

WE BUILD RESILIENT CITIES

**CUPOLEX**<sup>®</sup>  
SOLUTIONS



# CUPOLEX REFRIGERATED BUILDINGS

The best solution for slabs subjected to high loads  
in structures operating at low temperatures.

**PONTAROLO**<sup>®</sup>  
**ENGINEERING**



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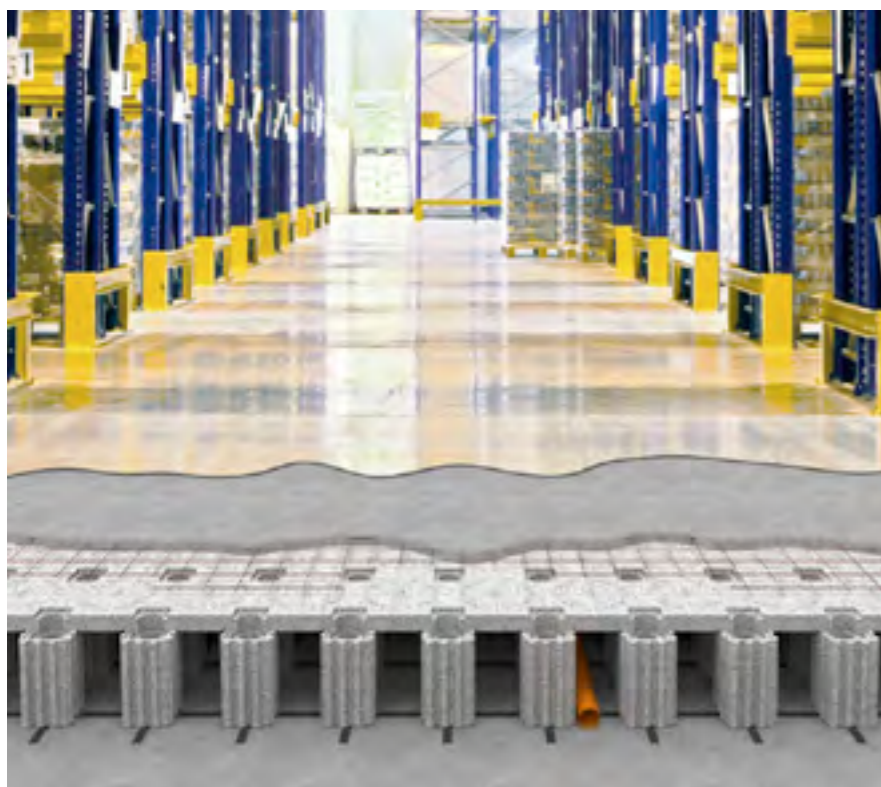
[www.pontarolo.com](http://www.pontarolo.com)

## THE SYSTEM

**The system creates a ventilated and thermally insulated floor**, ideal for buildings that operate at low temperatures. On top of the important thermal insulation quality, it is able to **prevent damages caused by freezing and expansion of water/external humidity**. Moisture or water on the ground, in fact, could undergo a freezing process near the cold floor of a structure. The frozen capillary water causes an expansion that often damages the concrete structure.

The CUPOLEX and ISOLCUPOLEX systems guarantee an **adequate ventilation thanks to the crawl space package, and therefore the expulsion of humidity**. In some cases, the ventilation can be mechanical or heated by the exhaust processes of the cold rooms, further increasing the benefits. The effectiveness of the crawl space against rising damp is, in this way, significantly improved compared to traditional gravel and pipe systems.

Another important feature, that characterizes the ISOLCUPOLEX system, is the particular geometry that allows the concrete of the slab to transmit all loads directly to the ground, without stressing and being supported by the insulating layer, which would deform and cause cracks on the slab. The package simply involves the casting of a single reinforced concrete slab on the insulated crawl space, thus reducing the workmanship and thickness of the classic package.



### THE BENEFITS FOR THE STRUCTURE

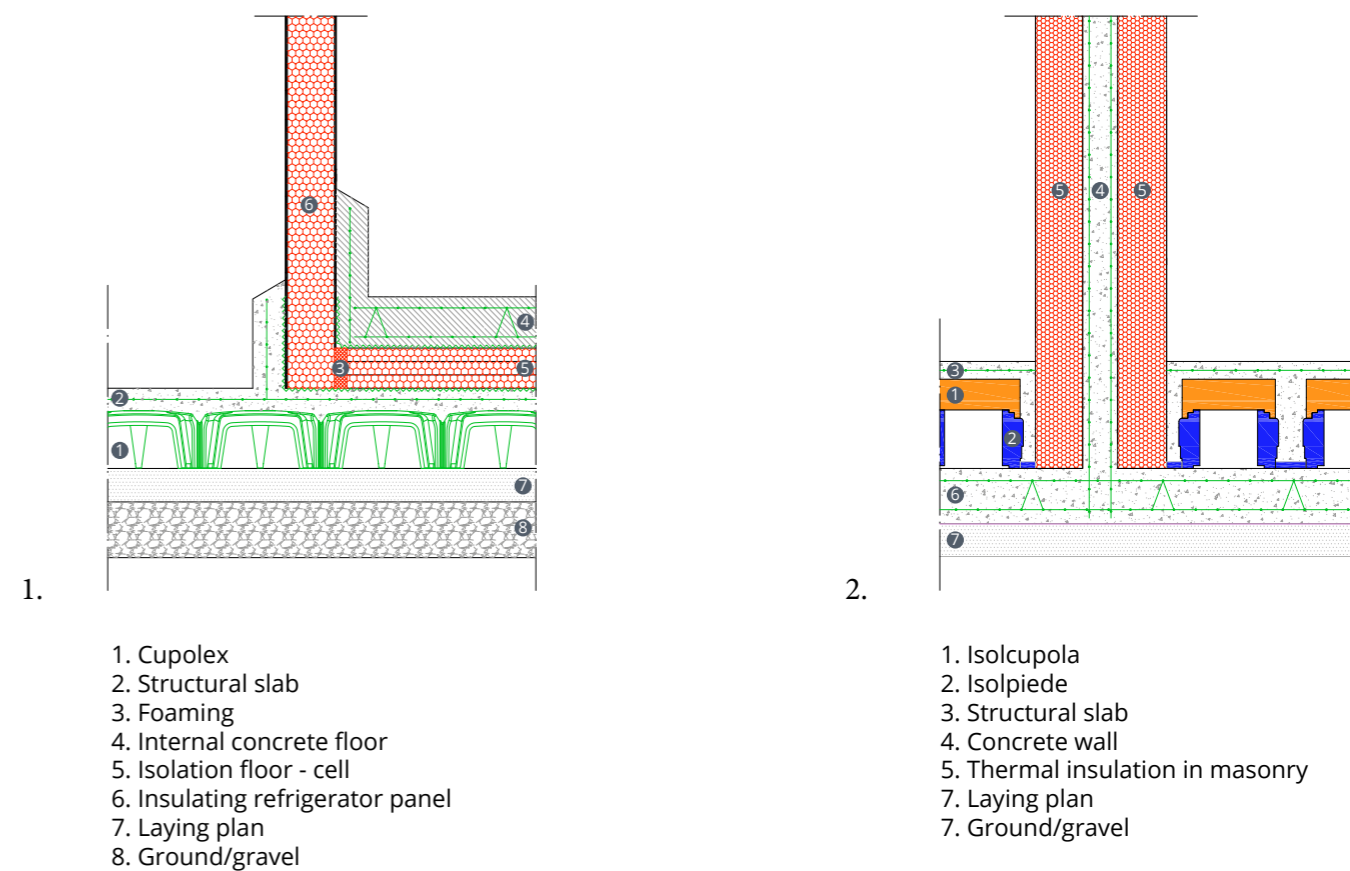
- No damage from freezing;
- High capacity structures;
- Durable and non-deformable structures over time;
- Dry environments thanks to the ventilation of the crawl space that removes the rising damp;
- Prevents the slab from cracking.

## THE ADVANTAGES

- The crawl space is continuous; it guarantees a free and better ventilation under the whole structure compared to pipe systems;
- More effective removal of moisture than gravel and pipes;
- ISOLCUPOLEX allows the installation of insulation and the creation of the ventilation space in a single step;
- Possible use of free thermal energy through geothermal and industrial processes;
- The air can be reused in a "closed" system and then heated and dehumidified;
- Reduced energy consumption.

## HOW DOES IT WORK

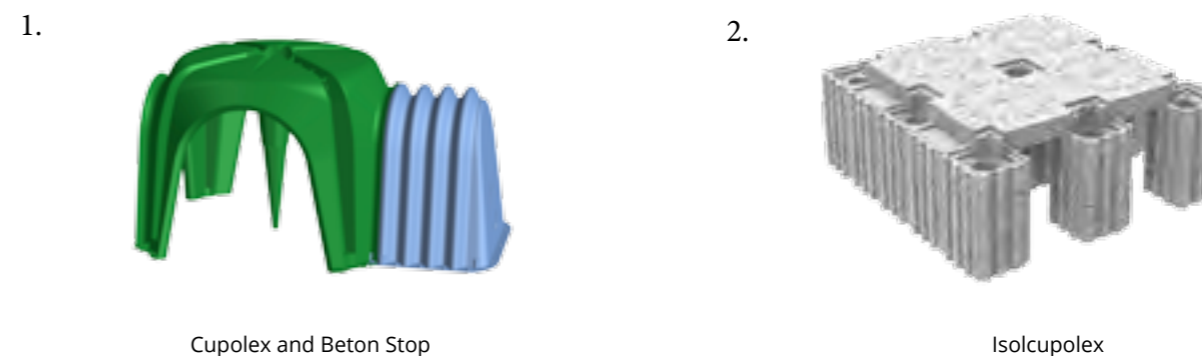
**ISOLCUPOLEX** elements are assembled directly on site on a suitable substrate, according to project layout, which depends on the insulating performance and the total height to be reached. The system acts as a formwork for the concrete cast and remains in place as thermal insulation. The concrete, when casted, creates the slab and fills the insulated foot elements to form small columns that transmit, as in column-arches geometry, the load of the slab directly on the subgrade, preventing the deformation of the insulation layer. The innovative system allows to obtain a reduced package and guarantees saving of concrete for the second slab, as well as an improvement in terms of the quality of the work.



### Applications

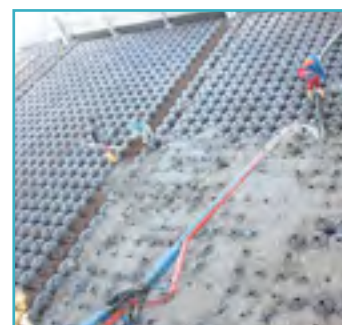
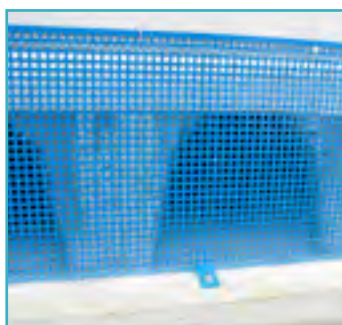
- Cold rooms
- Buildings for food storage
- Hockey fields

## THE PRODUCTS OF THE SYSTEM



## INSTALLATION

- Prepare the substrate properly as per project specifications;
- Install utilities if required in the crawl space;
- Install ISOLCUPOLEX elements according to the configuration indicated on the project layout;
- Make sure that all elements are installed and interlocked together correctly;
- The elements can be easily shaped with a normal hand saw to adapt to the project plant or for passage of utilities;
- The reinforcement is laid directly over the insulation layer, maintaining an adequate concrete cover;
- Cast in the traditional way by filling the foot elements first and then completing the slab.



## SPECIFICATION ITEM

Supply, on a preformed surface, of insulated ventilated crawl space type ISOLCUPOLEX of Pontarolo Engineering S.p.A., composed of IsolPupole Twinpor insulating tiles having a size in plan equal to 57x57cm and having thickness ..... cm; Twinpor high insulating feet ..... cm; (possible) PVC pipes with a diameter of 12.5 cm high ... cm; centering bases in recycled PP.

The ISOLCUPOLEX system thus described guarantees to obtain a transmittance of the floor package including thermal bridges equal to ... W / m<sup>2</sup> K

Supply and installation of metal reinforcement as per the executive project.

Class concrete casting .... for a quantity equal to ... m<sup>3</sup>, up to project height, with a top finishing pulled by helicopter.

Price: ..... € / m<sup>2</sup>

## TECHNICAL ASSISTANCE

Our technical office is available for assistance during design phase.  
Send the project plant in .ifc, .pln, .dwg, .dxf or .pdf format to the address [assistenza@pontarolo.com](mailto:assistenza@pontarolo.com).

At [www.pontarolo.com](http://www.pontarolo.com) DWG, CAD sections and BIM objects are available for download.

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