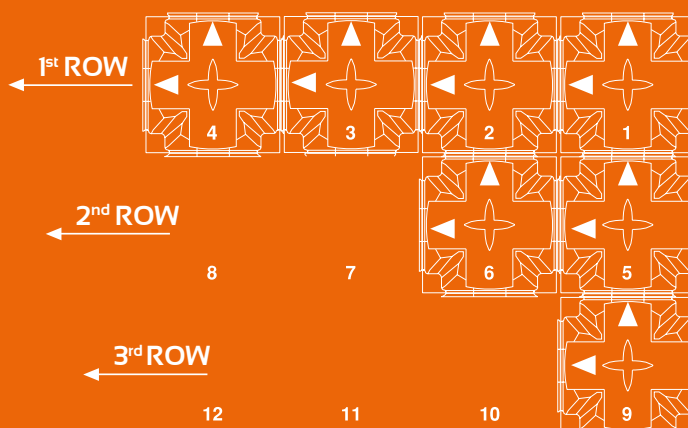
## ⑥ SINGLE POUR

Pour of the beams and the foundation slabs. Follow the instruction in order to pour correctly.



**MODULO** formwork system must be installed **FROM RIGHT TO LEFT AND FROM TOP TO BOTTOM**, keeping the molded arrows pointing towards and to the left.

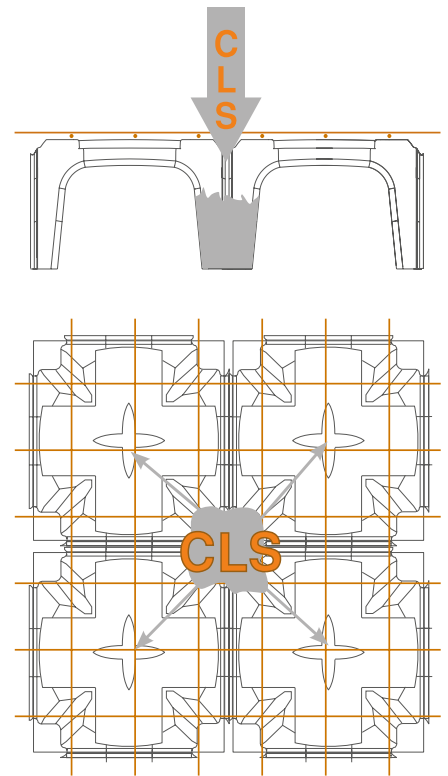
It is essential to verify the correct anchoring of the feet!



# CONCRETE POUR

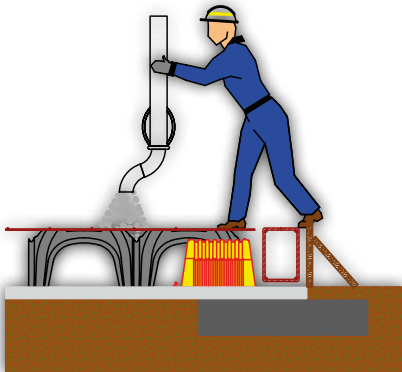
After having installed some **MODULO** elements, it is possible to walk on the formwork, being careful to walk only in proximity of the pillars and not directly over the dome. Once the distribution welded wire mesh is placed, the whole surface is walkable. In the case of pumped concrete, keep the pump outlet at a

maximal distance of 20 cm from the formwork, in order to avoid an excessive pressure. The pour should be performed by first filling partially the feet and then the upper part of **MODULO**, not vice-versa. Pour only after the place of the welded mesh and after having verified the correct installation of the formwork.



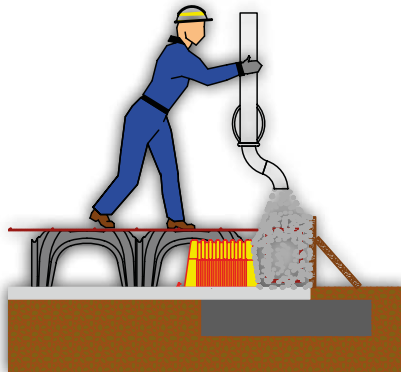
## Stage 1

Partially fill **MODULO** feet partially



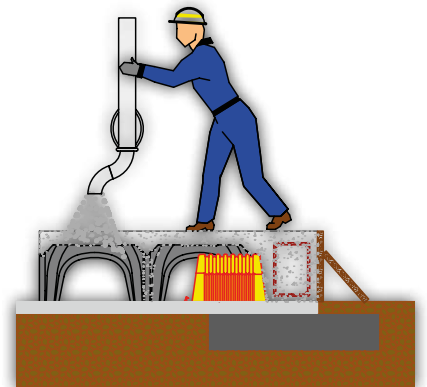
## Stage 2

Partially fill all kerbs and foundation beams



## Stage 3

Complete the pour of the feet, kerbs and foundation beams



DURING SUNNY DAYS WITH TEMPERATURES OF ABOVE 30°C, IT IS RECOMMENDED TO POUR IN THE COOLEST HOURS OR TO SOAK THE FORMWORK





# RESIDENTIAL BUILDING

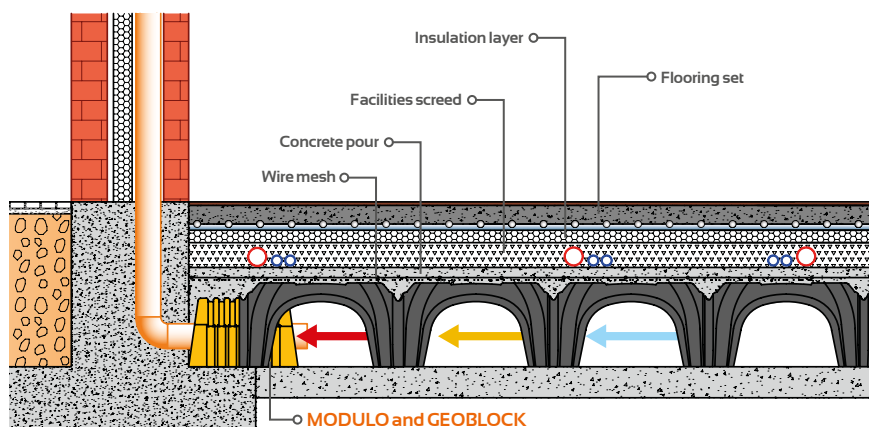


## The crawl space for healthy houses

When applied to residential buildings, **MODULO** system protects the house against **RADON GAS** issues and allows, at the same time, the creation of void spaces in the foundations. When properly

ventilated, these spaces facilitate the elimination of rising damp and **RADON GAS** that accumulate naturally under the building. The crawl space can be used for the passage of facilities.

Natural ventilation  
Radon Gas dispersion  
Rising damp elimination





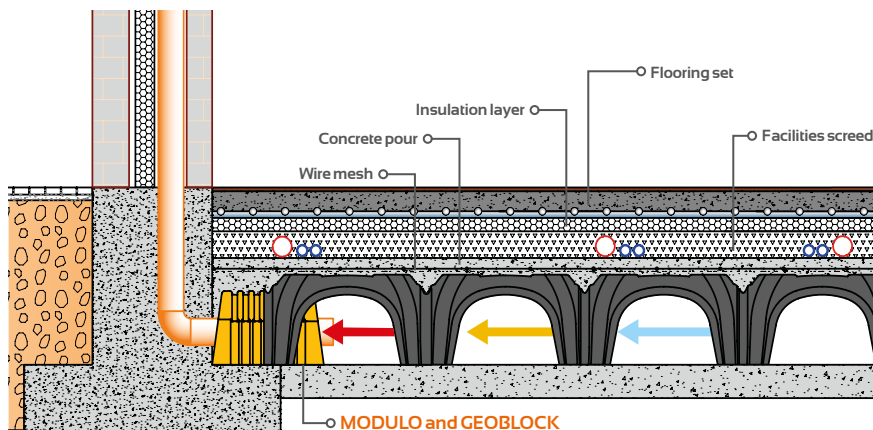


## Study in healthy schools

According to the latest health recommendations of the European Union (90/143/Euratom), schools and classrooms intended for use by children, in particular kindergartens and compulsory schools, must be healthy environments, free of harmful substances,

above all **RADON GAS**. The creation of a ventilated crawl space with **MODULO** avoids dangerous gas accumulation in the school environment, protecting the students against the serious diseases caused by exposure to **RADON**.

Healthier classrooms  
Technical void space  
No cracks



# INDUSTRIAL BUILDING

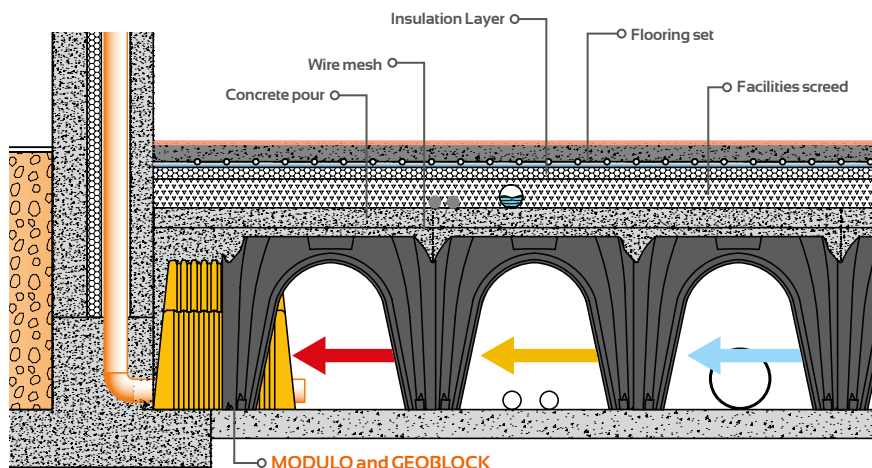


## High load-bearing solutions

Commercial and industrial buildings must be able to bear heavy loads. Thanks to their particular conformation, **MODULO** and **MULTIMODULO** create a solid ribbed foundation

slab that guarantees a high load-bearing capacity, both static and dynamic. Moreover, the ventilated crawl space allows the creation of technical void spaces useful for facilities.

High load-bearing capacity  
Fast installation  
Technical void space





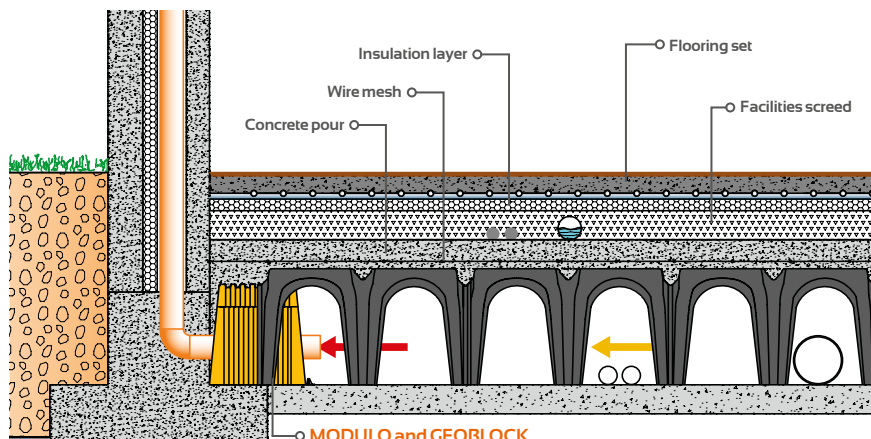


## Health and wellness in public spaces

The need to eliminate **RA-DON GAS** is even higher in public buildings used by a large number of people, such as hospitals, shopping centres, airports and train stations. Used in the construction of such large

buildings, **MODULO** system can be installed very quickly to build ventilated foundations. Moreover, the technical void space can be usefully used for the passage of facilities.

Healthier spaces  
Technical void space  
No cracks





# FRIDGE CELLS

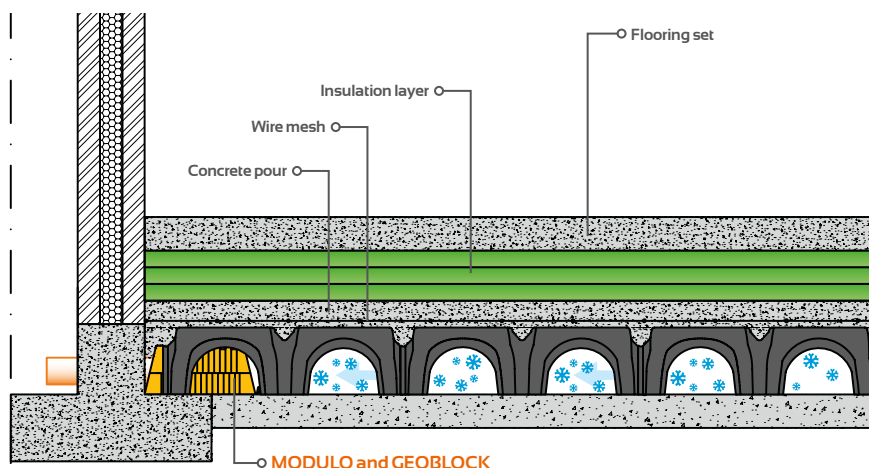


## Fresh products, stored in safe environments

In warehouses and fridge cells the cold reaches the ground, lowering its temperature to below 0°C. This produces the freezing of the soil, thus increasing the water volume and causing cracks and deformations

of the floor. The most cost-effective and safe solution to this problem is the building of a ventilated foundation between the ground and the building, in order to eliminate moisture infiltrations completely.

No frost heaving  
High load-bearing capacity  
Technical void space





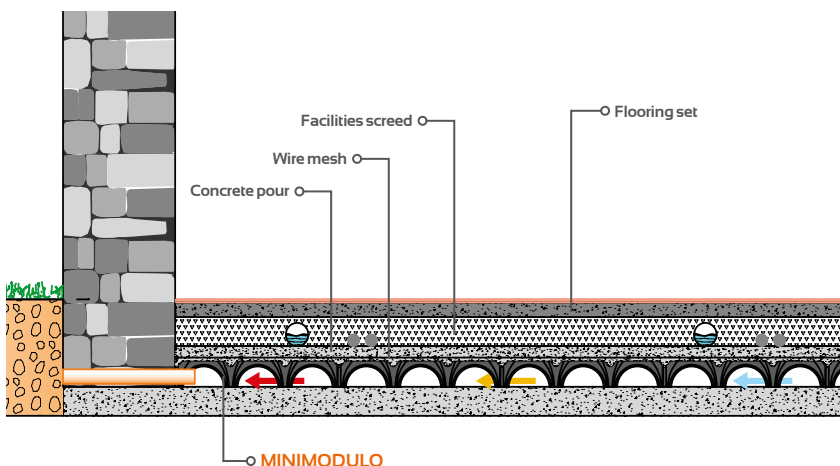
# RESTORATION INTERVENTIONS

## The innovative ventilated crawl space

**MINIMODULO** system is very useful in renovation interventions, as it allows the creation of ventilated floors with mini technical void spaces suitable for hydraulic pipes and electrical installations. The products's heights range permits to

intervene also with reduced thickness, thus avoiding loss of useful height. Moreover, in difficult to access areas, like historical centres, it simplifies logistics and transport as it is space-saving and easy to handle.

Reduced thickness  
Moisture elimination  
Downstream intervention





# VENTILATED ROOFS

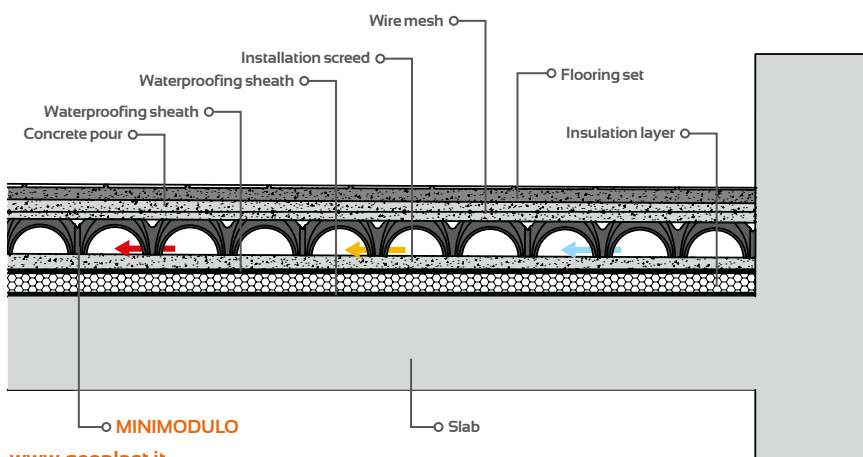


## Thermal comfort with ventilated roofs

Recently the construction world has increasingly focused on the planning of high energy-efficient buildings with high environmental comfort: this is possible also through the ventilation of roofs and walls. **MINI-MODULO** is ideal for the creation of ventilated surfaces

designed to reduce heat transmission and thermal shock. This system cools down the roof and walls during summer and warms them during winter. The form of the element and the short-distanced feet allow the creation of a ventilation chamber in both directions.

**Condensation effect elimination**  
**Ventilation in both directions**  
**Reduced weight of the elements**







# GEOPLAST HOUSING SYSTEM



## High productivity low cost houses

**MODULO** is particularly suitable for the creation of pre-fabricated "low cost houses". This is a particularly easy and fast system that improves life quality by separating the floor from the ground thanks to innovative construction methods. **MODULO** can be a winning solution also with last

generation timber lodges: their only weakness is the necessity of the creation of a ventilated foundation in order to thermally insulate the house. The ventilation created with **MODULO** eliminates rising damp protecting and sealing the timber frame.



# WEIGHT REDUCTION SYSTEMS

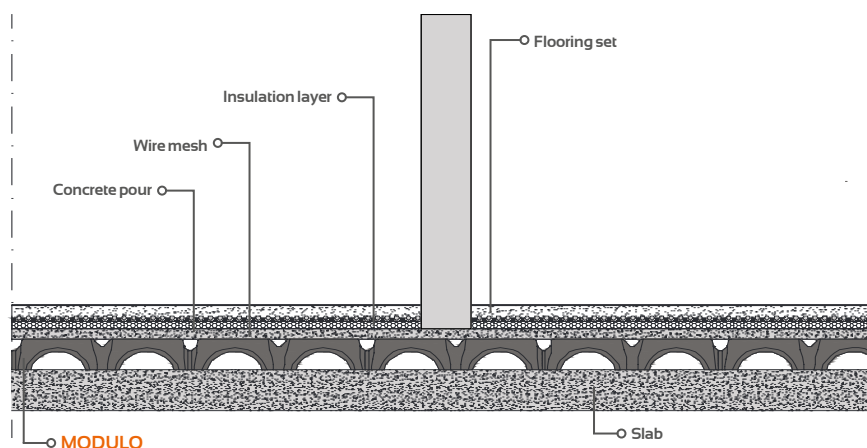


## UPPER FLOORS LIGHTENING SYSTEMS

The creation of a void space under the floor can be essential in the case of interfloor slabs, as lower weights allow an improvement of the structure behaviour. The PP formwork weights less than the traditionally used inert filling materials, and per-

mits a faster installation. The result is the weight reduction of the structure (this is very important in the case of upper-floors), avoiding the use of heavy filling materials which can be difficult to handle in the worksite.

**Reduced weight of the system**  
**Fast installation**  
**Easy to handle on-site**



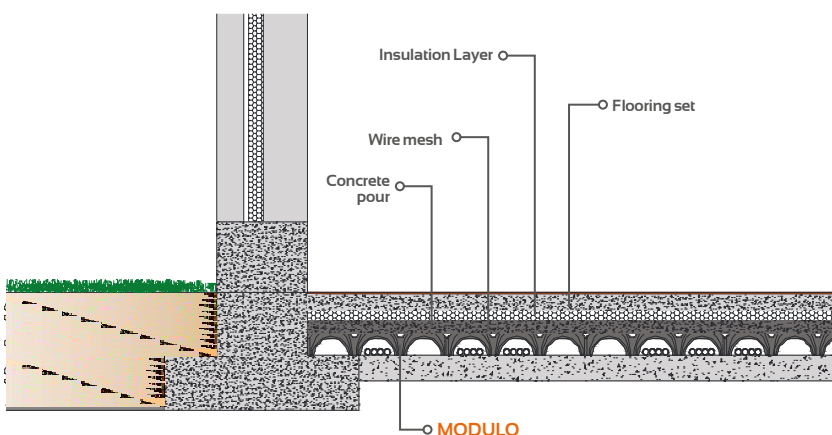


## SPACE-SAVING CRAWL SPACE

Not only **MODULO** offers health advantages thanks to the ventilation of the foundation, but it also easily solves every problem related to the installation of facilities. In fact, the void space under the floor can be used for the passage of pipes or other installations that otherwise should be

installed externally, thus increasing the flooring set thickness (this is not always possible in the project). It should be enough to place the pipes before the installation of **MODULO**, laying them compatibly with the formwork encumbrance.

Reduced thickness  
Moisture elimination  
Downstream intervention





# RAINWATER MANAGEMENT

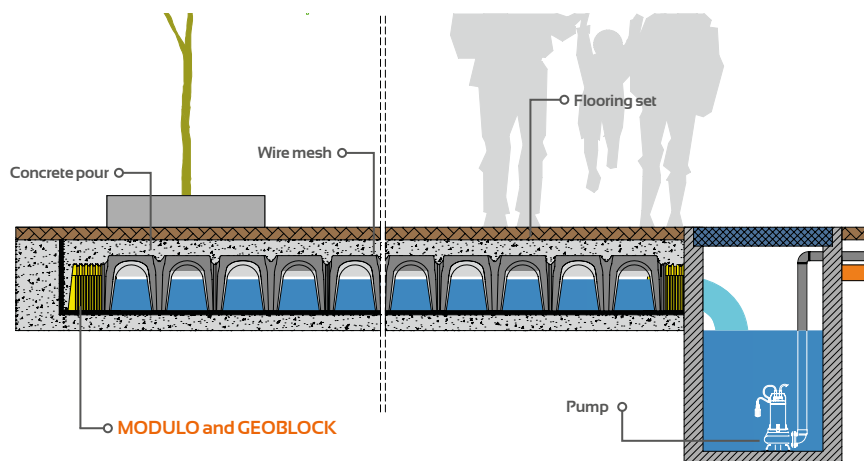


## Creation of storage tanks with reduced height

**MODULO** allows the creation of rainwater storage and lamination tanks with a reduced height and a large surface. This is the ideal solution when the groundwater is close to the ground-level or during urban

requalification interventions that could modify the hydraulic system of a certain area. The wide range of heights and the system resistance allow the creation of storage basins adaptable to any situation.

**Reduced excavation**  
**Good storage capacity**  
**High load-bearing capacity**





# CASE HISTORY



Modulo  
Geoblock



Modulo



Modulo  
Geoblock





**GEOPLAST S.p.A.**

35010 Grantorto PD - Italia - Via Martiri della Libertà, 6/8  
tel +39 049 9490289 - fax +39 049 9494028  
e-mail: [geoplast@geoplast.it](mailto:geoplast@geoplast.it) - [www.geoplast.it](http://www.geoplast.it)

