

### TYPE OF RESULT

**New technology**  
**New product**

New service

New knowledge or skill



### COMMERCIAL MATURITY LEVEL

Conceptual idea  
Proof of concept (design)  
Validated in a controlled  
environment

**Validated in a real environment**

Successfully implanted



### PROTECTION LEVEL

Non-applicable

**Patent**

Software

Know-how

Utility model

### Invention title

File number  
Priority date  
Status  
Country

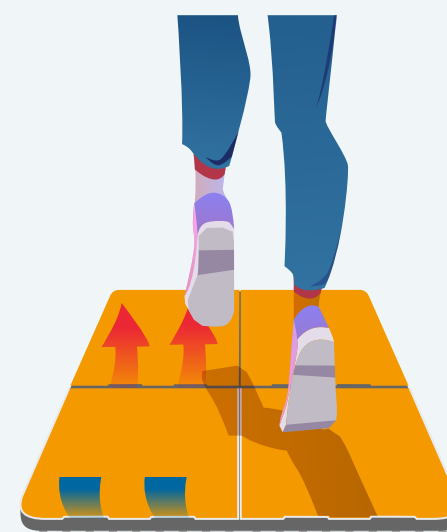
Isolierplatte  
EP3919704A1  
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European Patent

### Description of the solution. Problem solved

Current existing insulation materials try to reduce the effects of air temperature or air condensation in roofing. But they do not efficiently avoid the significant high solar radiation heating effects.

In climates where solar irradiation predominates, the thermal values produced on surfaces are considerably higher than the air temperature, significantly increasing roofing temperatures which, implies higher temperatures indoors.

An ideal solution for this is to create a ventilated air chamber in order to protect the roofing from direct solar reflectance. Several building solutions for this can be found, such as the Catalan-style roof or the floating on plots roof, but both of them imply a very high cost.



The solution we offer to this is a low-cost monolithic slab, which is intended to create a self-ventilated air chamber on the roof. The purpose of the ventilated air chamber is to reduce the heating produced by the solar reflectance on the floor slabs. It also works as a vapour barrier of the roof itself. This solution allows to improve the building's thermal conditions achieving, this way, the expected energy efficiency.

### Fields of commercial application

#### Sectors interested in applying this solution

- Design architects, engineers, builders interested in improving energy efficiency in their buildings.
- Climate Change policy makers that establish solar radiation as a factor to be considered in the improvement of energy efficiency.

#### Sectors interested in patent license.

- Manufacturers of building insulation materials that want to produce the insulating slabs as a new product.
- Manufacturers of other types of materials (clay, different types of metal forming, rubber, etc.) that choose the options proposed in the patent: bas-relief or moulding.
- Manufacturers of building elements that use the slab in any of their commercial solutions in order to improve their performance.

### Market opportunity

#### Traditionally, the following building techniques are used in order to insulate a roof:

- conventional roof system: on the floor slabs an insulating slab is installed (EPS fibre glass cork, etc.), then several layers are laid over it including the following ones: vapour barrier, roof slopes, waterproofing and finish (paving.)
- In inverted roof system: on the floor slabs roof slopes are executed. Then goes waterproofing and thermal insulation (EPS, fibre glass, cork...), and on top of it heavy duty protection is placed.

- These solutions work properly in low or medium solar radiation climates. However, they are ineffective, or even counterproductive in subtropical or tropical climates, where the effects of solar radiation on any of the heavy materials of the finishing layer cause

higher temperatures than the air temperature and also these temperatures keep high during the high hours as a consequence of the thermal inertia.

The solution here proposed improves considerably the thermal result of the cover slabs in high solar radiation climates, since its design introduces a self-ventilated air chamber. Moreover, it is an affordable solution.

This may be the best installation solution for buildings located in tropical and subtropical areas, as well as in all those regions where solar radiation produces thermal values higher than air temperature values.

In all of these climates we can find a market opportunity for this slab, which unlike the conventional ones, has been specially designed to solve the problems caused by solar radiation.

### Competitive advantage

Usually, honeycomb bricks or plots are used in order to achieve a ventilated air chamber in the roof. Both of these solutions are expensive, which means that they are unaffordable for regular buildings. The self-ventilated slab is based in common materials, successfully proven for roofing. Thanks to its special design, a significant improvement is achieved in thermal efficiency at a low cost.

### Resources needed to be implemented

This solution has been completely developed and it is ready to be commercially applied.

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