ENERGY EFFICIENCY STUDY IN PASSIVE POOL

EP-elementS, a manufacturer of products for constructive formations with a rigid core of high-density expanded polystyrene foam reinforced by two-component mortars and alkali-free glass fibres, is a non-biodegradable and long-life product for prolonged exposures humidity and permanent immersion in water. Thanks to the study and combination of these elements, EP-elementS manages to provide an ideal thermal insulation and, in turn, to be an ideal support for ceramic coatings, micro cements and thematic mortars.

EP–ELEMENTS

CONSTRUCTIVE DESCRIPTION

In the energy study referring to the consumption of the heat generator and the loss of heat in the vertical and horizontal enclosures and water layer, we obtain a comparison for two cases where we will see the great advantage offered by the EP-elementS product:

- **BASSIN WITH REINFORCMENT CONCRETE H-25,** without perimeter isolation to avoid heat loss by transmittance of the glass vase? Walls, with a 3 mm thick waterproofing layer, a 3 mm thick flexible glue cement layer prepared to receive ceramic coating. Wall thickness 0.30 m

- **CONCRETE BASSIN WITH EP-elementS PANEL in 80 mm thickness,** waterproofing with Sika brand two-component mortar with a yield of 3.00 kg / m² and a 3 mm thick flexible glue cement layer prepared for receive ceramic coating.

- **CONCRETE BASSIN WITH EP-elementS PANEL in 50 mm thickness,** waterproofing with mortar in two components of the Sika brand with a yield of 3.00 kg / m² and a 3 mm thick flexible glue cement layer prepared to receive ceramic coating.

According to appendix DA-DB HE 1 of the Basic Document of Energy Saving exposed in the Technical Building Code, it is stated that:

CONCRETE vessel transmittance	2,32 w/m² ºk
CONCRETE vessel transmittance WITH 50MM PANEL	1,16 w/m² ºk
CONCRETE vessel transmittance WITH 80MM PANEL	0,35 w/m² ºk

PRACTICAL EXAMPLE

For a glass with dimensions of 5.50x3.20 meters and a depth of 0.90 meters of a layer of water, we obtain a comparison in which we observe the heat losses suffered by one glass or another, thus obtaining an idea of the amortization provided by the investment made in EP-elementS

- SURFACE EXPOSED TO HEAT LOSS: 33,76m²

LOSSES FOR GLASS WITHOUT INSULATION	3,33 w/m² ºk x 33,76m² = 112,42 w/ºk
LOSSES FOR GLASS PAN 50MM	1,16 w/m² ºk x 33,76m² = 39,16 w/ºk
LOSSES FOR GLASS PAN 80MM	0,35 w/m² ºk x 33,76m² = 11,81 w/ºk
LOSS IN WATER PAD	0,51 w/m² ºk x 17,60m² = 8,98 w/ºk

**10% will be added to the results for losses in ductwork.*

CONCLUSIONS

It can be observed by seeing the losses in the glass per square meter of constructive element that, the isolation provided in 80 mm is three times more effective than a 50 mm isolation. This will also repeat the cost of installation and amortization of the investment.

If the technical data of the power of the water heating pump in the glass area is available, it could be possible to calculate the economic savings that the INTERNAL ISOLATION OF A SWIMMING POOL CUP makes.

DATA TO BE CONSIDERED: our system allows isolation to be carried out on the inside of the glass, which means that the isolating layer is the one that is in direct contact with the body of hot water, this means that we minimize the loss due to transmittance.