ZENON PANEL

www.zenonpanel.com

ZENON PANEL

Green

Structural System For Cellings And Walls

CONT

ENTS

WHO ARE WE

ZENON PANEL IS

Being produced since 1996 by **Itimat** Engineering **Zenon Panel Construction Technologies Ltd.** And it is one of the most preferred building material in many regions around the world. The mother company is in Turkey and there is branches in Egypt, Kuwait and KSA.

It is generally used as shown in **chapter number 03**. Zenon Panel has become more preferred product every day. We have a technical approval certificates such as Turkish Stand-arts Institute, **HBRC in Egypt, ISO and EOTA.**
The dealer network and promotional activities increased throughout the countries and middle east.

Zenon Panel is being served for more than 3000 different projects up to this day. Zenon Panel has already taken his place between alternative building materials of the future.
Zenon Panel is considered as a green building system due to edge system and it's a member of **GPRS** at **HBRC** in Egypt.

Our company serves with experienced staff and engineers also we have an extensive dealer network throughout the countries. Our company is working with quality principles at all stages of production until the installation of the panel. Zenon Panel offers a lot of innovation for the building sector with advanced technologies and brings different solutions to the classical application.

A Short Biography Of The Founder

Founder: Mehmet Büyüktortop

Birth: 1949 Isparta / Turkey

Education: Civil Engineer 1973

1973 - 1976: Control Engineer In Bosphorus Bridge Project

1976 - 1998: Architectural and Engineering Services

- He has developed 2000 projects
- Founded Itimat Engineering Company
- Contracting - Industrial and Housing Projects
- He has constructed 100 different buildings

1998 - 2018: Manufacture & Research of Zenon Panel Technology

- He managed and developed Zenon Panel construction system

Top Management

Eng. Ömer Yasin

PARTNER & MEMBER OF BOARD

Production Manager & Expert on Finance Markets
Graduated from Yildiz Technical University in Istanbul - Civil Engineering in **2004.**

Eng. Selçuk Yunus

PARTNER & MEMBER OF BOARD

Marketing Manager
Graduated from Yildiz Technical University in Istanbul - Computer & Software Engineer in **2005.**

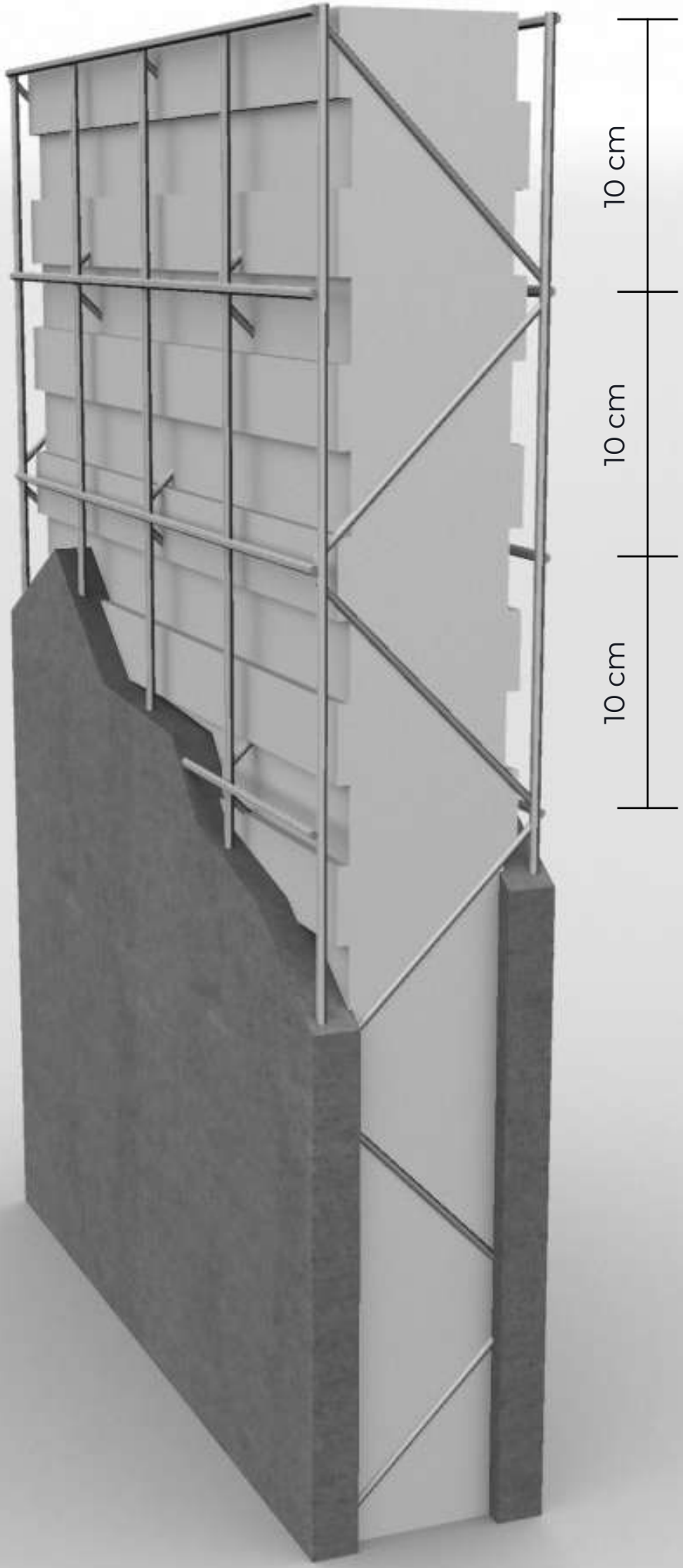
Eng. Hany Abdel Moez

MD & REGIONAL MANAGER

Graduated from Ain Shames University in Cairo - Civil engineering in **1990**. Master degree from American University in Cairo - Construction management in **1992**. **CEO** of **Moran Engineering Company** for Contracting since **1995**. **MD & Regional Manager** of Zenon Panel in **MENA.**

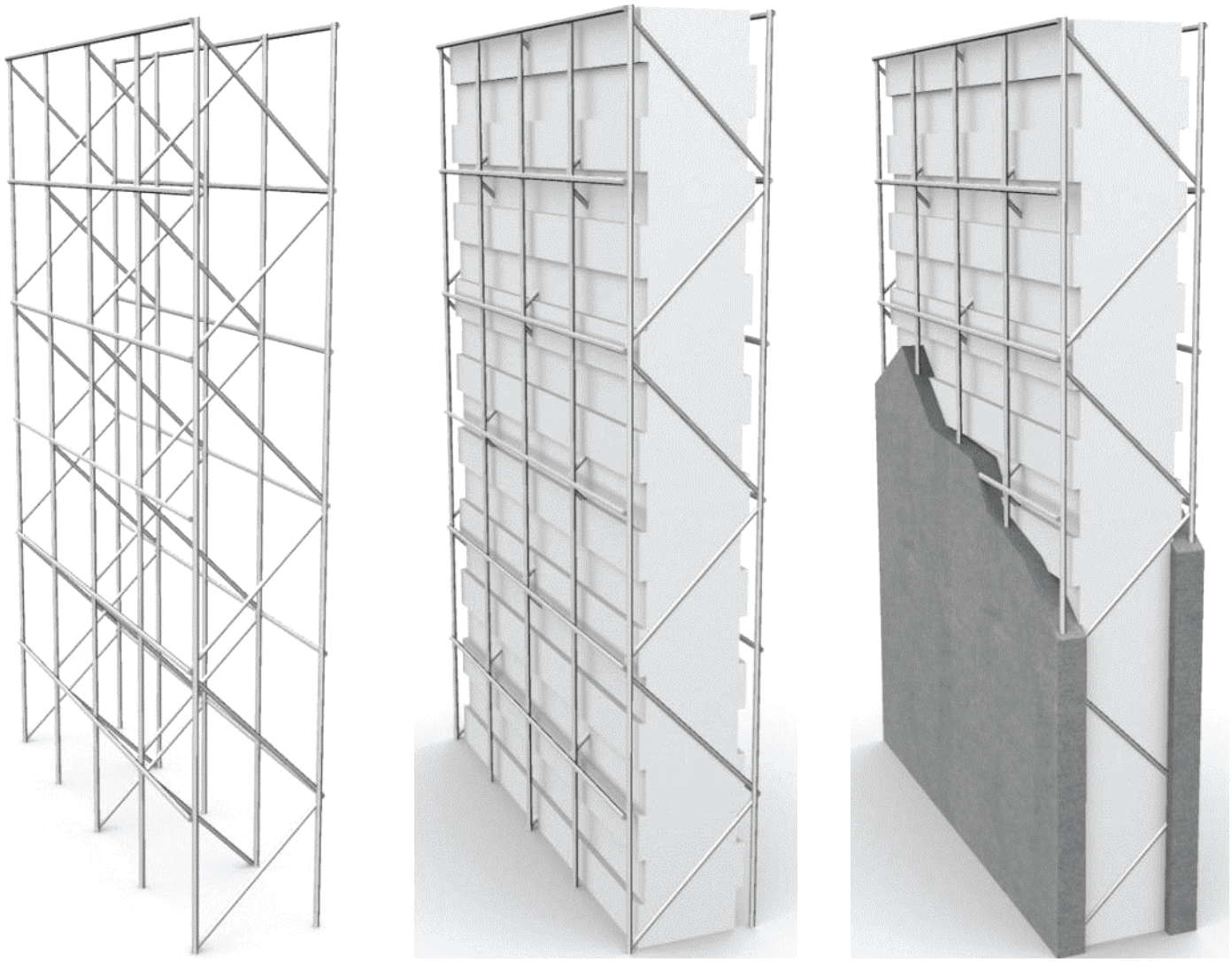
PROPERTIES OF ZENON PANEL

02


10 cm
10 cm
10 cm

We Produce Zenon Panel With EPS And Without EPS. Each Product Has Different Usage

WHAT IS ZENON PAN



N E L

Zenon panel has double layer of steel wire mesh connected by continuous diagonal wires, and an EPS-insulation board inserted between two layers (expaned polstyrene). Zenon Panel has rigidity and tensile strength with 3D steel wire mesh system. Each 1m2 panel has 200 connection nodes. Each node is welded with electronic control. The function of EPS core is sound and thermal insulation.

The Ultimate tensile stress of the wires is 7000 Kg / cm^2, and all the wires are galvanized and the diameter of the wire between 3 and 3.5 mm^2.

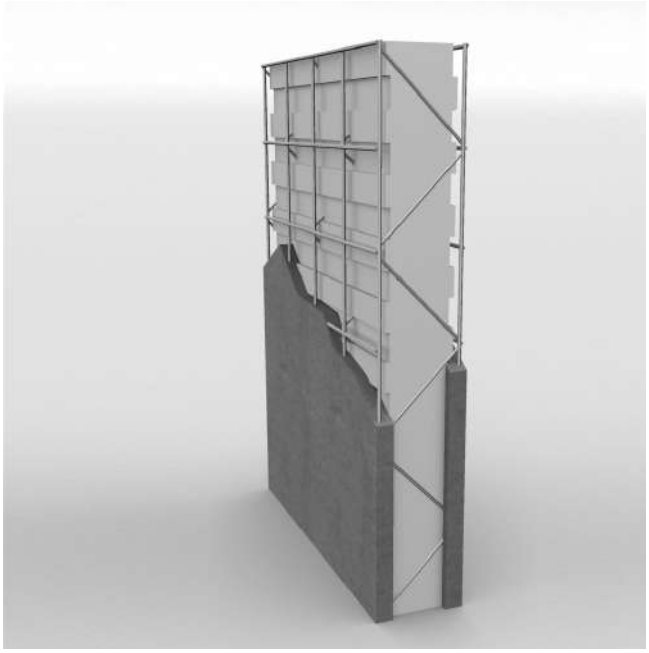
WHAT IS ZENON PAN

1 Two Galvanized Steel Mesh

- Diameter 3 - 3.5 mm
- Tensile strength 700 N/mm^2
- Galvanized Steel
- SAE 1006
- Thickness of the steel truss is 10 or 13 cm
- Truss wire mesh attached every 10 cm To connect two steel networks with the Truss system.
- 400 welding points per square meter.

2 Heat Insulation Board

- EPS is the expanded polystyrene sheet
- Density 16 kg/m^3
- Class B1 fire retardant, IE non-combustible
- Corrugated surface

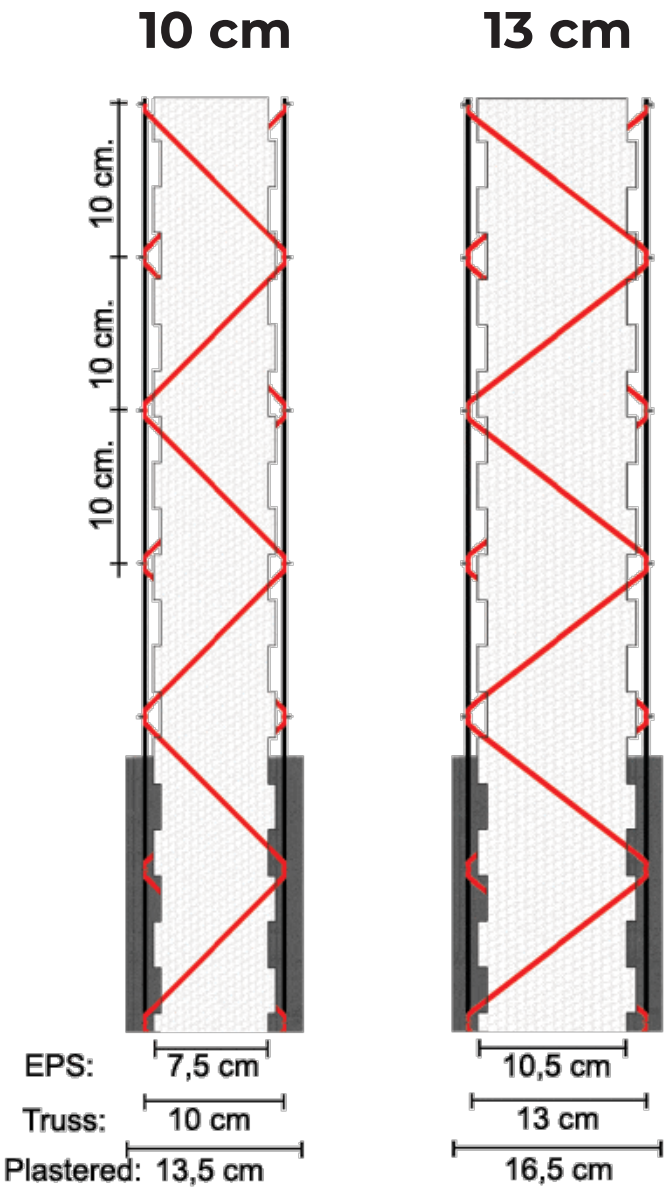


3 Plaster or Concrete Layer

- Thickness about 3 cm from both sides of the wall and from the bottom on the celling and the top of the celling is concrete
- Plaster-free layer until covered the whole wired mesh
- It is applied manually or by machine

NEL

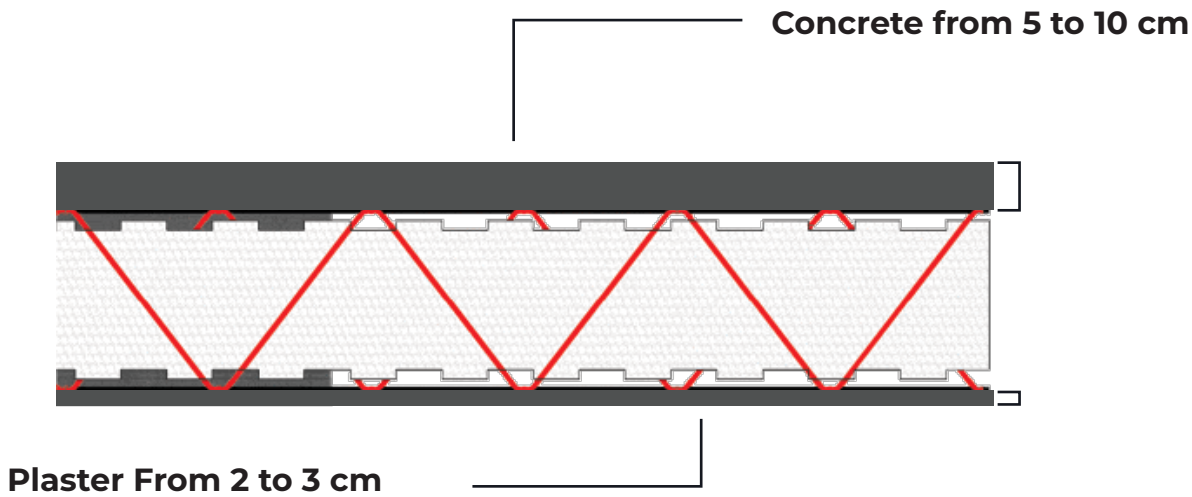
ZENON PANEL PROFILE IN WALLS



- The truss system on zenon panel is responsible to take all the stresses of zenon panel bearing walls.
- If zenon panel worked as an exterior walls the wire meshes and the truss systems would take all the bearing and lateral forces

ZENON PANEL PROFILE IN CELLINGS

- The truss system on the zenon panel is responsible to transfer the load and stresses on the slab to the supports and working as a composite section with concrete.
- We can make a slab design of zenon panel until 10 meter span.



Dimensions of Zenon Panel

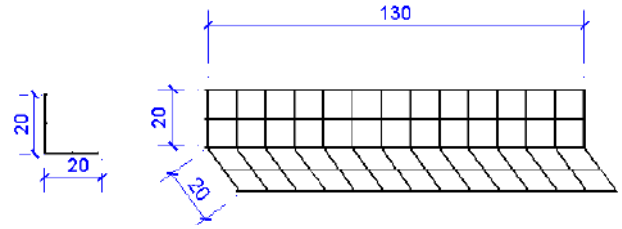
- Net width:121 cm Gross width with 2 overlap meshes: 142 cm.
- Length: Free due to order.

Zenon Panel Accessories And Assembly

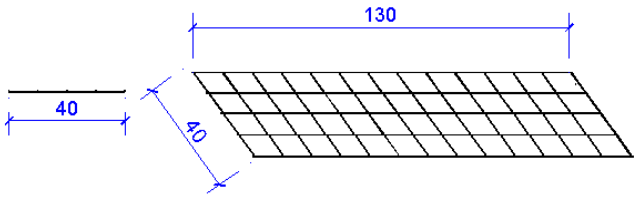
Materials required for installation

✓ Small-sized iron scissors	✓ Spirit level	✓ Tape meter
✓ Hammer drill	✓ Hammer	✓ Chalk line
✓ Slate nipper	✓ Nail	✓ Knife
✓ Binding wire	✓ Board marker pen	✓ 8mm ribbed rebar
✓ Aluminum gauge profile	✓ 5cm x 10cm or 10cm x 10cm timber	

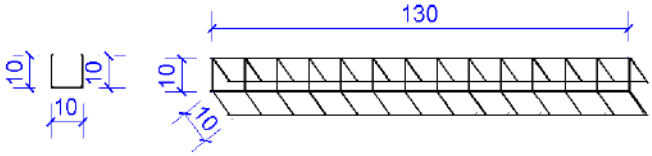
Connection meshes



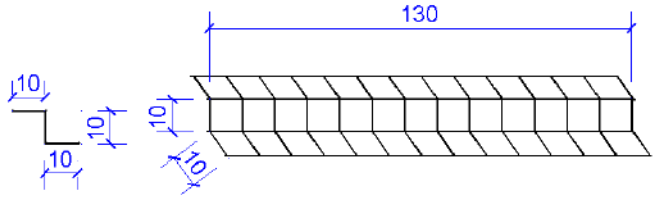
K130-40 Corner mesh



D130-40 Straight mesh



U130-30 "U" mesh

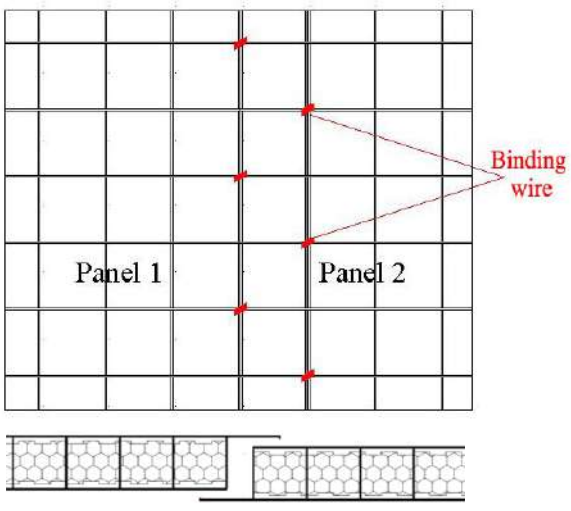


Z130-30 "Z" Mesh

Merge of panels and the use of connection meshes

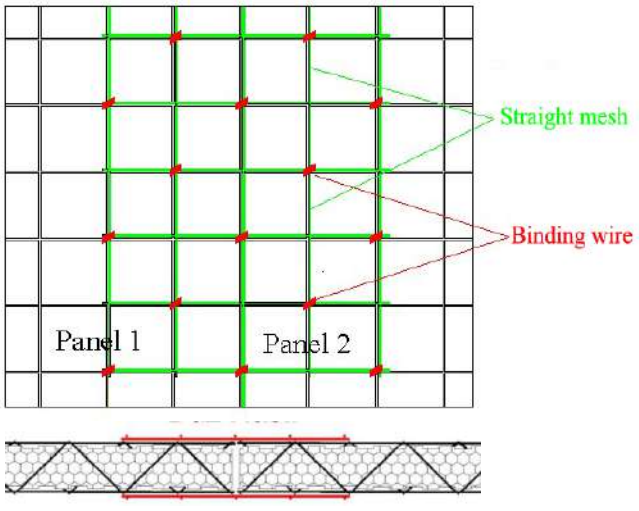
 # Merge of panels by tieing their overlap meshes

Take care that there are no gaps between the panes.



 # Merge of panels by using straight mesh

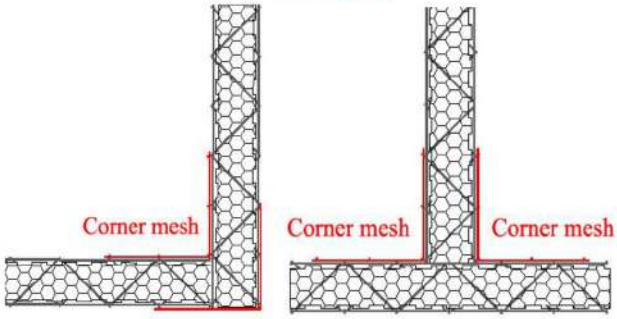
Straight mesh should be tied in the form of zigzags by the diagonal wire node points.



Note: The merge of the third panel should not be started until the first two panels are merged together without a gap. Otherwise, it is difficult to close the gap between the first two panels.

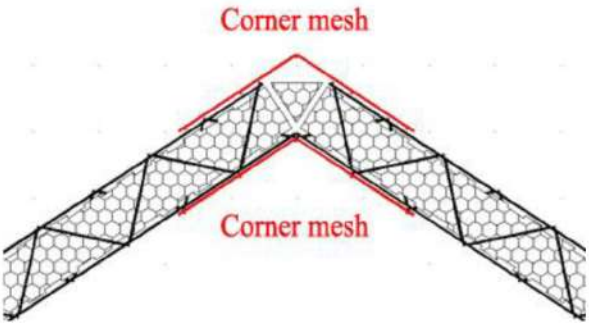
 # Merge of panels with corner meshes in angled joints

Corner meshes need to be tied both internally and externally.



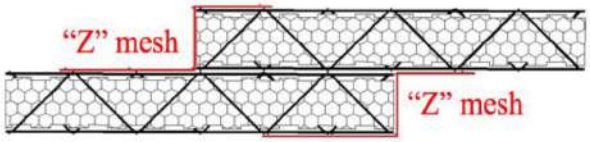
 # Merge of roof ridge panels with corner meshes

Corner meshes need to be tied both internally and externally.

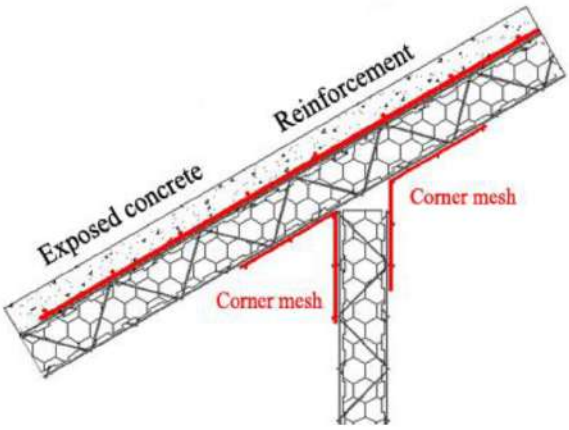


Note: In wall application, angular linearity of the panels must be checked before corner meshes are tied. After tieing the corner meshes, it is not possible to correct the angular linearity of the walls.

 # Merge of panels with "Z" meshes

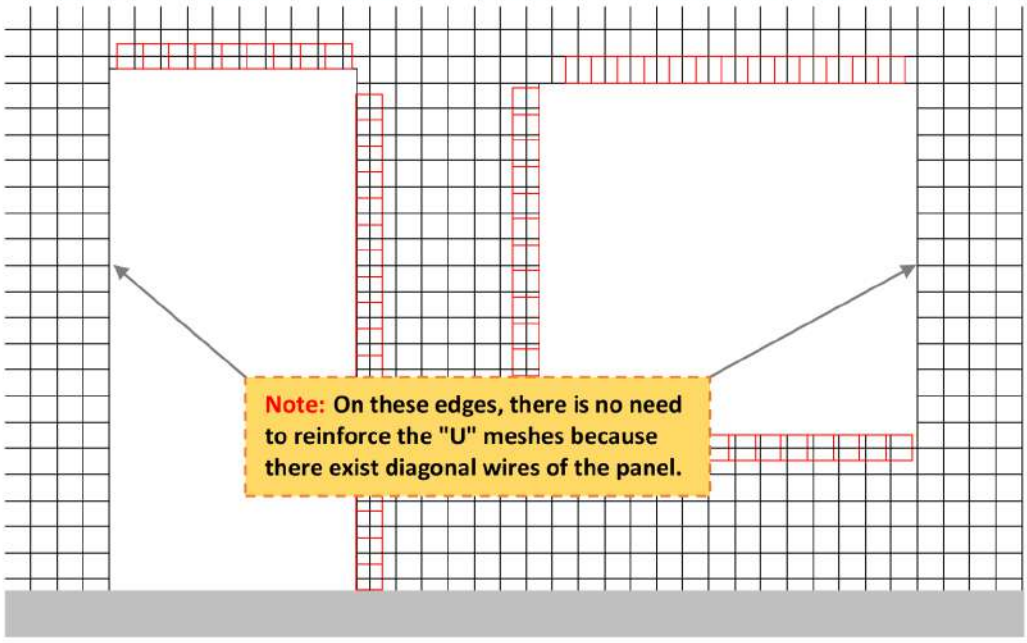


 # Use of corner meshes in junction of wall and floor panels

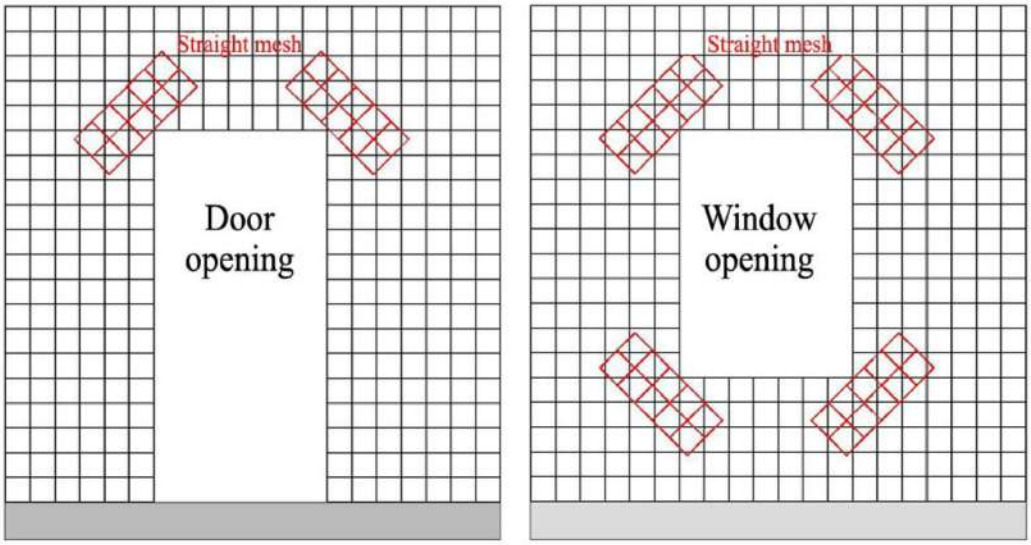


 # Reinforcement of door and window spaces with "U" mesh

Note: In Zenon Panel wall spaces, "U" mesh must be connected to the horizontal edges. On the vertical edges, if there is no diagonal wire, "U" mesh must be connected.



 # Reinforcement of door and window spaces with straight mesh

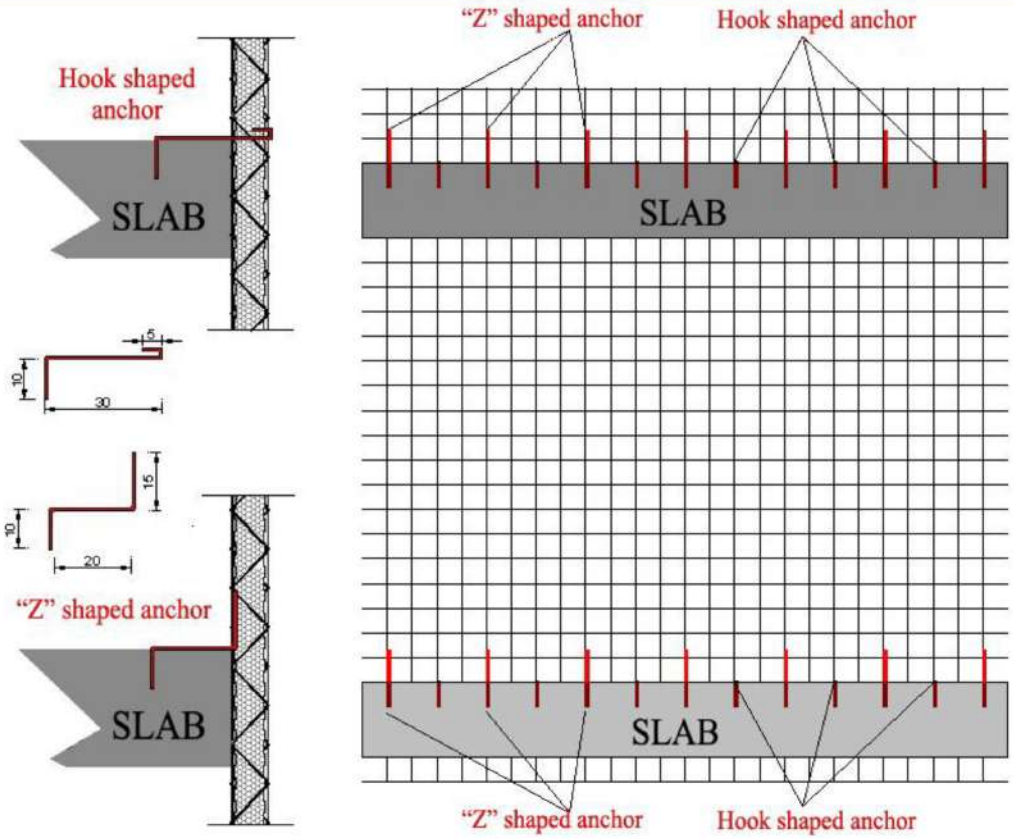


Anchorage details in wall applications

 # Curtain wall application (from outside the carcass)

On each floor, "Z" shaped and hook shaped rebars are successively anchored at intervals of 20 cm.

Note: Before starting the exterior wall application, check that the slabs are properly aligned. In case of plumb error in the slabs, the wall application should be carried out taking into consideration the outermost slab and necessary measures should be taken in the other floor slabs. It is extremely important that the facade wall is plumb in vertical and horizontal axis. "You have to be sure that the wall is on level.



APPLICATIONS OF ZENON PANEL

03

1

Zenon Panels For One-And Two-Story Buildings (Walls + Ceilings).

2

Zenon Panel As A Slab.

3

Zenon Panel As Exterior And Interior Walls.

4

Zenon Panel For Extension Roof.

5

Zenon Panel For Various Architectural Shapes.

6

Zenon Panel For Retaining Walls.

7

Zenon Panel For Industrial Buildings And Hangers.

8

Zenon Panel For Fences.

9

Zenon Panel For Swimming Pools.

10

Zenon Panel For Flooring And Lining

1 Zenon Panels For One- And Two-Story Buildings (Bearing Walls + Ceilings)

- Fast Tracking
- Heat Isolation And Sound Proofing
- Fire Resistance
- Easy Installation
- Architectural Shapes

2

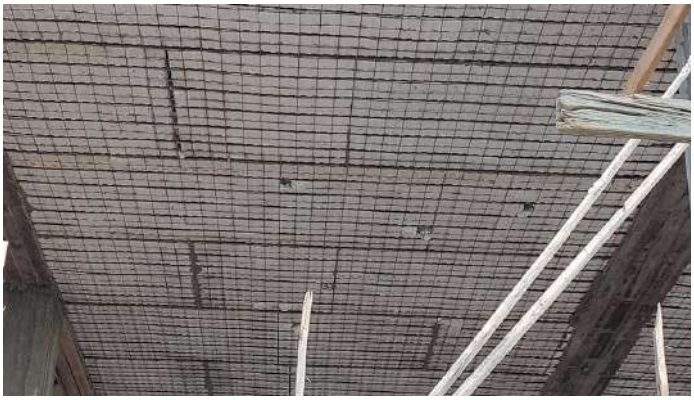
Zenon Panel As a Slab

- Fast Tracking
- Heat Isolation And Sound Proofing
- Fire Resistance
- Easy Installation
- Low Weight
- Low Cost

Nursery Building Ground And First Floors Using Zenon Panel Slab

Villa And Guest House Ground And First Floor With Zenon Panel Slab System






3

Zenon Panel As Exterior And Interior Walls

- Fast Tracking
- Heat Isolation And Sound Proofing
- Fire Resistance
- Easy Installation
- Low Weight
- Low Cost
- Saving Area


E.L.S


ULUSLAR
ULUSLAR INSAAT





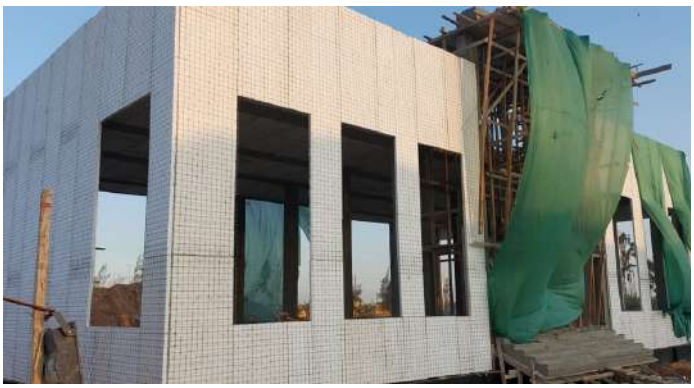


















DEVELOPERX
BY SHOURA

4 Zenon Panel For Extention Roofs

- Fast Tracking
- Heat Isolation And Sound Proofing
- Fire Resistance
- Easy Installation
- Low Weight
- Low Cost























ZENON PANEL
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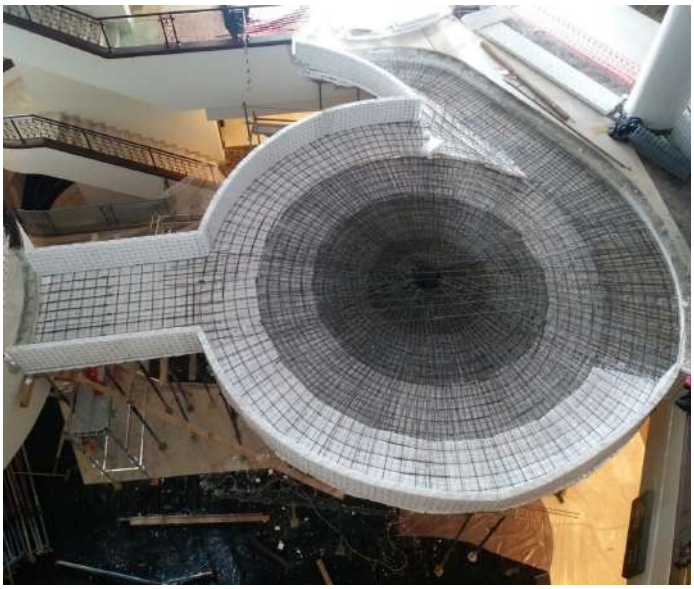
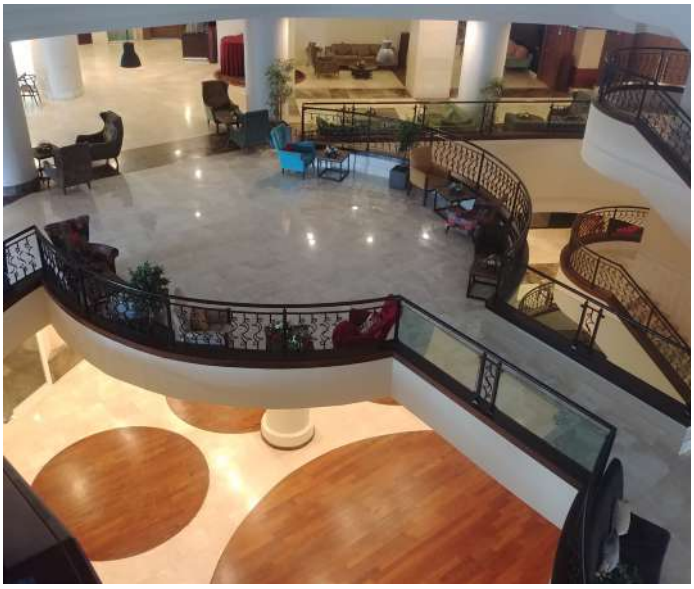
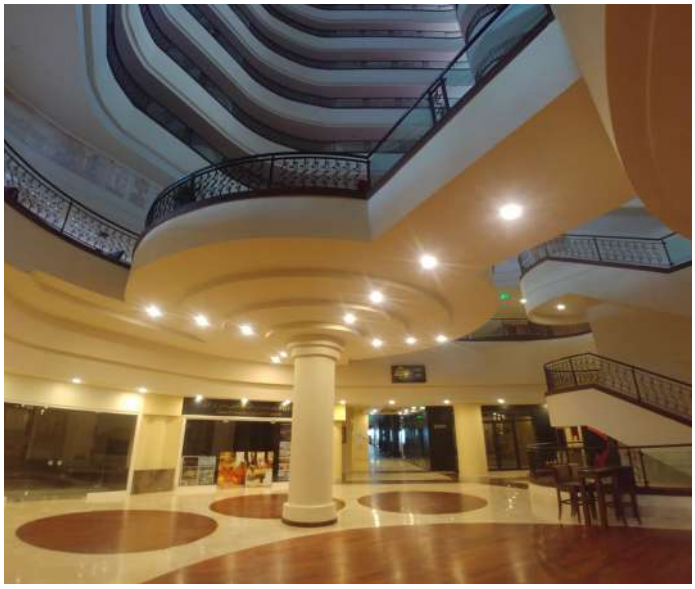
5 Zenon Panel For Various Architectural Shapes

- Fast Tracking
- Heat Isolation And Sound Proofing
- Fire Resistance
- Easy Installation
- Low Weight
- Low Cost







6

Zenon Panel For Retaining Walls

- Fast Tracking
- Easy Installation
- Low Cost









江草牧場

7

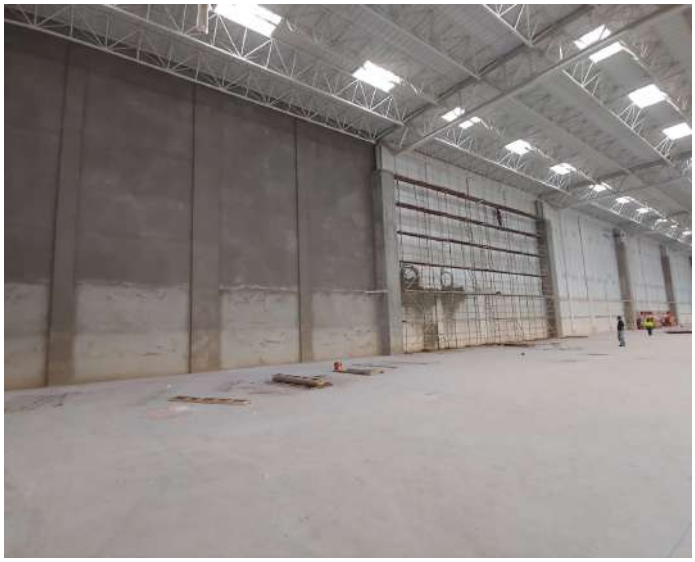
Zenon Panel For Industrial Buildings And Hangers

- Fast Tracking
- Heat Isolation And Sound Proofing
- Fire Resistance
- Easy Installation
- Low Weight
- Low Cost
- Available For Any Heights
- More Security


PICK UP
ORDER


POTTERY CAFE


10/06/2008



8

Zenon Panel For Fences

- Fast Tracking
- Low Cost
- Available For Any Heights
- Architectural Shapes


SENİRKENT ÖĞRENCİ YURDU

9

Zenon Panel For Swimming Pools

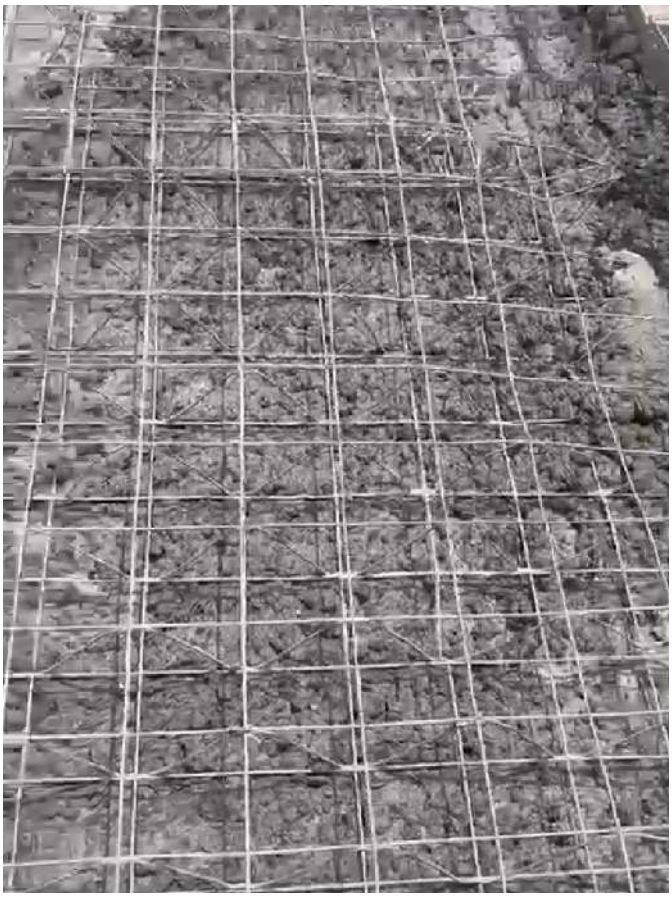
- Fast Tracking
- Low Cost
- Architectural Shapes

10

Zenon Panel For Flooring And Lining

- Fast Tracking
- Low Cost
- Architectural Shapes
- Easy Installation


BETON



COMPARISON BETWEEN ZENON PANEL & TRADITIONAL SYSTEM

04

Features Of Zenon Panel System

Green Buildings

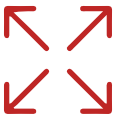
Speed Of Installation
And Execution

Extremely Light
Weight

Economic Aspect

Sound Proof

Thermal Insulation



Save The Real
Space Of The Building

Easy To Make Plaster

Easy To Install Electricity
And Water Pipes

Unique Architectural
Shapes On The Facades

The Ability To Hang
And Install Any Loads, Furniture
Or Air Conditioning Equipment

Fire Resistance

High Resistance
To Earthquake

Coverings For Roofs
Of Metal Structures

Hangar Walls
And Industrial Facilities

Not Affected By
Winds And Storms

High Level Bullet And
Ballistic Resistance

Easy To Open
Windows And Doors

Green Buildings

- Zenon Panel is a member of **GPRS** exhibitions in Egypt and is certified as a green building which reduces **carbon emissions** and energy consumptions.

WHY?

- Zenon panel reduces the quantity of steel and cement about **60%** than the traditional systems, which therefore reduces the manufacture of these materials and it's carbon emissions from their manufacture industries.
- Zenon panel is a **thermal insulation system**, It reduces the energy consumption about 30% whether the energy is electricity or gas.
- Zenon panel reduces **water consumption more than 60%** than the traditional system.
- Zenon panel can easily be **recycled** after the lifetime of the structure, so there is no waste and no effect on the environment.
- Zenon panel is a fast application which reduces the traffic trips of the workers into half which affects the reduction of **carbon emissions by 50%**.
- Installation of zenon panel is easy and light, so it reduces the possibility of putting workers in danger.
- Due to the elasticity of the system, the behavior of zenon panel during earthquakes is safe for the people and the enviroment.

Speed Of Installation And Execution

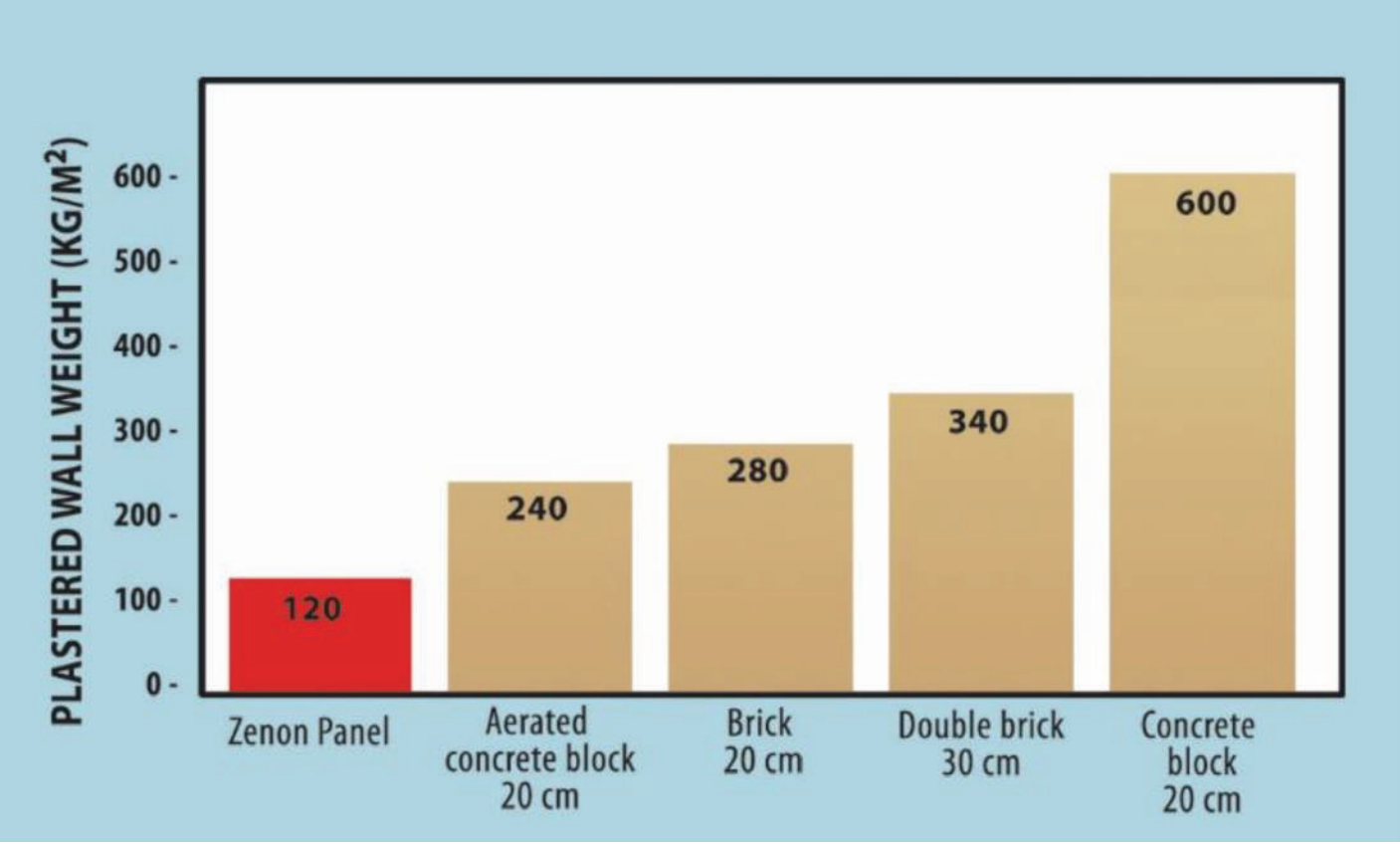
- Zenon Panel saves the formwork of the skeleton by 60% than the traditional system.
- Zenon panel is a light system, so the transferring and installation of zenon panel walls is much faster than when using brick walls.
- One worker can finish around 50 m^2 in one day.

Formwork Of Zenon Panel Slab

Formwork Of Traditional System Slab

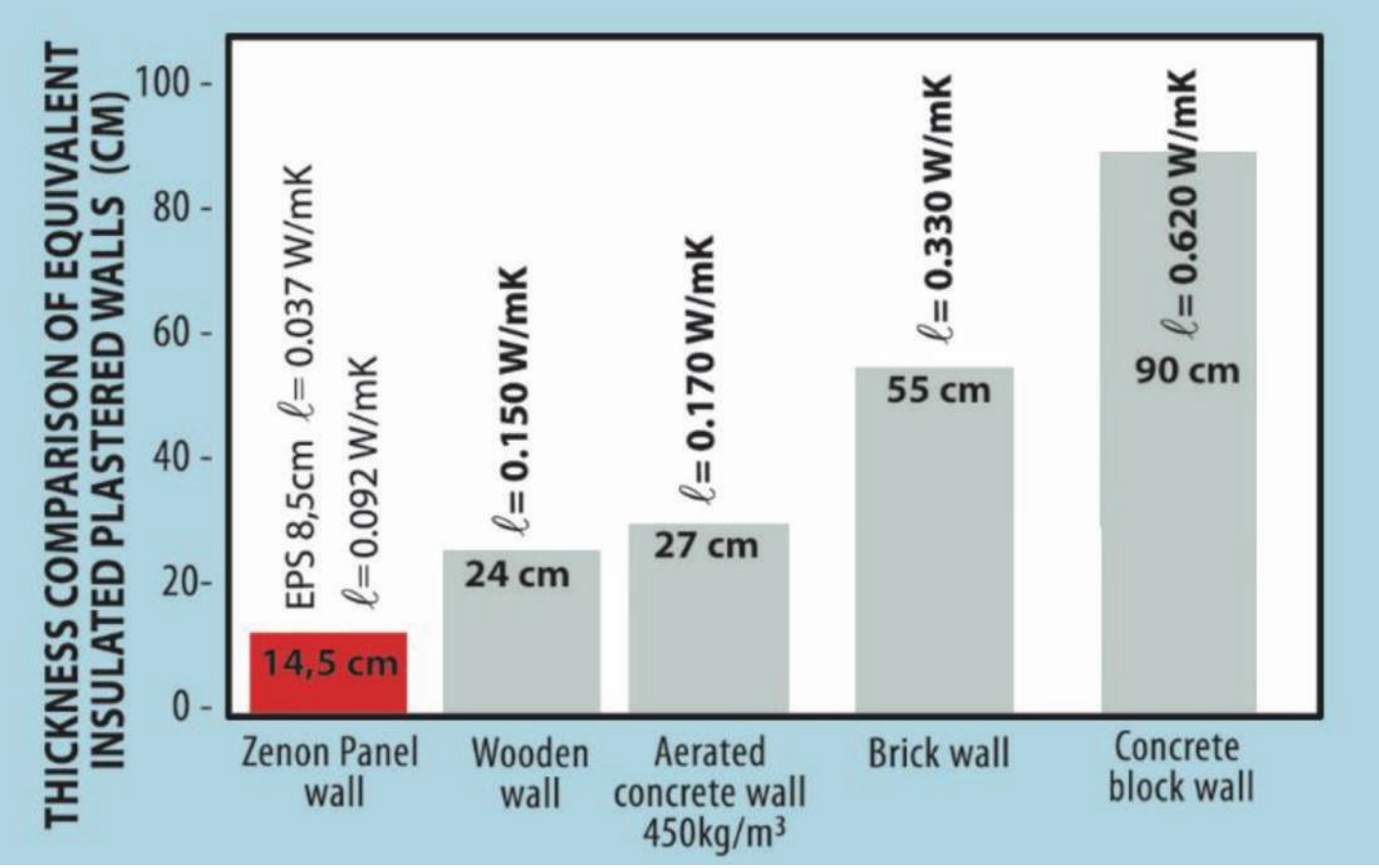
Extremely Light Weight

- Zenon Panel can easily be lifted by one worker.
- A 3 m^2 zenon panel wall weight is 12 kg, while a 3 m^2 brick wall weight 650 kg.
- Due to zenon panel slab light weight, the quantity of columns and foundations are reduced.



Thermal Insulation & Sound Proofing

- Zenon panel is a **thermal insulation system**, It reduces the energy consumption about 30% whether the energy is electricity or gas.
- Traditional systems need insulating materials which is expensive unlike zenon panel system.



Save The Real Space Of The Building

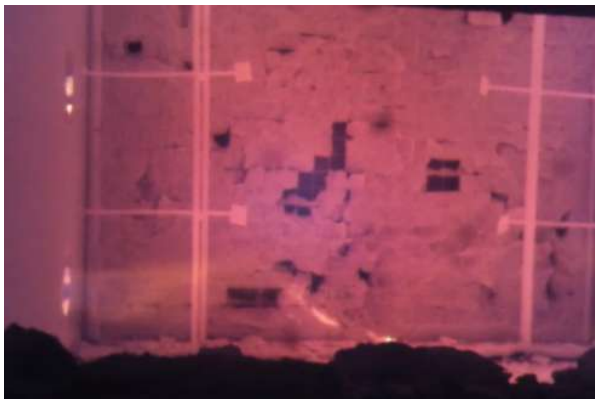
- Zenon Panel is installed cladding the building, which increases the area of the building by 10%.

Zenon Panel Cladding Walls

Brick Walls

Fire Resistance

- Zenon panel is fire resistant as it is rated B1 while the traditional system is rated B2 fire Resistant.
- The zenon panel behaviour during a fire is less dangerous than the traditional system, where the EPS melts and reduces very low carbon emissions, and no brittle or damage will happen during the fire.



Economic Aspect

- A sample study for a 5-storey building of **400 m² area for each floor** and it is designed twice:

  1- Design as zenon panel system as a slab and external walls.

  2-Design as a flat slab system and masonry walls

- The comparison below shows the quantity difference between zenon panel slab and external walls system and the flat slab system with masonry walls

Concrete Quantity Comparison between Zenon Panel System & Flat Slab System for a building		
	Zenon Panel	**Flat Slab**
Slab Ceilings	278 m3	590 m3
Columns	73.5 m3	97 m3
RC Foundations	98.5 m3	205 m3

Steel Quantity Comparison between Zenon Panel System & Flat Slab System for a building		
	Zenon Panel	**Flat Slab**
Slab Ceilings	27.5 ton	56 ton
Columns	11 ton	17 ton
RC Foundations	9.5 ton	14 ton

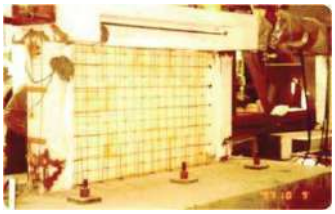
- Comparing this sample building as a whole, it decreases about 50% in quantity and cost when using zenon panel system than using flat slab system

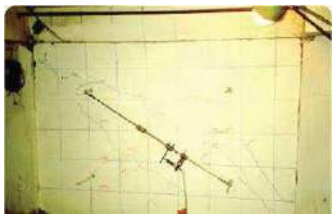
ZENON PANEL TESTS

05

Lateral and Earthquake Test

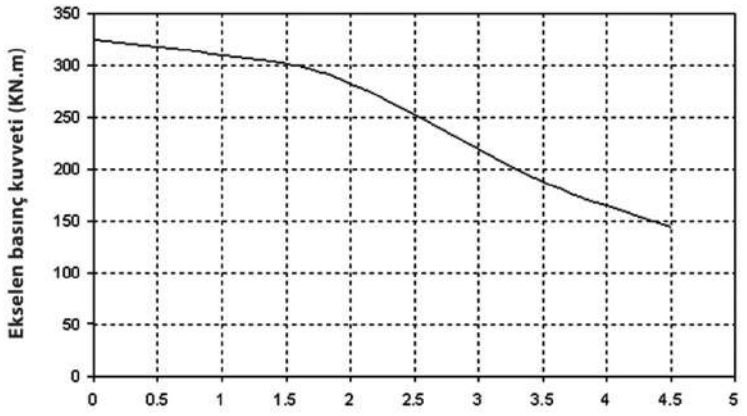
- Candelli Lab Vibrating Table Test in University of Bogazici
- The Zenon wall panel was not damaged when exposed to an earthquake with a magnitude of 8.4 Richter








- Diagram showing the axial torque of the zenon panel wall



Impact Resistance Test

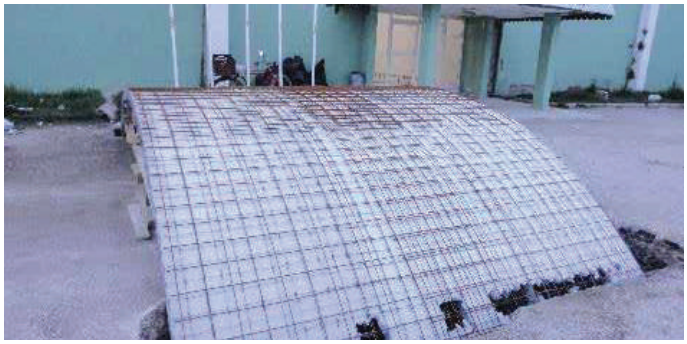
- The wall of the zenon panel did not suffer any damage when it was subjected to a load of 50 kg and was dropped at high speed from a height of 4 m

Bulletproof Resistant Wall

- Ammunition with a diameter of 62.7 mm and 9 mm was used to conduct tests and special operations by armed forces with all kinds of infantry rifles and heavy weapons. Wall resistance has been recorded Zenon Panel High Ammunition.

Load Bearing Test

- Compactor Truck Test (15 Ton Static Load and 39 Ton Dynamic Impact Load)



- On a span of 6 meters, 10 cm of concrete was poured and 5 kg/m² of additional steel reinforcement was added to the zenon panel. You can watch the video of the compactor truck test on the zenon panel on our website.
- Despite the impact of the moving load on the zenon panel, it is safe and can withstand any load thanks to the unique steel wire mesh.

Bending Test

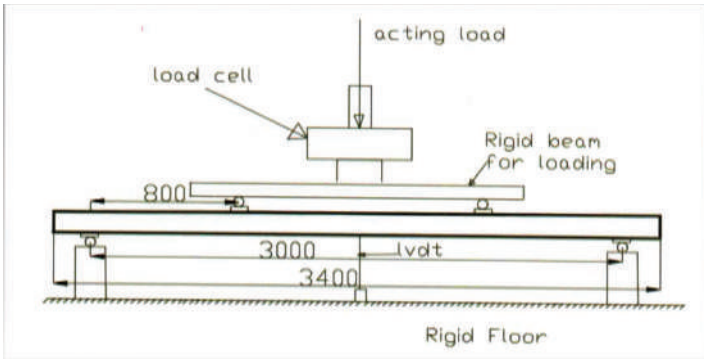
- High performance zenon panel and its resistance to bending moment
- Span: 4 meters
- Concrete: 8 cm grade 300 kg/cm^2
- Extra steel: 2 kg/m^2
- Load: 5 tons uniform.
- No signs of collapse or damage

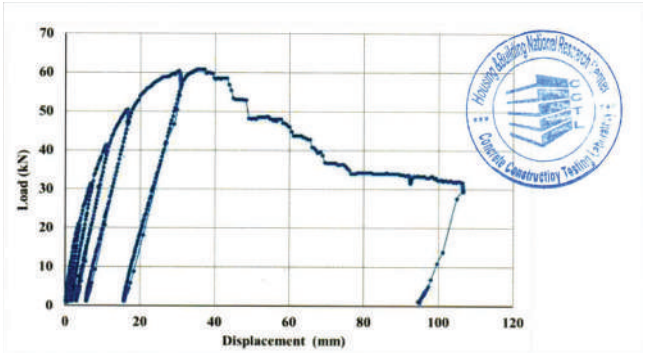








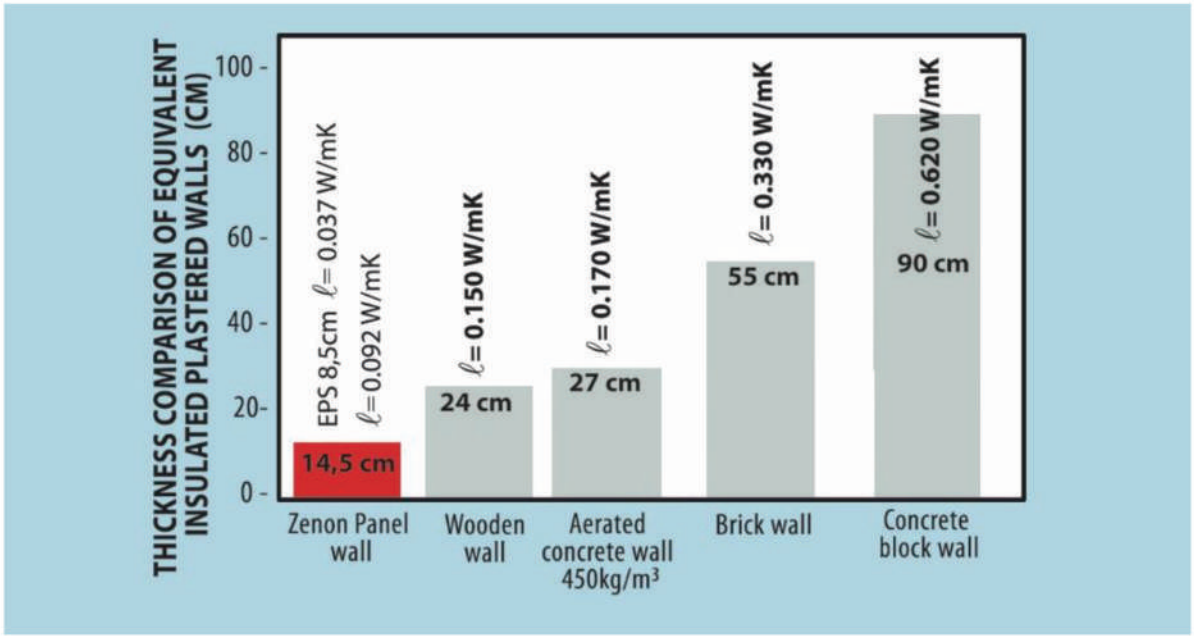





Heat Isolation Test

Thermal Insulation Capacity

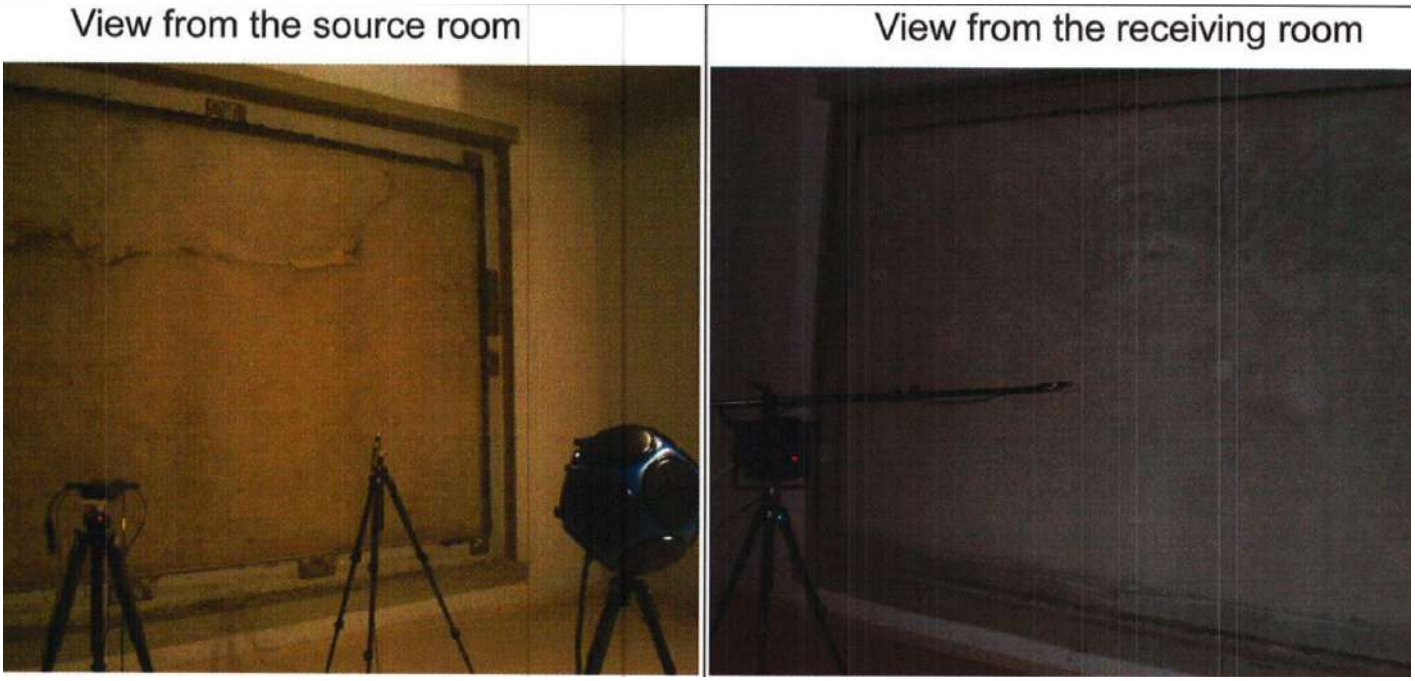
- Thermal conductivity coefficiency at 23C - %80 relative humidity conditions.
- 10 cm panel: Uwall < 0,65 W/m².K - Uroof < 0,65 W/m².K
- 11 cm panel: Uwall < 0,57 W/m².K - URoof < 0,57 W/m².K
- 13 cm panel: Uwall < 0,48 W/m².K - URoof < 0,49 W/m².K



Sound Proofing Test

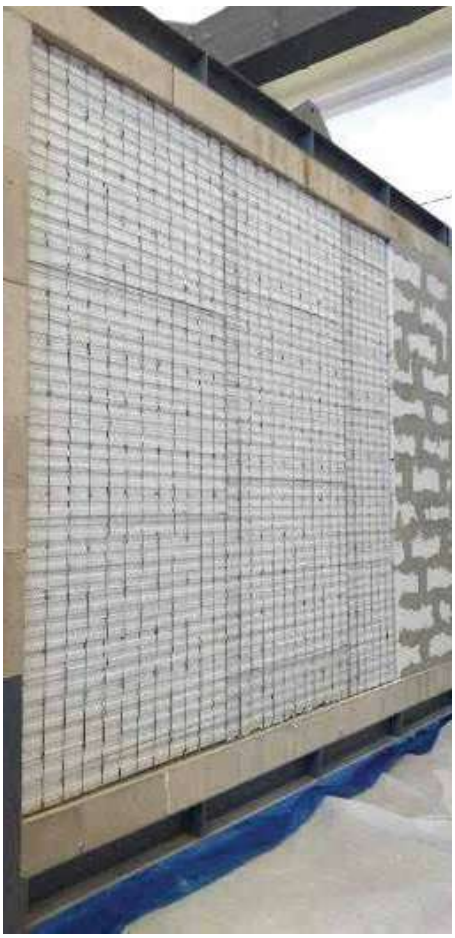
Sound Insulation Capacity

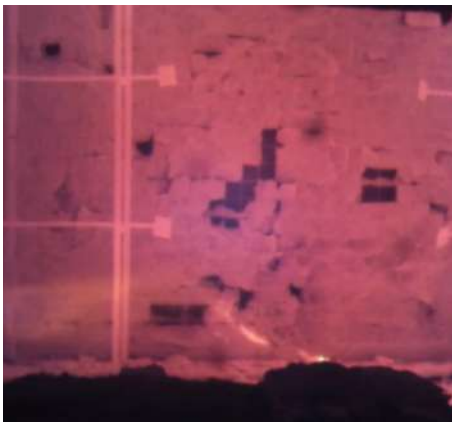
- Due to EN ISO 10140-2:2010 standards acoustic insulation capacity
- 10 cm panel = 38,7(-2,7 ; -4,5) dB
- 11cm panel > 38,7(-2,7 ; -4,5) dB
- 13cm panel > 38,7(-2,7 : -4,5) dB



Fire Resistance Test

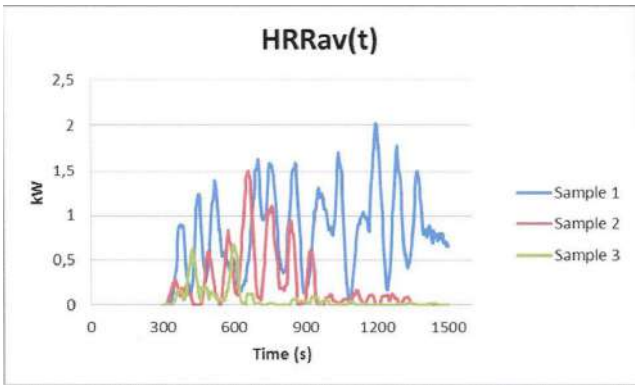
MEASURED VALUES AND THE TEST RESULTS					
Test specimen no.	**1**	**2**	**3**	**∅**	**Expanded uncertainty**
Date of test	23.12	23.12	23.12		
LFS > edge	no	no	no	no	(-)
$FIGRA_{0,2\ MJ}$ [W/s]	0,0	0,0	0,0	0,0	(-)
$FIGRA_{0,4\ MJ}$ [W/s]	0,0	0,0	0,0	0,0	(-)
$THR_{600\ s}$ [MJ]	0,4	0,2	0,1	0,2	0,5
SMOGRA [m^2/s^2]	3,6	2,9	3,9	3,4	0,7
$TSP_{600\ s}$ [m^2]	15,5	16,5	17,3	16,4	1,1
Flaming droplets/particles	no	no	no	no	(-)
Time of flaming [s]	0	0	0	0	(-)
Observation during the test: Non-flaming spalling particles of finishing mortar were observed at 300. second of exposition.					

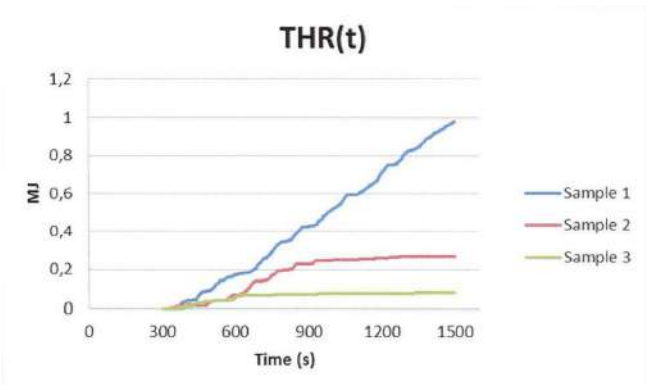


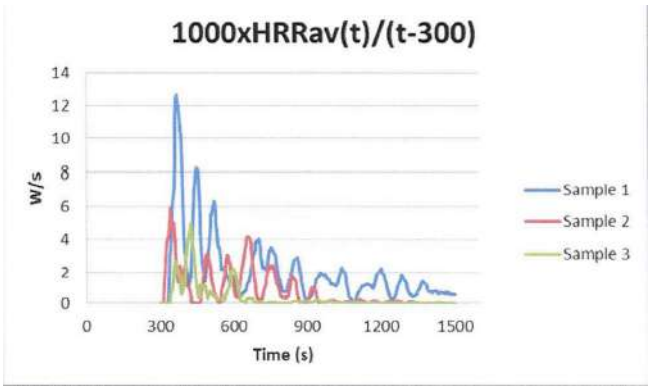


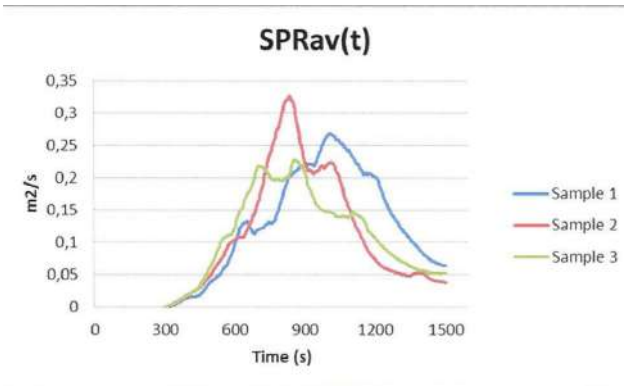
The photograph of the exposed surface of long wing	The photograph of the exposed surface of short wing

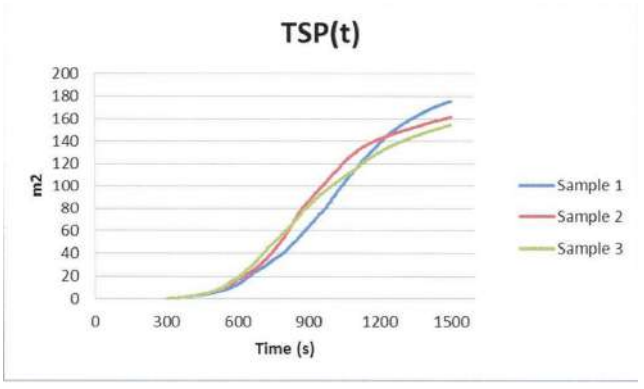
The photograph of the exposed surface taken from the opposite of corner line

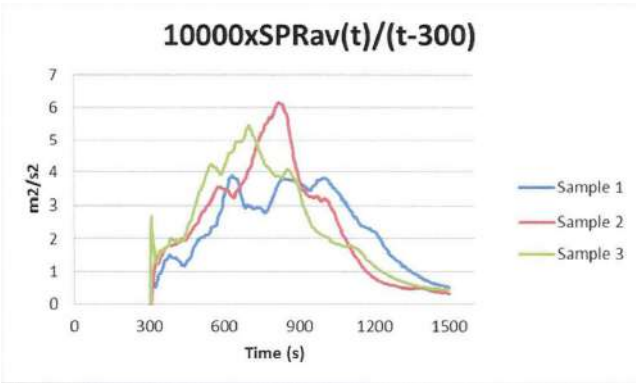








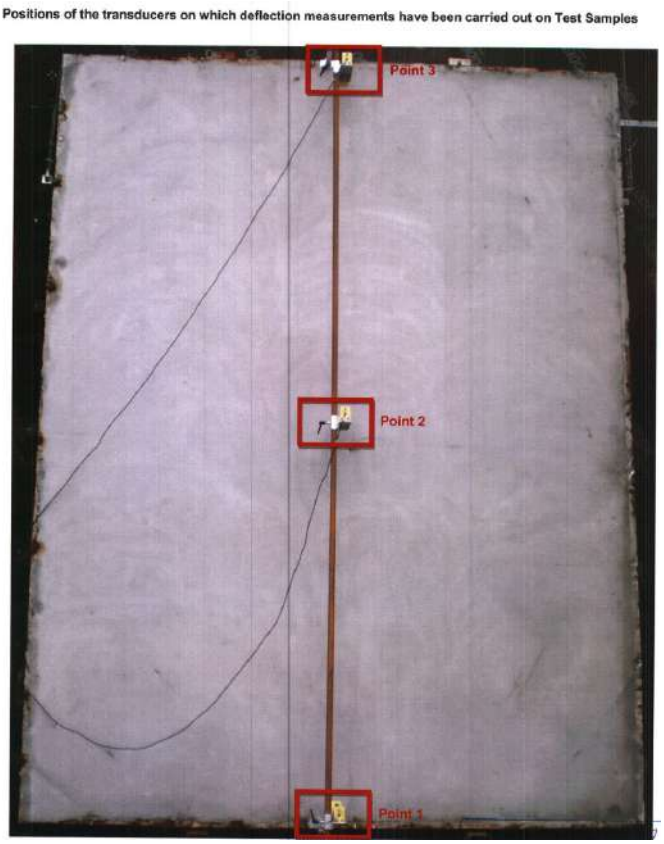


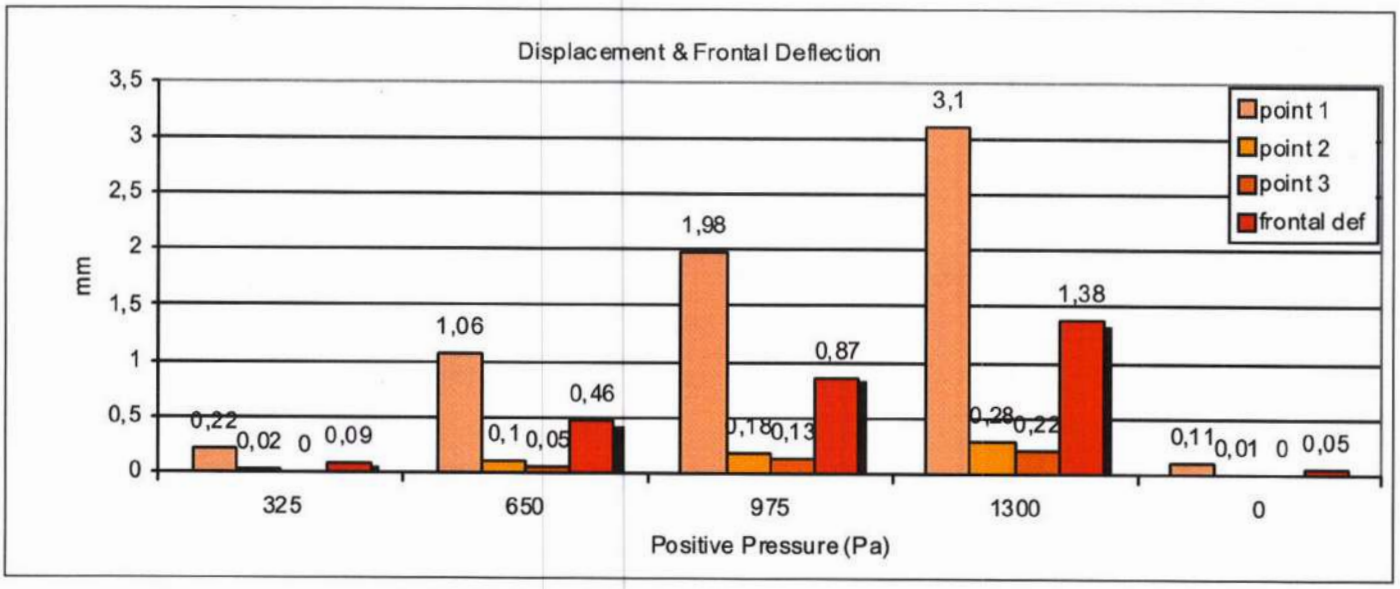


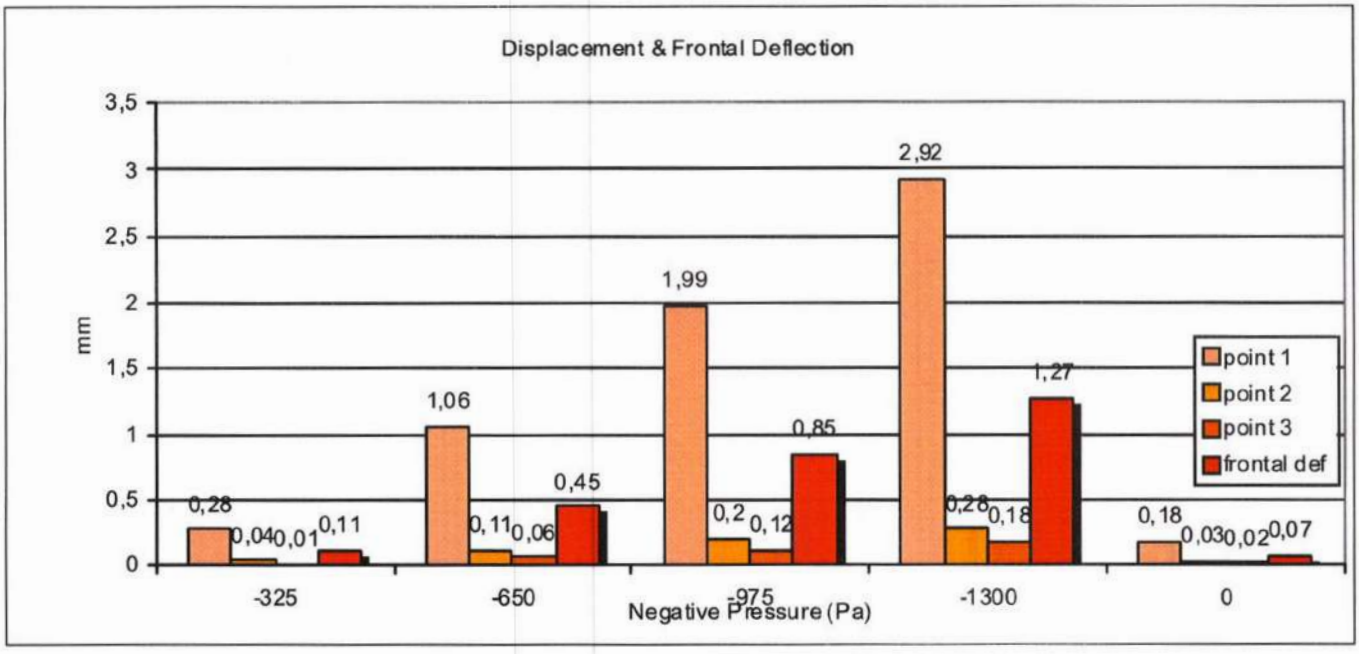
Wind Load Test

Resistance To Wind Loads

- According to the EN 12179 standards, dimensions of 4.5 m x 6m Zenon Panel wall placed on wind turbines and Zenon Panel wall-performed extraordinary resistance against positive and negative wind pressure.
- Maximum load capacity of laboratory 200 km/h wind load is applied on Zenon Panel wall and it showed excellent performance.







6. RESULT

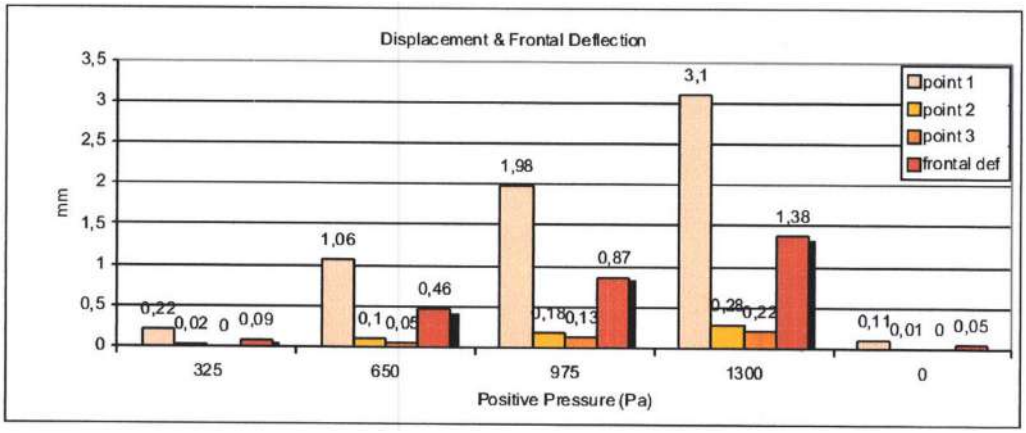
6.1. Results and Classification

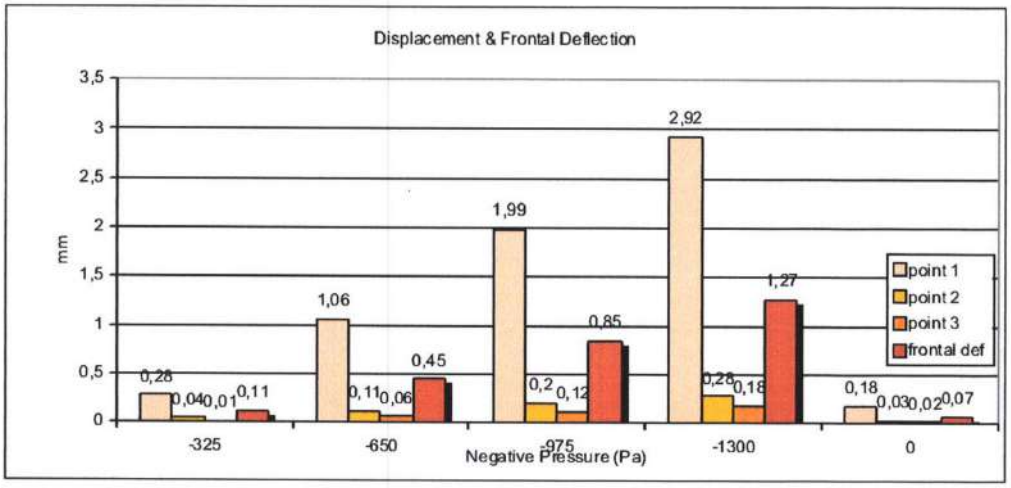
	CONDITIONS	RESULTS	CLASSIFICATION
RESISTANCE TO WIND LOAD EN 13116	Deflection < 15,0 mm at +1300 Pa and -1300 Pa	OK (max. + 1,38 mm) (max. - 1,27 mm)	**OK**
	There will be no damage at secure load (+1950 Pa, -1950 Pa)	No damage was observed at positive or negative pressure	

Water Tightness Test

Water vapor diffusion

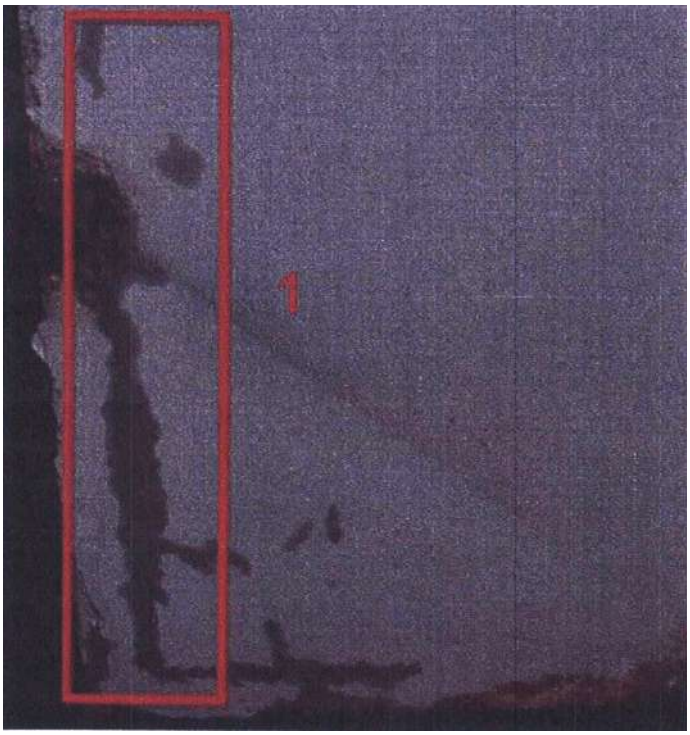
- Water vapor diffusion resistance coefficient 1 = 33.36





6.1. Results and Classification

	CONDITIONS	RESULTS	CLASSIFICATION
WATER-TIGHTNESS (Static Pressure) EN 12154	There will be no water leakage at 600 Pa	Water leakage was observed at 50 Pa, 150 Pa, 450 Pa, 600 Pa.	**None**
RESISTANCE TO WIND LOAD EN 13116	Deflection < 15,0 mm at +1300 Pa and -1300 Pa	OK (max. + 1,38 mm) (max. - 1,27 mm)	**OK**
	There will be no damage at secure load (+1950 Pa, -1950 Pa)	No damage was observed at positive or negative pressure	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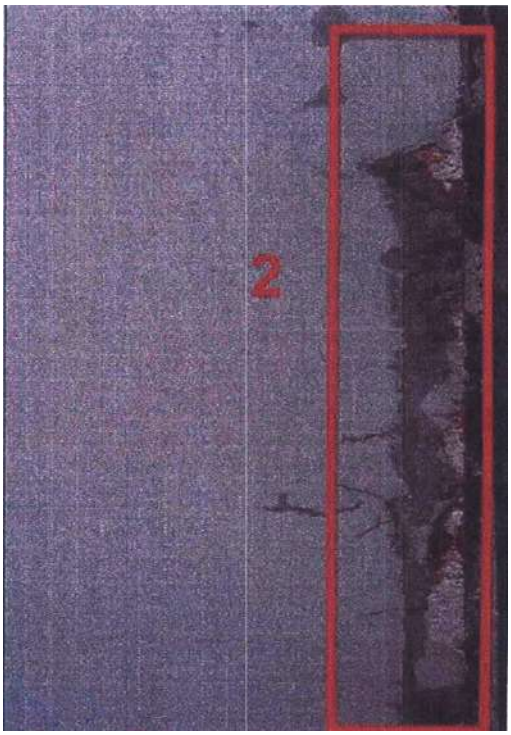
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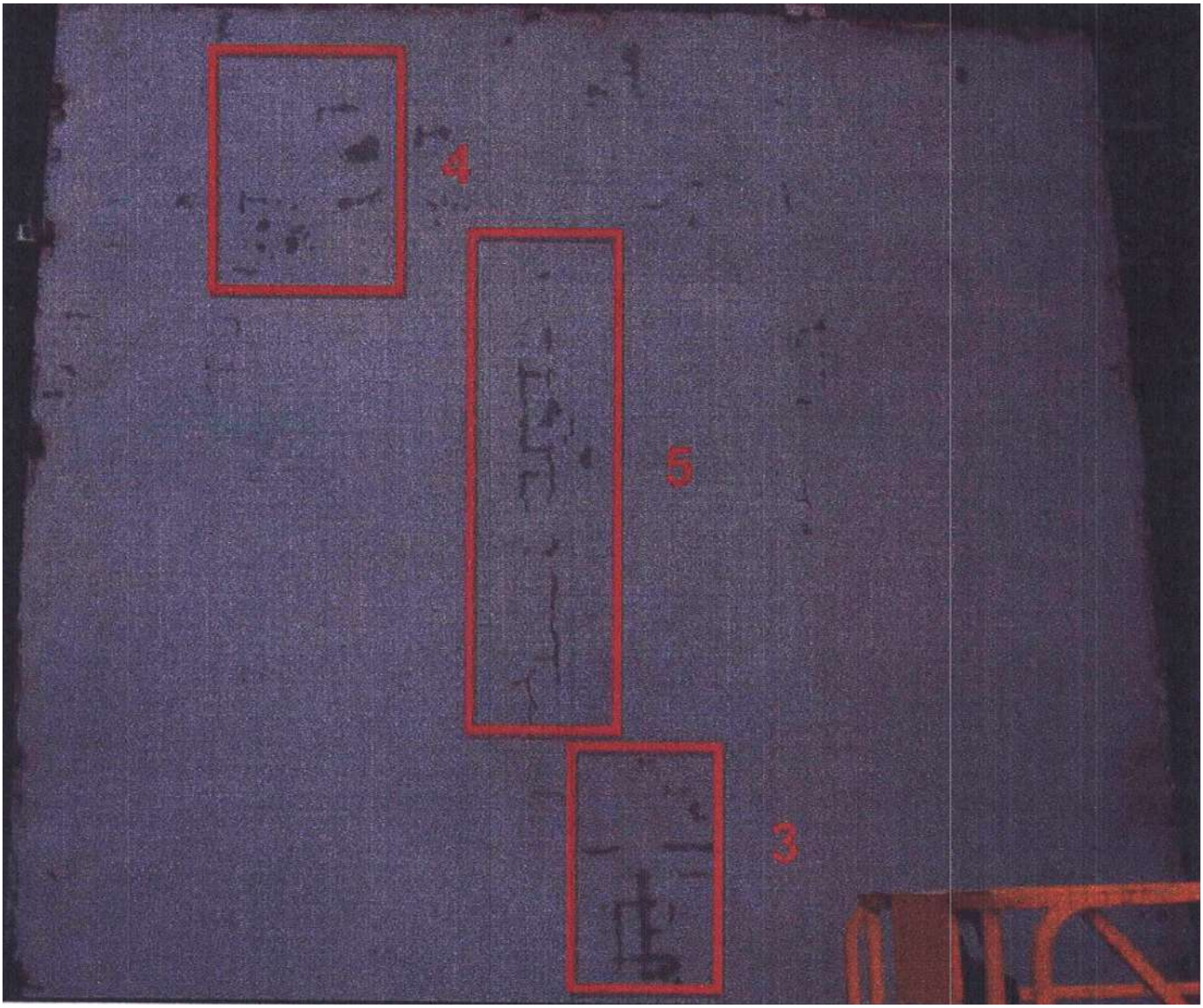
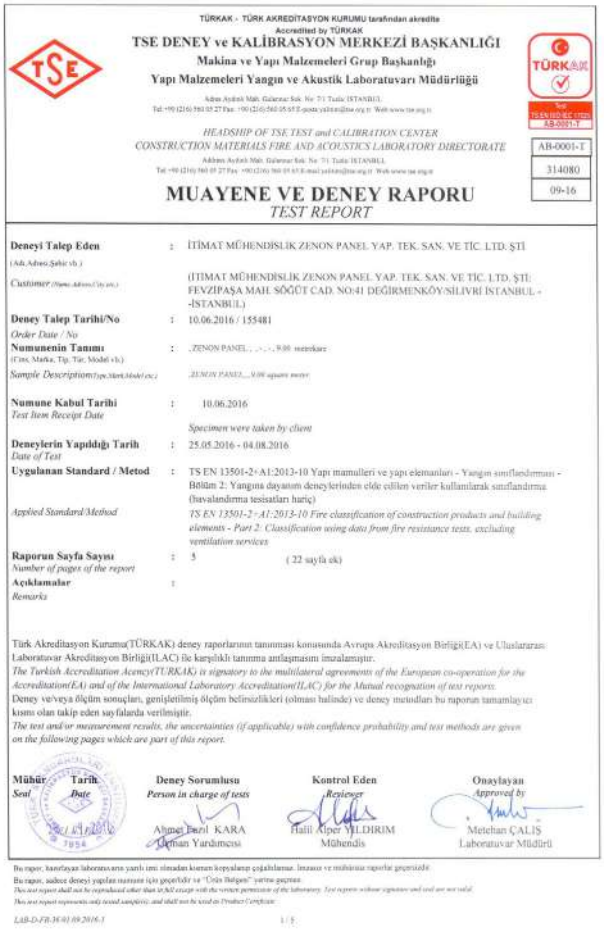

4
5
3

CERTIFICATES & DOCUMENTATION

06

Technical Approval Certificate



TÜRKAK - TÜRK AKREDİTASYON KURUMU tarafından akredite
Accredited by TÜRKAK

TSE DENEY ve KALİBRASYON MERKEZİ BAŞKANLIĞI
Makina ve Yapı Malzemeleri Grup Başkanlığı
Yapı Malzemeleri Yangın ve Akustik Laboratuvarı Müdürlüğü

HEADSHIP OF TSE TEST and CALIBRATION CENTER
CONSTRUCTION MATERIALS FIRE AND ACOUSTICS LABORATORY DIRECTORATE

AB-0001-T
314080
09-16

MUAYENE VE DENEY RAPORU
TEST REPORT

Deneyi Talep Eden	:	İTİMAT MÜHENDİSLİK ZENON PANEL YAP. TEK. SAN. VE TİC. LTD. ŞTİ
(Ad, Adres,Şehir vb.)		
Customer (Name, Address, City etc.)		(İTİMAT MÜHENDİSLİK ZENON PANEL YAP. TEK. SAN. VE TİC. LTD. ŞTİ: FEVZİPAŞA MAH. SÖĞÜT CAD. NO:41 DEĞİRMENKÖY/SİLİVRİ İSTANBUL - -İSTANBUL)
Deney Talep Tarihi/No	:	10.06.2016 / 155481
Order Date / No		
Numunenin Tanımı (Cins, Marka, Tip, Tür, Model vb.)	:	„ZENON PANEL„ ,-,-, 9.00 metrekare
Sample Description(Type,Mark,Model etc.)		„ZENON PANEL„ ,-,-, 9.00 square meter
Numune Kabul Tarihi	:	10.06.2016
Test Item Receipt Date		
		Specimen were taken by client
Deneylerin Yapıldığı Tarih	:	25.05.2016 - 04.08.2016
Date of Test		
Uygulanan Standard / Metod	:	TS EN 13501-2+A1:2013-10 Yapı mamulleri ve yapı elemanları - Yangın sınıflandırması - Bölüm 2: Yangına dayanım deneylerinden elde edilen veriler kullanılarak sınıflandırma (havalandırma tesisatları hariç)
Applied Standard/Method		TS EN 13501-2+A1:2013-10 Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services
Raporun Sayfa Sayısı	:	5 (22 sayfa ek)
Number of pages of the report		
Açıklamalar	:	
Remarks		

Türk Akreditasyon Kurumu(TÜRKAK) deney raporlarının tanınması konusunda Avrupa Akreditasyon Birliği(EA) ve Uluslararası Laboratuvar Akreditasyon Birliği(ILAC) ile karşılıklı tanınma anlaşmasını imzalamıştır.
The Turkish Accreditation Acency(TURKAK) is signatory to the multilateral agreements of the European co-operation for the Accreditation(EA) and of the International Laboratory Accreditation(ILAC) for the Mutual recognation of test reports.
Deney ve/veya ölçüm sonuçları, genişletilmiş ölçüm belirsizlikleri (olması halinde) ve deney metodları bu raporun tamamlayıcı kısmı olan takip eden sayfalarda verilmiştir.
The test and/or measurement results, the uncertainties (if applicable) with confidence probability and test methods are given on the following pages which are part of this report.

Mühür / Tarih Seal / Date	Deney Sorumlusu Person in charge of tests	Kontrol Eden Reviewer	Onaylayan Approved by
	Ahmet Fazıl KARA Uzman Yardımcısı	Halil Alper YILDIRIM Mühendis	Metehan ÇALIŞ Laboratuvar Müdürü

Bu rapor, hazırlayan laboratuvarın yazılı izni olmadan kısmen kopyalanıp çoğaltılamaz. İmzasız ve mühürsüz raporlar geçersizdir.
Bu rapor, sadece deneyi yapılan numune için geçerlidir ve "Ürün Belgesi" yerine geçmez.
This test report shall not be reproduced either in full except with the written permission of the laboratory. Test reports without signature and seal are not valid.
This test report represents only tested sample(s), and shall not be used as Product Certificate.

LAB-D-FR-30-01.09.2016-3 1 / 5

İTB ULUSAL TEKNİK ONAY

UTO 2014 / 036

EOTA
EUROPEAN ORGANISATION FOR TECHNICAL ASSESSMENT
İTB Araştırma Kurumu EOTA Üyesidir

Adres : Çankaya Mahallesi Cinnah Caddesi No: 73/5 Çankaya/ANKARA
Telefon : + 90 312 285 63 80 - +90 530 922 38 76
Faks : + 90 312 285 63 82
e-posta : itbak@itbak.org

TEKNİK ONAY KONUSU ÜRÜNÜN	
İsmi	Zenon Panel
Sahibi	İsmat Müh. Zenon Panel Yapı Tek. San. ve Tic. Ltd. Şti.
Kullanım amacı	Yapılarda iç-dış duvarların ve kalıcı kalıpların oluşturulması
Üretim tesisi	Fevzipaşa Mah. Söğüt Cad. No:41 Değirmenköy Silivri İSTANBUL
Geçerlilik süresi	21/01/2015'ten, 21/01/2020'ye kadardır.
Sayfa ve ek sayısı	1 ek dahil toplam 16 sayfa

TEKNİK ONAYIN TİPİ
Yapı Malzemelerinin Tabi Olacağı Kiterler Hakkında Yönetmelik
Madde:9/1
STANDARDI BULUNMAYAN YENİ ÜRÜN
TEYİT SİSTEMİ:(2+)

PANEL GENİŞLİĞİ, (mm)	135	145	165	185
Yatay Isıl Geçirgenlik Hesap Değeri, ($W/m^2.K$)	0.65	0.57	0.48	0.43
Düşey Yukarı Yönde Isıl Geçirgenlik Hesap Değeri, ($W/m^2.K$)	0.65	0.57	0.49	0.43
Yangına Dayanım	EI90/E90			
Yangına Tepki Sınıfı	B-s1,d0			
Darbe Dayanımı	E5			
Rüzgar Yüküne Dayanım	Sehim değerleri standartta tanımlanan L/200 (5701/200 = 28.5 mm değerinden) veya 15 mm'den küçüktür.			
Gürültüye karşı koruma, Rw (C; Ctr) (dB)	38.7 (-3.7; -4.5)			
Su Buharı Difüzyonu Direnç Katsayısı, μ	36.36			

- Total Heat Permeability Coefficient (Total Heat = 0.49 W/m² K)
- Shock Resistant E5
- Fire Retardant E120
- Sound Insulation 39 dB
- Wind Resistant
- Resistant To Water Vapor Diffusion (36.33)

Tests and Certificates from HBRC in Egypt

Housing and Building National Research Center HBRC

IAS INTERNATIONAL ACCREDITATION SERVICE

Verification of Compliance Certificate

No. 1307 **Issue 1**

Certificate's Holder: **ZENON PANEL Egypt,**

9 Abdelhameed Lotfy St.- Makram Ebeid-Nasr City, Cairo, Egypt.

Product: Zenon Panel System: 3D Wire Mesh Panel with Core of Expanded Polystyrene and Concrete both sides for use as structural slabs and partition and exterior walls.

- Zenon panel consists of upper and lower meshes with longitudinal and transversal galvanized steel 3 mm wires spaced 100 mm in both directions
-The two meshes are connected to each other in longitudinal direction with special design zigzag steel truss with wire diameter 2.8 mm and each point of connection took 3 points of DC welding.
-Each square meter includes 200 electrical nodes on each side.
-The spacing of the truss system is 10 cm on the cross dimension and the height of truss is 10 cm. Each two successive zigzag truss lines are shifted to form cross shear reinforcement as

The Product Has Demonstrated Compliance in Accordance to the Given Standards Corresponding to Each Laboratory Test per the following table:

No.	Test	Result	Testing laboratory	Date
1	Thermal insulation capacity (W/m.k)	0.0378	TEBAR Lab-Turkey	8/23/2011
2	Airborne Sound Insulation level (dB) Weighted Sound Reduction Index: R_w (C; Ctr) = According to: ISO 10140-2: 2010.	38.7 (-2.7 ; -4.5)	Façade testing institute - Turkey	11/15/2011
3	**Tensile Test of steel wire:**			
	- Tensile strength (Mpa)	778.08	HBRC	10/5/2021
	- Elongation %	8.71		
4	- Compressive strength of concrete kg/cm2	207	HBRC	9/28/2021
5	**Shear test of slabs with additional reinforcement :**			
	- Cracking load (kN)	60	HBRC	10/4/2021
	- Total ultimate load (kN)	106.15		
	- Ultimate moment (kN.m)	18.58		

Housing and Building National Research Center
87 EL-Tahrir St., Dokki, Giza 11511P.O. BOX: 1770 Cairo, Egypt.
Phone: (+202) 37617102 -37617092
Fax : (+202) 33351564 -37628736

The certificate is valid from 4th of July 2022, until 3rd July 2023, and remains valid subject to satisfactory annual surveillance audits. Re certification audit due on or before 1st of July 2023.

Remark: This verification of compliance has been issued on a voluntary basis. HBRC confirms that a Technical Construction File (TCF) is existent for the above listed products. The TCF satisfactory covers the essential requirements of the above listed directives. This document is only valid for product and configuration described and in conjunction with the TCF detailed above whereas the manufacture is responsible of the certification on the products and not exempted to perform all the necessary activities before placing the product to the market.
The manufacturer is also responsible of the internal production control to ensure the products are in compliance with the essential requirements of the above-mentioned directives. The company, the exclusive agent, is also responsible for monitoring the distribution of the product within the country to ensure that the products comply with the basic requirements of the guidelines mentioned above. The agent ZENON PANEL Construction Technologies presented the catalogues and test certificates for the product, according to the relevant international standards.

Prepared by:

Prof. Mahmoud Kamel Mahmoud — **Prof. Tarek Mahmoud Attia,**

Authorized by:

Prof. Mohamed Masoud Sadawy

6/7/2022

Housing and Building National Research Center
87 EL-Tahrir St., Dokki, Giza 11511P.O. BOX: 1770 Cairo, Egypt.
Phone: (+202) 37617102 -37617092
Fax : (+202) 33351564 -37628736

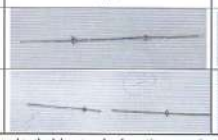
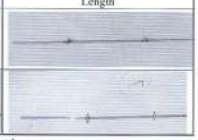
Housing & Building National Research Center
Building Materials Research & Quality Control Institute.

Tensile Test Results of Steel Wires

Client: الهندسية للمقاولات موران وكيل شركة زنبون بانل — **Delivery Date :** 03/10/2021 , 20/10/2021

Project : —— **Delivery No:** 7675,7149

Additional Info: - The Steel wires are part of steel wire mesh of Zenon Panel — **Sample Code:** MTL/ST/2021/1444

Sample Number		1	2
Nominal Diameter	(mm)	3	3
Nominal Area	(mm^2)	7.068	7.068
Initial Gauge Length	(mm)	100	100
Final Gauge Length	(mm)	108.71	——
Ultimate Load	(KN)	5.5	5.2
Ultimate Tensile Strength	(Mpa)	778.09	735.65
Elongation	%	8.7	The failure occurred outside Gauge Length
The Sample Before Test			
The Sample After Test			

- The samples were delivered to the laboratory by the entity requesting the test.
- The aforementioned data according to what was mentioned in the letter of the body requesting the test without any responsibility on the center.
- The attached results apply only to the sample submitted to the center, bearing in mind that the results are not valid for the approval of any quantitative production/ practices / supplies as well as export and is not considered as a conformity certificate.
- Validity of the report is 3 months from testing date.

Prepared by Eng. Ahmed Sayed 27/10/2021 — **Supervisor** Dr. Fatima 27/10/2021 — **General Supervisor** Prof. Dr. Ahmed El-Gabry

Page 1 of 1

87 El-Tahreer St. Dokki Giza P.O. Box 1770
Tel.:(02)33356722-33356853 Fax:33351564
www.hbrc@idsc.net.eg

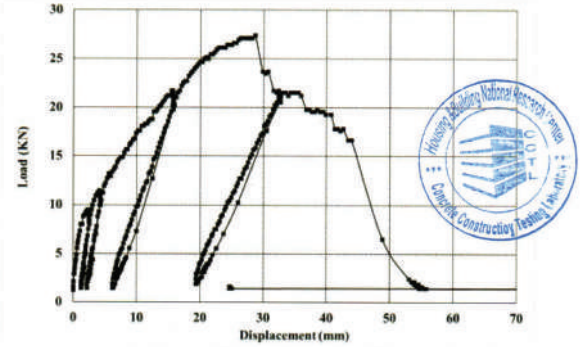
87 شارع التحرير -الدقي ص.ب:١٧٧٠
تليفون: ٣٣٣٥٦٧٢٢ -(٠٢)٣٣٣٥٦٨٥٣ فاكس: ٣٣٣٥١٥٦٤(٠٢)

5.2 Crack and Total Ultimate Load:

Table 1 shows total ultimate load for each specimen.

Table 1: Total ultimate load

Specimen	Cracking load (kN)	Total ultimate load (kN)	Corresponding deflection (mm)	Ultimate moment (KN.m)
S1	-	60.77	35.00	24.31
S2	20.00	27.42	28.68	10.97



Certification Of The Ministry Of Housing In KSA For Zenon Panel System As Walls And Slabs

Ministry of Municipal Rural & Housing — وزارة الشؤون البلدية والقروية والإسكان
Technical Affairs — وكالة المشاريع والصحة العامة

BTSI - Technical Review

Company Name :- creative engineers for technical consultation

Technology :- Zenon Panel ® system- panel is produced with a braided steel wire mesh via inserted various thicknesses of expended polystyrene material. In the direction of the tensile strength of the skeleton of the panel consists of 2.5-4.0 mm diameter, low-carbon steel, There are 200 nodes per square meter, Shotcrete layers are applied on both sides at application site. (used as structural composite panels for load-bearing and nonload-bearing concrete walls and reinforced concrete floor and roof panels)

issue Date :-17.Jun. 2021

#	Requirements	Availability Yes	Availability No	Observations
1	**Proposed Technology - Brief**			
1.01	Company to provide brief on the proposed technology with technical write up and/or A/V presentation	✓		
1.02	Is this technology proven elsewhere			
	a. within KSA		✓	
	b. within Middle East	✓		
	c. elsewhere in the world	✓		
1.03	List of projects by region shall be submitted with its type and quantity of different prototypes		✓	
1.04	Is this technology uses patterned assembly or custom made assemblies?			
1.05	If patterned assembly, list those patterns applicable for Villas, Townhouses and Apartments within KSA, complete with details of those patterns and its test reports?	✓		
1.06	If custom made assembly, how individual assemblies are designed, fabricated and tested against the requirements? eg: Structural stability, Fire resistance, Acoustic performance, Thermal performance, Seismic etc.,	✓		
1.07	Any other item which may illustrate on the proposed technology	✓		
2	**Method of Construction**			
2.01	Step by step method of construction from design, fabrication, handling, transportation, construction / assembly, completion, finishes etc., to be clarified with a method statement	✓		
2.02	On-site or Off-Site factory?			
	a.If on-site, Space and other requirements within or nearby project?	✓		
	b.If off-site, Location of off-site factory and type of fabrication / production at factory to be clarified.	✓		
	c.List of on-site and off-site works to be clarified	✓		
2.03	Logistics plan including type of modules, its size, handling at site factory & at site, transportation etc., to be clarified		✓	Co. stated (No need any special logistic plan)
2.04	List of dependencies from outside KSA such as molds, form works, machinery or any special materials etc., to be clarified		✓	
2.05	Submit drawings / sketches showing cross section of the proposed assembly with identification material and its specification	✓		
2.06	Clarify on the foundation type and its assembly / joint etc.,	✓		Co. stated(traditional shallow foundation)
2.07	Clarify on the method of assembly, joint and treatment for finishes, fire, ingress and acoustic protections	✓		
3	**Code compliance of the proposed technology**			
3.01	Is this technology approved within KSA? If yes, list those governmental agencies		✓	

Ministry of Municipal Rural & Housing — وزارة الشؤون البلدية والقروية والإسكان
Technical Affairs — وكالة المشاريع والصحة العامة

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Company Name :- creative engineers for technical consultation

Technology :- Zenon Panel ® system- panel is produced with a braided steel wire mesh via inserted various thicknesses of expended polystyrene material. In the direction of the tensile strength of the skeleton of the panel consists of 2.5-4.0 mm diameter, low-carbon steel, There are 200 nodes per square meter, Shotcrete layers are applied on both sides at application site. (used as structural composite panels for load-bearing and nonload-bearing concrete walls and reinforced concrete floor and roof panels)

issue Date :-17.Jun. 2021

#	Requirements	Availability Yes	Availability No	Observations

Recommendation

No objection' to the proposed system - **Zenon Panel ® system-** panel is produced with a braided steel wire mesh via inserted various thicknesses of expended polystyrene material. In the direction of the tensile strength of the skeleton of the panel consists of 2.5-4.0 mm diameter, low-carbon steel, There are 200 nodes per square meter, Shotcrete layers are applied on both sides at application site, **for using as nonload bearing wall & permanent formwork for floor, Can also be used for load bearing walls for upto two story residential units only as per approved by Dubai Municipality (for similar system).subject to Design by the Approved Consultant as per SBC, Mock-up and Testing for Structural Integrity, Durability, Fire rating, Acoustic rating and Thermal insulation (without thermal bridging noted)**

We MOMRAH reserve the rights to reject this method of construction irrespective of the above results from the mock-up, as this system cannot support vertical expansion using other methods of construction and due to social acceptance for the dry assembly.

We recommend the following observations taken care in the best interest protecting the stakeholders:-

1- Structure design (Complete with load analysis with all parameters wind, seismic, self-weight, live and dead loads including considerations to foundations and floor / roof slab) to suit the architecture plans &soil test reports of the project.

2-whole panel thermal insulation Real value still questionable due to thermal bridges notes, must be subject to test to ensure ability to comply with SBC & other entities requirement

3- The concealed MEP services that will be embedded in the wall panels, Method of erection to be agreed with the consultant including repair.

4- How the imbedded MEP services will be fixed in the wall panels and how the chipped parts will be filled and treated.

5-The proposed 2 Layers of plaster may not be considered for structural calculations, as the same shall be higher strength concrete with single layer for justifying against SBC. The specialist to check and reconfirm.

7- Fire rating & thermal insulation subject to design to meet SBC & other concerning authorities' requirements.

8- Fixing any items on ceiling & walls such as A/C units, Chandeliers, TV, Cabinets etc., to be addressed may require special anchoring.

9- Connection method between the panels and the slab/other non-load bearing panels or the footing to ensure the required structural strength and performance.

10- Waterproofing method to be clarified.

11- A detail at windows and doors to be submitted & approved from supervision consultant and to ensure no thermal bridging at these locations.

12- The above comments shall be addressed and approved by the consultant, prior to commencement of construction.

Disclaimers

1. The above review is limited to technical aspects of the proposed technology only (Phase:1) which doesn't release the company from complying with the requirements of the local authorities having jurisdiction.
2. The capabilities of the company shall be demonstrated in the next phase to BTI team once technical review is complete and the team agreed to proceed to next phase (Phase: 2).
3. The proposed technology, it's specific assembly for the agreed housing products and materials used etc., are subject to approval of the authorized third party consultant who will be appointed by the developer during design and supervision phases of the project (Phase:3).

Ministry of Municipal Rural & Housing — وزارة الشؤون البلدية والقروية والإسكان
Technical Affairs — وكالة المشاريع والصحة العامة

BTSI - Technical Review

Company Name :- creative engineers for technical consultation

Technology :- Zenon Panel ® system- panel is produced with a braided steel wire mesh via inserted various thicknesses of expended polystyrene material. In the direction of the tensile strength of the skeleton of the panel consists of 2.5-4.0 mm diameter, low-carbon steel, There are 200 nodes per square meter, Shotcrete layers are applied on both sides at application site. (used as structural composite panels for load-bearing and nonload-bearing concrete walls and reinforced concrete floor and roof panels)

issue Date :-17.Jun. 2021

#	Requirements	Availability Yes	Availability No	Observations
3.02	Is this technology approved within Middle East? If yes, list those governmental agencies, countries and independent third parties	✓		
3.03	Is this technology approved elsewhere in the world? If yes, list those governmental agencies, countries and independent third parties	✓		
3.04	Is this technology complies with Saudi Building Code?			Co. stated (it is fixible in design using ACI , IBC by SAP and ETABs prograam)
	a. If Yes, please demonstrate its extent of compliance.			
	b. If No, what is the proposed method to get it complied?	✓		
3.05	Is this technology complies with KSA Civil Defense requirements?			
	a. If Yes, please demonstrate its extent of compliance.			
	b. If No, what is the proposed method to get it complied?	✓		
3.06	List of international codes and extent of compliance	✓		
4	**List of material and its code compliance**			
4.01	List of materials used to be clarified - Concrete, Steel, Polystyrene, Tiles etc.,	✓		
4.02	Specification of the individual material to be confirmed with its code compliance within KSA	✓		
5	**Particular requirements**			
5.01	Structural analysis & calculation sheet of the proposed assembly for various prototypes such as Villas (2 1/2 Story), Townhouses (2 1/2 Story) and Apartment G+6 Story Buildings to be clarified.	✓		Company submitted (Sample 2 Story Design Report)
5.02	Technical limitations of the technologies, if any, to be clarified, such as number of storeys, size of modules etc.,	✓		
5.03	What is the tested fire rating of the wall and slab? Please provide with details of assembly and certifications	✓		
5.04	What is the tested thermal insulation of the wall and slab? Please provide with details of assembly and certifications	✓		
5.05	What is the tested acoustic insulation of the wall and slab? Please provide with details of assembly and certifications	✓		
5.06	Any tests on seismic done? If yes, please share those details	✓		
5.07	Is the slab or wall assembly be modified? eg: add opening or door etc.,			
	a.If yes, should the customer contact you or anyone can carryout modification?		✓	
	b.If anyone can carryout, what are the precautions to be taken?	✓		
5.08	How the ten years warranty for the structure and three years warranty for MEP Works will be supported by the company here in KSA, as per the requirements of the authorities having jurisdiction?	✓		Company stated (by main contractor)

ISO Certificates

CERTIFICATE

IQR CERTIFICATION

İTİMAT MÜHENDİSLİK ZENON PANEL YAPI TEKNOLOJİLERİ SAN. VE TİC. LTD. ŞTİ.

FEVZİPAŞA MAH. SÖĞÜT CAD. NO: 41 DEĞİRMENKÖY / SİLİVRİ / İSTANBUL / TÜRKİYE

Has been assessed and found to Comply with the Requirements of:
Denetlenmiş ve aşağıdaki standardın gerekliliklerine uygunluğu görülmüştür:

ISO 9001:2015

The Quality Management System is applicable to:
Kalite Yönetim Sistemi:

SERVICES OF ARCHITECTURE, ENGINEERING AND CONTRACTING, MANUFACTURE, IMPLEMENTATION AND SALE OF BUILDING PANELS AND BUILDING MATERIALS

MİMARLIK, MÜHENDİSLİK VE MÜTEAHHİTLİK HİZMETLERİ, YAPI PANELLERİNİN VE YAPI MALZEMELERİNİN ÜRETİMİ, UYGULANMASI VE SATIŞI

Certificate Number: QMS-04569
Belge Numarası: QMS-04569

Initial Certification Date: 26.07.2018
İlk Belgelendirme Tarihi: 26.07.2018

Certification Period: 3 Years
Belgelendirme Periyodu: 3 Yıl

Certificate Expiry Date: 25.07.2019
Belge Geçerlilik Tarihi: 25.07.2019

IAF

ACCREDITED

Management Systems Certification Body
MSCB-135

IQR ULUSLARARASI BELGELENDİRME HİZMETLERİ LTD. ŞTİ.

British Certifications Inc.

JAS-ANZ

M4340909IO

This is to Certify that the Management System of:
Bu belge ile Yönetim Sistemi Belgelendirilen:

İTİMAT MÜHENDİSLİK ZENON PANEL YAPI TEK. SAN. VE TİC. LTD. ŞTİ.

FEVZİPAŞA MAH. SÖĞÜT CAD. NO: 41 DEĞİRMENKÖY SİLİVRİ / İSTANBUL / TÜRKİYE

Has been assessed and found to Comply with the Requirements of:
Denetlenmiş ve aşağıdaki standartın gerekliliklerine uygunluğu görülmüştür:

ISO 9001:2008

The Quality Management System is applicable to:
Kalite Yönetim Sistemi:

SERVICES OF ARCHITECTURE, ENGINEERING AND CONTRACTING, PRODUCTION, PERFORMANCE AND SALE OF PANELS AND BUILDING MATERIALS

MİMARLIK, MÜHENDİSLİK VE MÜTEAHHİTLİK HİZMETLERİ, YAPI PANELLERİNİN VE YAPI MALZEMELERİNİN ÜRETİMİ, UYGULANMASI VE SATIŞI

Certificate No: BCI/Q/J-INT-AV/9982
Sertifika Numarası: BCI/Q/J-INT-AV/9982

Date of Certification Audit: 14.08.2015
Denetim Tarihi: 14.08.2015

Date of Issue: 25.08.2015
Yayınlanma Tarihi: 25.08.2015

Date of Expiry: 24.08.2016
Son Geçerlilik Tarihi: 24.08.2016

1st Surveillance Audit : July 2016
1. Gözetim Denetim Tarihi : Temmuz 2016
2nd Surveillance Audit : July 2017
2. Gözetim Denetim Tarihi : Temmuz 2017

BCI

CEO

BCI British Certification Inc.

IAF

ANADOLU ULUSLARARASI BELGELENDİRME HİZMETLERİ LTD. ŞTİ.

TSE Certificates

FABRİKA ÜRETİM KONTROLÜ BELGESİ

TSE

TÜRK STANDARDLARI ENSTİTÜSÜ
TURKISH STANDARDS INSTITUTION
Necatibey cad. No: 112 Bakanlıklar -ANKARA

TSE-012

İtimat Mühendislik Zenon Panel Yapı Teknolojileri San. Tic. Ltd. Şti.
Fevzipaşa Mah. Söğüt Cad. No:41 Değirmenköy Silivri İSTANBUL

tarafından

İtimat Mühendislik Zenon Panel Yapı Teknolojileri San. Tic. Ltd. Şti.
Fevzipaşa Mah. Söğüt Cad. No:41 Değirmenköy Silivri İSTANBUL

Fabrikasında üretilip pazara sürülen ve 26/06/2009 tarihli ve 27270 sayılı Resmi Gazete'de yayımlanan Yapı Malzemelerinin Tabi Olacağı Kriterler Hakkında Yönetmeliğe uygun olarak,

yapı malzemesi olduğu tespit edilen

YAPILARDA İÇ-DIŞ DUVARLARIN VE KALICI KALIPLARIN OLUŞTURULMASINDA KULLANILAN ZENON PANEL

Panel Genişliği (mm)	135	145	165	185
Yatay Isıl Geçirgenlik Hesap Değeri (W/m² K)	0,65	0,57	0,48	0,43
Düşey Yukarı Yönde Isıl Geçirgenlik Hesap Değeri (W/m² K)	0,65	0,57	0,48	0,43
Yangına Dayanım	EI60/E90			
Yangına Tepki Sınıfı	B-s1, d0			
Darbe Dayanımı	E6			
Rüzgar Yüküne Dayanım	< 15 mm			
Gürültüye Karşı Korunma, Rw (C; Ctr) (dB)	38,7 (-2,7; -4,5)			
Su Buharı Difüzyonu Direnç Katsayısı, μ	33,36			

UTO 2014/036

İmalatçı tarafından başlangıç tip deneyine tabi tutulmuş, düzenli deneyler yapılarak fabrika üretim kontrolü gerçekleştirilmiş ve TSE tarafından fabrikanın ve fabrika üretim kontrolünün başlangıç tetkiki, periyodik gözetimi, değerlendirilmesi ve onayı yapılmıştır.

Bu belge , UTO 2014/036' da tanımlanan hükümlerin uygulandığını açıklar.

Bu belge 10.08.2015 tarihinde düzenlenmiş olup, herhangi bir nedenle askıya alınmadığı veya iptal edilmediği müddetçe, referans koşulları, üretim süreci veya fabrika üretim kontrolünün değiştirilmemesi koşuluyla 21.01.2020 tarihine kadar geçerlidir.

ANKARA, 10.08.2015

Ezref ÇAKIROĞLU
Ankara Belgelendirme Müdürü

TÜRK STANDARDLARI ENSTİTÜSÜ / Necatibey cad. No: 112 Bakanlıklar -ANKARA / +90 312 416 62 00

TSE

TÜRK STANDARDLARI ENSTİTÜSÜ
TÜRK STANDARDLARINA UYGUNLUK BELGESİ
TURKISH STANDARDS INSTITUTION
CERTIFICATE OF CONFORMITY TO TURKISH STANDARDS

Markanın Tanımı / Description of the Mark
TSE

BELGE NUMARASI / REFERENCE NUMBER OF LICENCE	097614-TSE-01/01
BELGENİN İLK VERİLİŞ TARİHİ / DATE OF FIRST ISSUE OF LICENCE	14.07.2015
BELGENİN SON GEÇERLİLİK TARİHİ / LICENCE VALID UNTIL	09.07.2018
BELGE SAHİBİ KURULUŞUN ADI / NAME OF THE LICENCE HOLDER	ROYPOR YALITIM VE AMBALAJ SAN TIC LTD ŞTİ.
BELGE SAHİBİ KURULUŞUN ADRESİ / ADRESS OF THE LICENCE HOLDER	KARADENİZ MAH ŞEHİT ÇAĞRI KURT CAD NO:3 TEKİRDAG/TÜRKİYE
ÜRETİM YERİ ADI / NAME OF THE MANUFACTURING PLACE	ROYPOR YALITIM VE AMBALAJ SAN TIC LTD ŞTİ
ÜRETİM YERİ ADRESİ / ADRESS OF THE MANUFACTURING PLACE	KARADENİZ MAH ŞEHİT ÇAĞRI KURT CAD NO 3 TEKIRDAG / TÜRKİYE
İPTAL EDİLEN BELGE NUMARASI (Varsa) / INDICATION OF SUPERSEDED LICENCE (if any)	14.0.30.4.34.00/TSE-66919
TESCİLLİ TİCARİ MARKASI / REGISTERED TRADE MARK	ROYTERM
İLGİLİ TÜRK STANDARDI / RELATED TURKISH STANDARD	TS EN 13163+A1 / Isı yalıtım mamulleri - Binalar için - Genleştirilmiş polistirenden (EPS) fabrikasyon mamuller - Özellikler / 02.04.2015

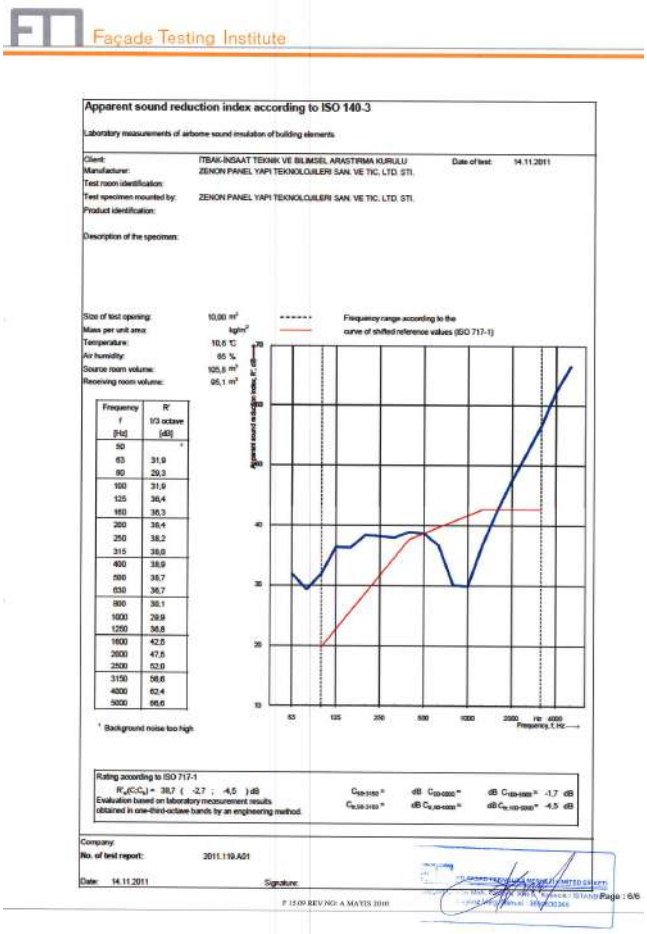
BELGE KAPSAMI / SCOPE OF LICENCE

1-YANGIN SINIFI:E ,BOYUT TOLERANS SINIFLARI:LUZUNLUK:L3,GENİŞLİK:W2,KALINLIK T2,GÖNYEDEN SAPMA:S2,YÜZEY DÜZGÜNLÜĞÜ:P3,ISI İLETKENLİK KATSAYISI:λ0.038 W/mK ,BÜKME DAYANIMI:BS 100,BASINÇ GERİLMESİ:CS(10)70,UZUN SÜRELİ SU EMME:WL(T)4,LABORATUVAR ŞARTLARI ALTINDA BOYUT KARARLILIĞI:DS(N)5,YÜZEYLERE DİK ÇEKME DAYANIMI:TR 50

2-YANGIN SINIFI:E ,BOYUT TOLERANS SINIFLARI:LUZUNLUK:L3,GENİŞLİK:W2,KALINLIK T2,GÖNYEDEN SAPMA:S2,YÜZEY DÜZGÜNLÜĞÜ:P3,ISI İLETKENLİK KATSAYISI:λ0.032 W/mK ,BÜKME DAYANIMI:BS 100,BASINÇ GERİLMESİ:CS(10)70,UZUN SÜRELİ SU EMME:WL(T)4,LABORATUVAR ŞARTLARI ALTINDA BOYUT KARARLILIĞI:DS(N)5,YÜZEYLERE DİK ÇEKME DAYANIMI:TR 50
GENLEŞTİRİLMİŞ POLİSTİREN KÖPÜK LEVHALAR
NOT:ISI YALITIM LEVHALARI ÇATI VE CEPHELERDE ISI YALITIM AMAÇLI OLUP BASMA SÜNMESİ GEREKTİREN ÖZEL UYGULAMALARDA KULLANILAMAZ.

06./12/2017
AYDIN ÇÖTEN
TSE İSTANBUL BELGELENDİRME MÜDÜRÜ V.

Sound Proof Certificate



Façade Testing Institute

Apparent sound reduction index according to ISO 140-3

Laboratory measurements of airborne sound insulation of building elements

Client: ITBAK-INSAAT TEKNIK VE BILIMSEL ARASTIRMA KURULU — Date of test: 14.11.2011
Manufacturer: ZENON PANEL YAPI TEKNOLOJILERI SAN. VE TIC. LTD. STI.
Test room identification:
Test specimen mounted by: ZENON PANEL YAPI TEKNOLOJILERI SAN. VE TIC. LTD. STI.
Product identification:
Description of the specimen:

Size of test opening: 10,00 m²
Mass per unit area: kg/m²
Temperature: 10,6 °C
Air humidity: 65 %
Source room volume: 105,8 m³
Receiving room volume: 95,1 m³

Frequency range according to the curve of shifted reference values (ISO 717-1)

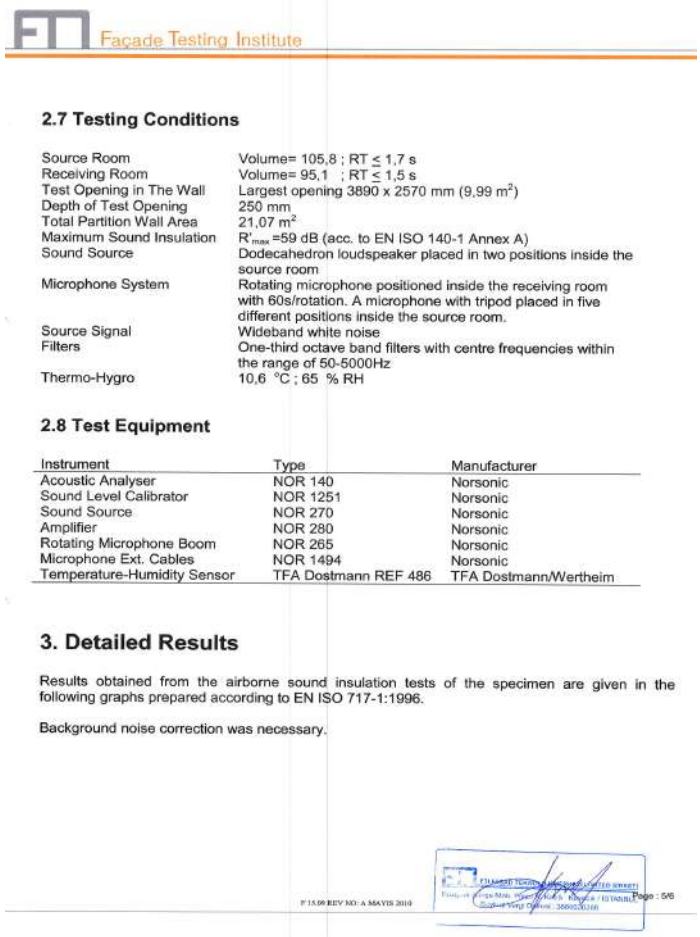
Frequency f [Hz]	R' 1/3 octave [dB]
50	*
63	31,9
80	29,3
100	31,9
125	36,4
160	36,3
200	36,4
250	38,2
315	38,0
400	38,9
500	36,7
630	36,7
800	38,1
1000	29,9
1250	36,8
1600	42,5
2000	47,5
2500	52,0
3150	56,6
4000	62,4
5000	66,6

* Background noise too high

Rating according to ISO 717-1
$R'_w(C;C_{tr})$ = 38,7 (-2,7 ; -4,5) dB
Evaluation based on laboratory measurement results obtained in one-third-octave bands by an engineering method.

Company:
No. of test report: 2011.119.A01
Date: 14.11.2011 Signature:

P 15.09 REV NO: A MAYIS 2010 Page : 6/6



Façade Testing Institute

2.7 Testing Conditions

Source Room	Volume= 105,8 ; RT ≤ 1,7 s
Receiving Room	Volume= 95,1 ; RT ≤ 1,5 s
Test Opening in The Wall	Largest opening 3890 x 2570 mm (9,99 m²)
Depth of Test Opening	250 mm
Total Partition Wall Area	21,07 m²
Maximum Sound Insulation	R'_{max} =59 dB (acc. to EN ISO 140-1 Annex A)
Sound Source	Dodecahedron loudspeaker placed in two positions inside the source room
Microphone System	Rotating microphone positioned inside the receiving room with 60s/rotation. A microphone with tripod placed in five different positions inside the source room.
Source Signal	Wideband white noise
Filters	One-third octave band filters with centre frequencies within the range of 50-5000Hz
Thermo-Hygro	10,6 °C ; 65 % RH

2.8 Test Equipment

Instrument	Type	Manufacturer
Acoustic Analyser	NOR 140	Norsonic
Sound Level Calibrator	NOR 1251	Norsonic
Sound Source	NOR 270	Norsonic
Amplifier	NOR 280	Norsonic
Rotating Microphone Boom	NOR 265	Norsonic
Microphone Ext. Cables	NOR 1494	Norsonic
Temperature-Humidity Sensor	TFA Dostmann REF 486	TFA Dostmann/Wertheim

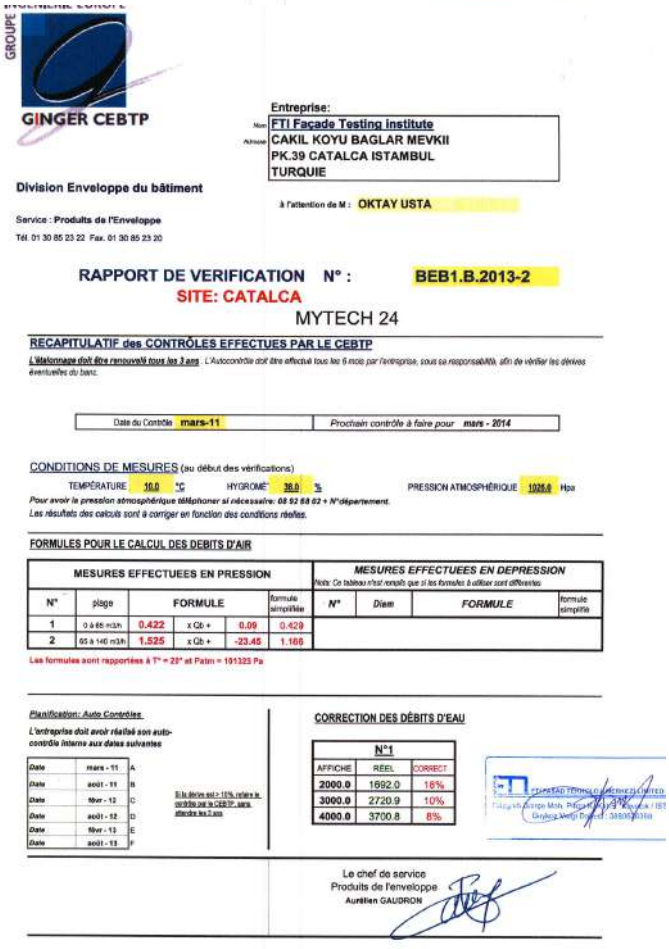
3. Detailed Results

Results obtained from the airborne sound insulation tests of the specimen are given in the following graphs prepared according to EN ISO 717-1:1996.

Background noise correction was necessary.

P 15.09 REV NO: A MAYIS 2010 Page : 5/6

Wind Load Resistance Certificate



GROUPE

GINGER CEBTP

Entreprise:
Nom: FTI Façade Testing institute
Adresse: CAKIL KOYU BAGLAR MEVKII
PK.39 CATALCA ISTAMBUL
TURQUIE

Division Enveloppe du bâtiment

à l'attention de M : OKTAY USTA

Service : Produits de l'Enveloppe
Tél. 01 30 85 23 22 Fax. 01 30 85 23 20

RAPPORT DE VERIFICATION N° : BEB1.B.2013-2

SITE: CATALCA

MYTECH 24

RECAPITULATIF des CONTRÔLES EFFECTUES PAR LE CEBTP

L'étalonnage doit être renouvelé tous les 3 ans . L'Autocontrôle doit être effectué tous les 6 mois par l'entreprise, sous sa responsabilité, afin de vérifier les dérives éventuelles du banc.

Date du Contrôle mars-11	Prochain contrôle à faire pour mars - 2014

CONDITIONS DE MESURES (au début des vérifications)

TEMPÉRATURE 10.0 °C HYGROMÉ 38.0 % PRESSION ATMOSPHÉRIQUE 1026.0 Hpa

Pour avoir la pression atmosphérique téléphoner si nécessaire: 08 92 68 02 + N°département.
Les résultats des calculs sont à corriger en fonction des conditions réelles.

FORMULES POUR LE CALCUL DES DEBITS D'AIR

MESURES EFFECTUEES EN PRESSION					MESURES EFFECTUEES EN DEPRESSION			
N°	plage	FORMULE		formule simplifiée	N°	Diam	FORMULE	formule simplifiée
1	0 à 85 m3/h	0.422	x Qb +	0.09	0.429			
2	85 à 140 m3/h	1.525	x Qb +	-23.45	1.166			

Les formules sont rapportées à T° = 20° et Patm = 101325 Pa

Planification: Auto Contrôles

L'entreprise doit avoir réalisé son auto-contrôle interne aux dates suivantes

Date	mars - 11	A
Date	août - 11	B
Date	févr - 12	C
Date	août - 12	D
Date	févr - 13	E
Date	août - 13	F

Si la dérive est > 15% relancer le contrôle par le CEBTP sans attendre les 3 ans

CORRECTION DES DÉBITS D'EAU

N°1

AFFICHE	REEL	CORRECT
2000.0	1692.0	18%
3000.0	2720.9	10%
4000.0	3700.8	8%

Le chef de service
Produits de l'enveloppe
Aurélien GAUDRON

ZENON
PANEL

CONTACT US

www.zenonpanel.com

www.zenonpanel-eg.com

export@zenonpanel.com

info@zenonpanel-eg.com

+90 542 239 23 24 +90 212 603 28 27

+20 122 313 81 83 +20 226 714 242

Fevzipaşa Mah. Söğüt Cad. No:41
Değirmenköy Silivri - Istanbul - Turkey

9 Abdelhameed Lotfy st - Makram
Ebeed - Nasr City - Cairo - Egypt