

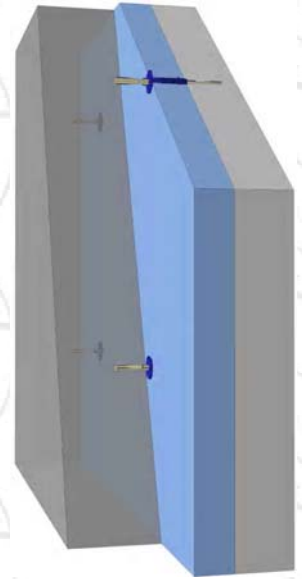
# High Performance Insulated Precast Wall Panel



High performance insulated panels are designed to meet the most stringent energy conversation requirements in the construction industry. This superior wall system has a coefficient of heat transmission as low as  $U=0.22 \text{ W/m}^2\text{K}$  for 150mm (6") insulation, exceeding any energy code requirement and contributing greatly towards the LEED and Estidama Pearl rating system.

## The System

At the heart of the wall system is a continuous fiber composite (FC) connector patented by THERMOMASS®, USA which is used to structurally tie two layers of concrete through pre-drilled, prefabricated insulation board. The non-conductive, chemically resistant FC connector allows the creation of an uninterrupted envelope of insulation throughout the exterior walls of the building thus providing a highly energy efficient building system that is virtually maintenance-free. The system represents a dramatic advancement in building technology for many types of temperature and atmosphere controlled buildings/facilities and offers unsurpassed advantages over conventional construction.



## Connectors



The Fiber composite connectors are made from a resilient composite matrix. With incredible strength and durability they are far superior to steel because they are non-corrosive, chemically resistant and have low thermal conductivity with unsurpassed structural strength. FC connectors are available for 25mm (1") to 250mm (10") thick insulation boards.

## Cost Comparison of Various Wall Systems - Wall size 4x3m<sup>2</sup>

Wall Systems Complying to Estidama Pearl Rating System & SASO Thermal Requirements ( $U=0.290 \text{ W/m}^2\text{K}$ )

	High Performance Insulated Panel	Standard Wall	EIFS Insulated Wall
outer layer	60 mm concrete wythe	100 mm concrete wythe	120 mm EIFS (15+105mm)
insulation	115 mm $k^{**}=0.035 \text{ W/mK}$	120 mm $k^{**}=0.035 \text{ W/mK}$	- $K^{**}=0.035 \text{ W/mK}$
inner layer	100 mm concrete wythe	200 mm hollow block	200 mm hollow block
plaster	-	15 mm spray plaster	15 mm spray plaster
total wall thickness	275 mm	435 mm	335 mm
fixing accessories	4 galvanized angles	4 galvanized angles	-
sealing of joints	included	included	-
construction stages	2 stages	5 stages	4 stages
construction time	5 man-hours	35-45 man-hours	40-45 man-hours
remarks	Cranes for erection excluded	Cranes for erection excluded	scaffolding not included*
cost/m2	330 AED	430-450 AED	330-350 AED

\* external scaffolding for application of EIFS wall , \*\* wall can be thinner with better-quality insulation



## Advantages:

### Energy Efficiency

- consistent thermal control
- higher R-values due to Mass Effect
- reduces HVAC loads
- eliminates moisture condensations and frost build-up in freezers
- impedes mold growth
- interior space comfort – no cold spots.

### Economic Advantages

- longer building life
- lowers building maintenance cost
- reduces HVAC system construction cost
- reduces energy bills by as much as 50%
- fire resistance lowers insurance cost

### Construction Advantages

Precast concrete insulated panels can be load bearing or cladding panels.

- rapid construction, quickest dry-in possible
- off-site construction, production never on critical path
- fewer construction trades at the site
- panels produced in quality controlled environment

### Technical Design Assistance

- determination of system compatibility with your project
- recommendation of design modifications to assure the integrity of the project
- isothermal analysis verifying R-value
- mass performance analysis showing the impact of mass on the building
- construction cost estimate and building life cycle payback analysis
- dewpoint analysis, moisture and WUFI
- thermographic analysis



Figure 1: High Performance Panel Casting



Figure 2: Sandwich Panel Off-loading



Figure 3: Courtyard – Thermal Image

