







KORU-Wall Panels Technology

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KORU-Wall Panels

It is an industrial system for the construction of structural walls of reinforced concrete for buildings in single panel up to four stories (G+3), and higher stories in double panels

The system is composed of:

- a factory-produced panel of undulated (wave shape) polystyrene
- covered on both sides by an electrowelded zinc coated square mesh
- connected by 33 connectors per m2 realising a 3 dimensional hyperstatic reinforcement steel structure

The panels are assembled on site and in situ poured concrete (double panel, floors, stairs) and shotcreted concrete (single panel) to realise the different elements of the system:

•Vertical structural walls;

•Horizontal structural elements;

Cladding element;

•Internal walls.







SINGLE PANEL

SINGLE PANEL

Used as

> bearing structure for buildings up to $3 \div 4$ storey, on site finishing with structural shotcrete plastering in both sides;

► PARTITIONS;

► FLOORS WITH SHORT SPAN.









DOUBLE PANEL

DOUBLE PANEL

Two single panels with internal and external mesh, assembled through connectors, the concrete is poured "in situ".

THE THICKNESS OF THE CORE CONCRETE WILL BE DEFINED ON THE BASIS OF THE STRUCTURAL REQUIREMENTS.

THE OUTSIDE PANEL IS FINISHED USING STANDARD PLASTER OR READY MIX MATERIAL.









FLOOR PANEL

FLOOR PANEL

USED FOR FLOOR SLABS AND ROOFS WITH VARIABLE THICKNESS ACCORDING TO THE SPAN.

THE REINFORCING STEEL IS PLACED INSIDE THE BEAMS AND POURED WITH CONCRETE ON SITE.









STAIRCASE PANEL

STAIRCASE PANEL

The staircase element is constituted by a shaped polystyrene core covered with two electro-welded meshes joined by connectors. This element must be reinforced and completed according to the span on site.









LANDING

WAY SLAB

PANEL TWO





ASSEMBLING & REINFORCEMENT



Site Panels Assembling - Scafolding



Roof Concrete Pouring



Roof Panels Reinforcing

- 1. SIMPLICITY IN THE SITE ASSEMBLING, WITH GEOMETRIES PREDISPOSED IN FACTORY AS FROM THE STRUCTURAL PROJECT;
- 2. LIGHTNESS, EASY LIFTING AND HANDLING ON SITE
- 3. DEAD LOAD REDUCED WITH NOTABLE REDUCTION OF THE SEISMIC MASSES;
- 4. ABSOLUTE CERTAINTY OF THE THERMAL ISOLATION CONTINUITY.







RULES FOR DESIGNING

The structures designed with panels – both simple and doubles – can be represented as bearing-wall structures.

For this reason it is necessary that the structure is characterized by:

- **Continuity in elevation**: the bearing walls must continue from the foundation to the roof to be able to discharge the loads correctly.
- **Openings** shall be vertically aligned so that there are areas that ensure the full continuous presence of bearing elements. For the same reason, it isn't recommended to design big openings or façades with ribbon windows.
- **Regularity in plan**: the bearing walls have to be well distributed on the plan in order for the structure to have a good distribution of the stiffness. This is a basic rule for any kind of structure.







RULES FOR DESIGNING

EXAMPLE : 3 stories house

Walls in single panel and floors in floor panel:

- -Number of level up to 4
- -Maximum floor/roof

span: 8 m

-Floor/roof

supported on

two sides



FACADE ENTREE



TYPICAL FLOOR







RULES FOR DESIGNING

Walls in single panel and floors in floor panel:



TYPICAL FLOOR

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TYPICAL FLOOR







SYSTEM PERFORMANCE



- 8. STORMS RESISTANT
- 9. SUPERIOR STRENGTH







PRODUCTION PLANT









KORU-Wall Panels vs. Other Systems

Lightness:

Panel weight between 4 and 15 Kg/m², remains light until the final mounting Only after application of plaster a single panel weighs about 150 kg/m²

Therefore:

- Easy handling of the panels in all phases
- No need of special tools/equipment
- Easy to install
- · Reduction of the dimension of the foundations
- · Absence of debris in the job-site

Great logistics advantages:

- Substantial reduction in transportation cost
- Ease of storage on the job-site
- · Security for workers







Continuous insulation:

- Continuous polystyrene sheet achieves high thermal performance
- Significantly reduced energy consumption
- Experimental tests have shown that a single panel with a polystyrene plate 8 cm thick has a Transmittance K = 0,58 W/m2K against a K = 2,5 for a reinforcement concrete wall as the Precast conventional System

Durability:

- Concrewall panels are made by galvanized steel wires meshes and therefore are not subject to corrosion
- Concrewall panels are confined and protected by a double concrete layer that prevents them from coming into contact with any possible aggressive chemical agents inside and outside







KORU-Wall Panels vs. Other Systems

Resistance:

Earthquake resistance

Storm and wind shear resistance

• All Concrewall panels have an overlap mesh which allows each panel to join the mesh of the adjacent panel

•The structure can be considered as a "one block" because it is made of rigid and not deformable frames

•High resistance to the behavior of the structural "knots" in case of dynamic situations, like seismic stress







Panels Production Plan

- Lead time to deliver the factory equipment: 8 months from closing of financial agreement
- Such machines have a panel capacity production of 4,000sqm/day (Considering 2 shifts of 8 hours each)
- Equivalent to a 4 storey Building each day composed of 16 apartments of 70sqm each
- Equivalent to about 5,500 apartments each year
- Production volume can be increased by adding further machinery on site as and when required
- Note: site preparation shall be done ahead of the factory equipment delivery







Construction method KORU-Wall Panels









Construction method KORU-Wall Panels









Construction made – KORU-Wall Panels: Villas













Construction made – KORU-Wall Panels: 3 storey houses













Construction made – KORU-Wall Panels: 4 storey building











Construction made – KORU-Wall Panels: Hospital









Construction Detail









Construction Detail for Fixing



















Anchoring partition panels on reinforced concrete structure.





















Reinforced concrete villa and external and internal filling walls.

Anchoring partition panels on reinforced concrete structure.











INDUSTRIAL BUILDING













































































FOR FURTHER INFORMATION PLEASE CONTACT:

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