# D3.8_Evaluate Specialist Deep-Retrofit Products Report

# DRAFT

# CS16, OP23, OP27 Spain

INTELLIGENT ENERGY – EUROPE II

**Energy efficiency and renewable energy in buildings**

**IEE/12/070**

EuroPHit

**[Improving the energy performance of step-by-step refurbishment and integration of renewable energies]**

**Contract N°: SI2.645928**

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Technical References

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PLATAFORMA EDIFICACIÓN PASSIVHAUS

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# Abstract

***'Retrofitting to the EnerPHit standard will require the following initiatives with respect to building materials and products:***

- Use of existing materials in a non-typical method such as additional thickness of insulation;
- Use of non-typical (or non-commonly used) materials to achieve the extraordinary performance of the EnerPHit standard, such as airtightness tapes and membranes, foam glass for thermal bridging and triple glazing in windows;
- Testing of new-to-market materials which have had limited application in real-world scenarios; and
- Identification of short-comings in the marketplace in terms of products or materials that would greatly enhance the application of EnerPHit on a broader scale.

**It is planned that existing, uncommon and new to market materials and products will be used on each of the step-by-step EnerPHit projects where possible. Where materials are not yet certified for use on public buildings, their properties will be assessed qualitatively by the design and construction teams in terms of their potential for application in EnerPHit projects in future. ' (source: EuroPHit contract)**

# 1 Introduction

## 1.1 General projects description

**PEP works in Europhit with three social housing examples included as case studies or observer projects. Each example has been addressed from a different approach, allowing us to explore three scenarios: detached house, single flat and common areas of a residential building retrofit.**

## 1.2 Scope of this report

**Generic product types will be qualitatively evaluated by the construction teams using such criteria as those listed below:**

- Ease of use, including whether specialist training is required for application;
- Fit for purpose;
- General availability in the marketplace;
- Health and Safety considerations; and
- Cost.

# 2 Building envelope

## 2.1 Insulation

### 2.1.1 Mineral wool - Interior insulation

| | | |
|---|---|---|
| Manufacturer | : | Rockwool |
| Homepage | : | http://www.rockwool.es/ |
| Product name | : | FixRock system |
| URL: | : | http://www.fixrock.es/el+sistema/productos+que+componen+el+sistema |
| Fit for purpose | : | Thermal and acoustic insulation from the inside |
| λD: W/(mK) | : | 0,035 |
| Installation pace | : | External walls, from the inside. |
| Preconditions | : | Uninsulated brick walls |
| Usability | : | Easy to install: http://www.fixrock.es/instalaci%C3%B3n/procesos+de+instalaci%C3%B3n |
| Availability | : | |
| Health /Safety | : | Workers must wear masks during the installation of the rockwool insulation |
| Costs material [€/m²] | : | |
| Other | : | Be careful with thermal bridges, vapour transmission and driving rain protection of the wall. |


**Figure 1: Rockwool installation from the inside**

## 2.2 Windows

### 2.2.1 Zendow#neo Premium

| | | |
|---|---|---|
| Manufacturer | : | Deceuninck |
| Homepage | : | http://www.deceuninck.es/ |
| Product name | : | Deceuninck Zendow#neo Premium |
| URL: | : | http://www.deceuninck.es/es/ventanas-puertas/zendowneo-premium.aspx |
| Fit for purpose | : | High quality windows Uf≤ 1.03 W/(m2K) |
| Installation pace | : | Whenever possible in the insulation layer |
| Preconditions | : | Must be analyse the existing situation |
| Usability | : | Can be installed by producers of the windows. |
| Availability | : | Local producers |
| Health /Safety | : | |
| Costs Installed [€/m²] | : | |
| Other | : | Certificate component PHI for warm-temperate climate |

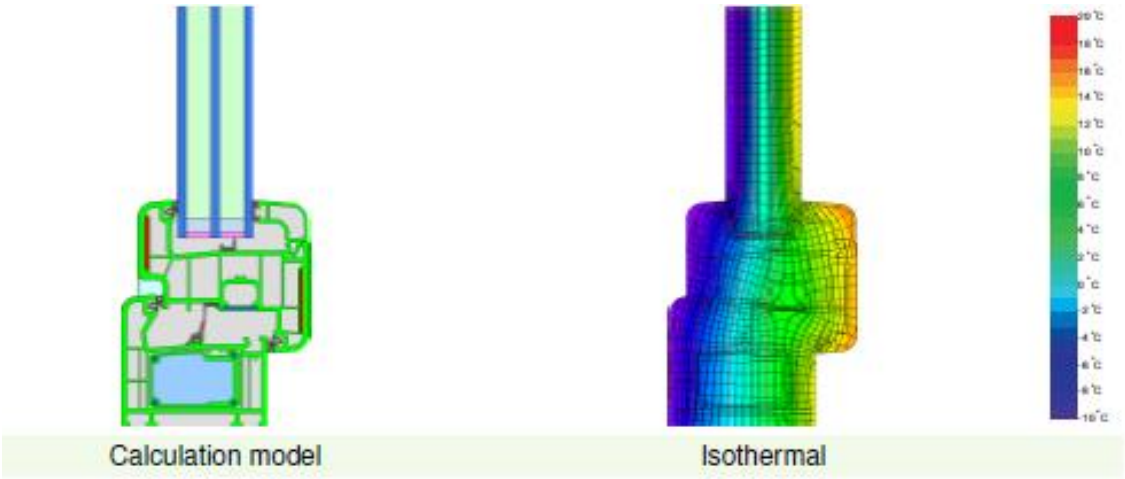



**Figure 2: Zendow#neo Premium. Certificate component PHI for warm-temperate climates**

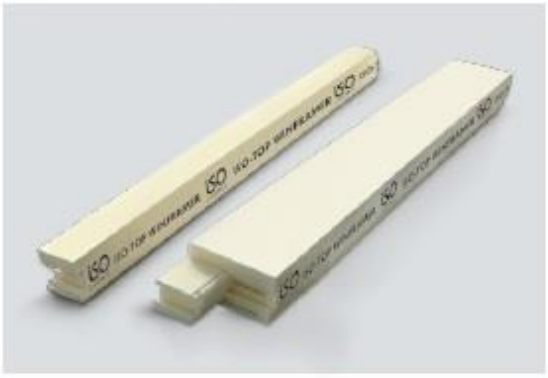
## 2.3 Special products avoiding thermal bridges (e.g. floor, windows, etc.)

### 2.3.1 ISO-TOP WINDFRAMER TPE 2

| | |
|---|---|
| Manufacturer: ISOCHEMIE | : ISOCHEMIE |
| Homepage: | : http://www.aisavua.com/ |
| Product name: | : ISO-TOP WINDFRAMER TYP 2 |
| URL: | :https://www.iso-chemie.eu/en/sealing-solutions/sealing-products/in-front-of-wall-installation-systems/iso-top-winframer-type-2/ |
| Fit for purpose: | :Suitable for the installation and sealing of windows in the insulation layer without thermal bridge. |
| Installation pace: | :Windows (small to medium-sized windows) |
| Preconditions: | : |
| Usability: | :Simple installation. Can be installed by common carpenters. The profiles can be cut to the required length using a knife or "hot blade". |
| Availability: | : To be ordered from Ais Avuá |
| Health /Safety: | : No special requirement |
| Costs [€/m²] Installed | : |
| Other | : It is a complete system with insulation profiles, brackets, consoles and spacer plates, adhesive |


**Figure 3: Window installation system ISO TOP WINFRAME TYP 2**

SYSTEM COMPONENTS

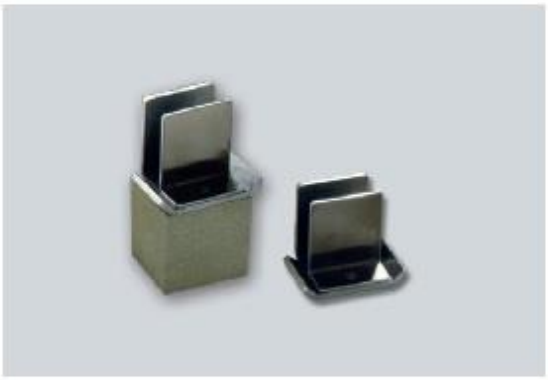


### ISO-TOP WINFRAMER INSULATING PROFILE 80 / 80 AND 140 / 80

ISO-TOP WINFRAMER INSULATING PROFILEs are available for projections of 80 and 140 mm. With a width of 80 mm and a height of 80 mm, ISO-TOP WINFRAMER INSULATING PROFILEs 80 / 80 are excellent for window and door elements which are fitted in the direct transition area between the wall and the EWIS. With this dimension, in front of wall installation can be realised for most of the window and door systems on the market. With a width of 140 mm and a height of 80 mm, the ISO-TOP WINFRAMER INSULATING PROFILEs 140 / 80 provide a larger projection. This finish can be used for window and door elements with larger fitting depths, for example, or in combination with roller shutter add-on systems.

### ISO-TOP WINFRAMER SYSTEM BRACKET „TYPE 2" 80 / 80 AND 140 / 90

ISO-TOP WINFRAMER SYSTEM BRACKETs „TYPE 2" are particularly suitable for load transfer in the lower connection area of window and door elements with in front of wall installation. These are available in two different sizes to match the insulating profiles. The ISO-TOP WINFRAMER SYSTEM BRACKET „TYPE 2" 80 / 80 (80 mm height and 80 mm width) is used for classic projections. The dimension 140 / 90 (140 mm width and 90 mm height) is designed for larger projections of up to 140 mm.



### ISO-TOP WINFRAMER ATTACHMENT CONSOLE & SPACER PLATE

Attachment consoles comprising a special aluminium bracket combination are provided to fix the windows in place. The tested aluminium attachment consoles are fastened to the masonry at the top and sides using standard, approved facade screws.

**Figure 4: ISO TOP WINFRAME system components**

# 3 Airthightness

## 3.1 Airtight window connection

| | | |
|---|---|---|
| Manufacturer | : | Ais Avua |
| Homepage | : | http://www.aisavua.com/ |
| Product name | : | ISO BLOCO ONE |
| URL: | : | http://www.aisavua.com/ISO-BLOCO-ONE/ |
| Fit for purpose | : | System for airtight and thermal bridge reduced window installation |
| $s_d$-value [m] | : | - |
| $s_d$-value [m] humidity variable | : | - |
| Surface weight [g/m²] | : | - |
| Installation pace | : | Windows, in case of no easy way to work from the outside |
| Preconditions | : | |
| Usability | : | Can be installed by common carpenters |
| Availability | : | To be ordered from Ais Avua |
| Health /Safety | : | Active moisture transport, ensuring dry and safe insulation structures |
| Costs [€/m²] Installed | : | |
| Other | : | Passive House certified component |

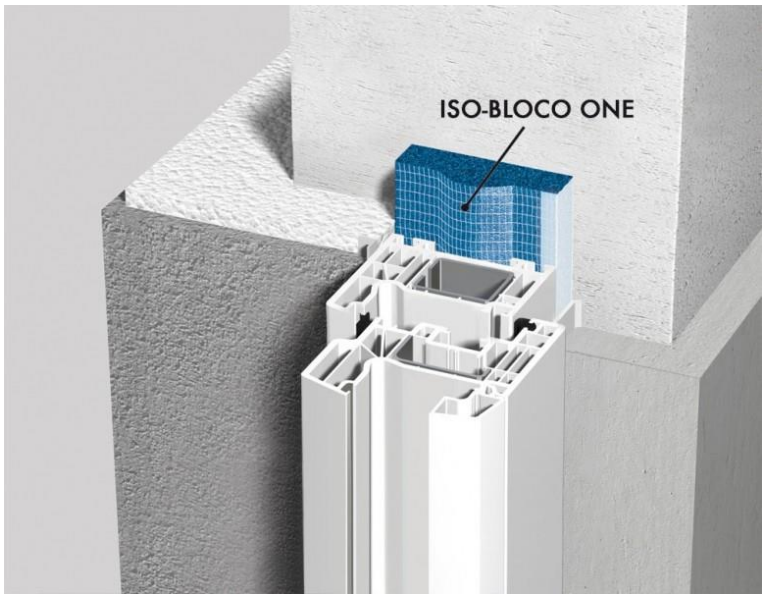



**Figure 5: ISO BLOCO ONE  for window installation**

# 4 Final remarks

**Until now we have used the same products for new buildings and retrofit. Sometimes it was hard to find the right way to work with them. Manufactures have started to develop and commercialize  new products for low energy retrofits in the last years. The main barrier is the costs of this special products (considerably high) and the lack of information about the improvements that you can achieve using them.**

**Some components have been certified for warm-temperate climate by Passive House Institute in 2016. This means a step forward towards because this components have an specific and important role in our market.**