الحل الأمثل الذى تبحث عنه

THE SOLUTION MATERIAL THAT YOU ARE SEEKING FOR

ZENON

PANEL

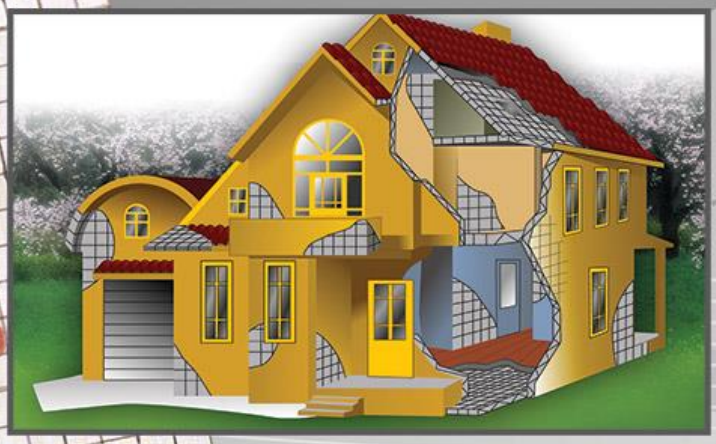
Earthquaqe resistant insulated structural system

Hassle-free insulated wall and slab solution

نظام هيكلى مقاوم للزلازل

حل مثالى بدون متاعب للجدران و الأسقف العازله

Rapid changes in building materials came against the block wall!
The goal is cheaper, more durable and more practical...



ISO 9001:2008 REGISTERED

www.zenonpanel.com

ZENON PANEL

What is Zenon Panel? ما هي لوحة زينون

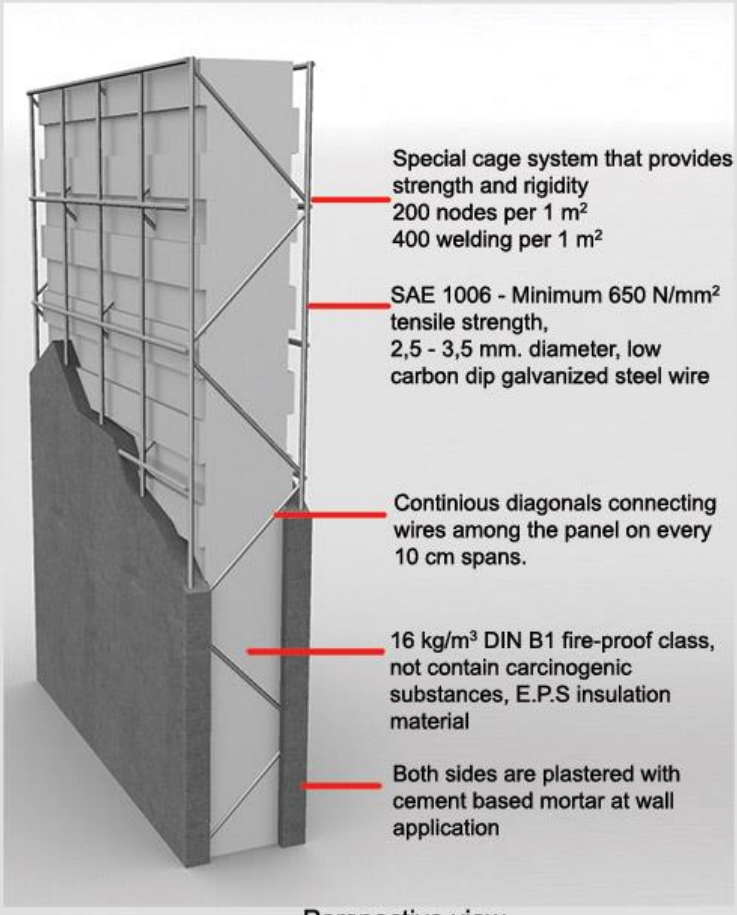
Zenon Panel system was applied for the first time in the 1970s in U.S.A; the production technology was improved in Europe in the 80s. The use of modern building system technology rapidly increased all over the world.
Zenon Panel has double layer of steel wire mesh connected by continuous diagonal wires, and an E.P.S. - insulation board inserted between two layers (expanded polystyrene). 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 E.P.S core is sound and thermal insulation.

Zenon panel dimensions: Net width of panel is 121cm, with 2 overlap meshes the total width is 142 cm.
The panel is produced in desired lengths depending to the need.

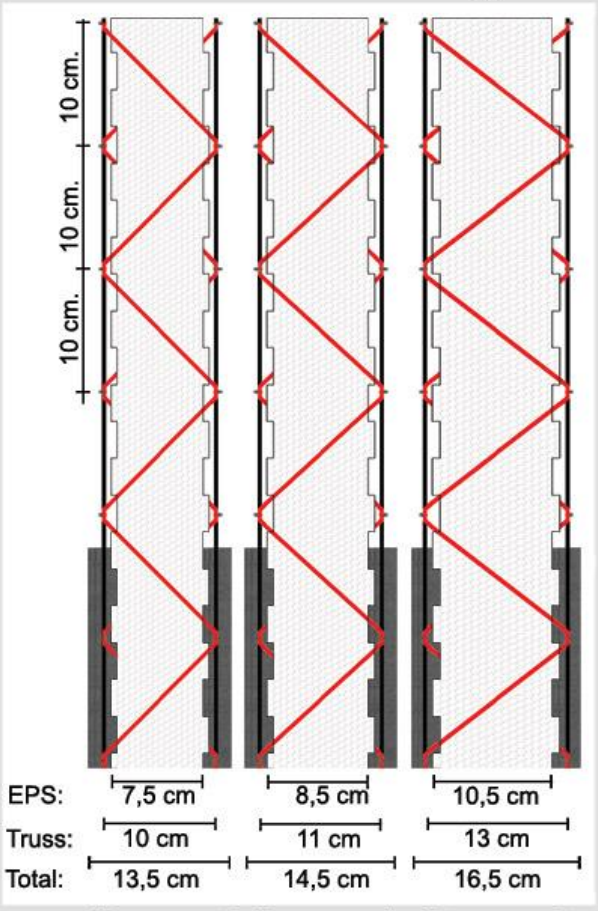
Application places أماكن التطبيقات

At construction site Zenon Panel is assembled and both sides of panel is plastered to generate insulated wall. Also reinforced concrete is poured on panel to generate insulated slab. Zenon Panel can be used as wall system in concrete frame, steel and prefabricated structures. There is no usage or size limit.

- Low rise building system أنظمة المباني منخفظة الأرتفاع
- Roofs or last floors الأسقف و الأسطح النهائية
- Interior or exterior wall الجدران الداخلية و الخارجية
- Special projects مشاريع خاصة



Perspective view



10cm panel **11cm panel** **13cm panel**

Patent protected Zenon Panel steel truss has 100 diagonal connecting wire and 400 welding per m².

Zenon Panel building system is used in the U.S, Canada and in many different countries since the 1990s, it is used for the rapid construction of low-rise structures such as housing or villas.

ZENON PANEL
(LOW-RISE STRUCTURES)
الهياكل الانشائية للطابق الواحد

Single storey building with Zenon Panel. It is fast to build, permanent and comfortable.

Fast
سريع

All kinds of architectural concepts can be implemented with Zenon Panel in low cost

Provides design freedom
يدعم حرية
فى التصميم

Panels are cut and fixed according to the project dimensions; provides save of material and labor

Economic
اقتصادى

After the installation, Zenon Panel walls are plastered, concrete is poured on Zenon Panel slab

Excellent thermal and sound isolation
عزل ممتاز للحرارة
و الصوت

Thanks to steel reinforcement of panel, there is no need to columns or beams for single floor houses

Not affected by the storms up to 200 km/hour

لا تأثير للعواصف و الرياح الى سرعة 200كم/ساعة

Provides up to 70% lightness than alternative structure types, so it is stronger and more stable

High production capacity

قدرة إنتاجية عالية

Up to 8.4 richter seismic loads are tested on Zenon Panel wall. Perfect performance is certificated

Strong against hits

قوى ضد الصدمات

It is enough to place the roof ridges with 60cm spacings. It reduces formwork and labor costs up to 75%

Saves formwork costs

توفير فى تكلفة الشدات والقوالب

Original architectural designs can be applied easily.

No wastage

لا فقد فى المواد

The construction of a 3-storey villa with Zenon Panel. Panels are assembled and plastered

Light-weight
4,5 kg/m²
خفيف الوزن
4.5 كج/متر مربع

On load bearing structural Zenon Panel walls, horizontal beam sections are built

No need to special mastership
لا يحتاج مهارات خاصة

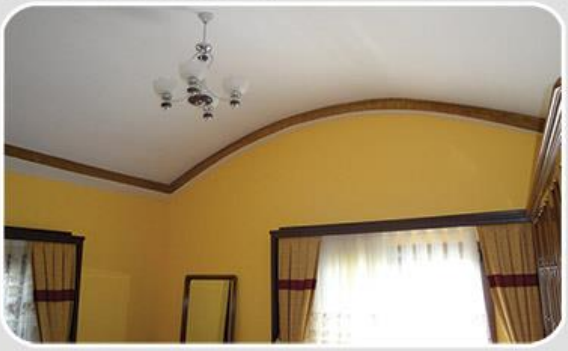
After concrete is poured on the slab, upper floor wall and slab panels are mounted

Safe against earthquakes
أمن ضد الزلازل

Walls are plastered with cement-based mortar. Reinforced concrete is poured on entire slabs

Fast
سريع

Zenon Panel wall can be coared with all kind of materials such as stone, marble or wood



Provides design freedom
يدعم حرية في التصميم

Especially for fast constructing housing projects, Zenon Panel is the most practical solution

Light-weight
4,5 kg/m²
خفيف الوزن
4.5 كج/متر مربع

Approximately, 5-experienced workers can make the assembly of 100 m² one floor house in 5 days

Excellent thermal and sound isolation
عزل ممتاز للحرارة و الصوت

Zenon Panel submit perfect-insulated houses that you will not feel cold in winter and hot in summer

Strong
قوى ضد الصدمات

Lightweight building system Zenon Panel provides high percentage savings in the basement costs

Fast
سريع

Solve the thermal and sound insulation issue with single structural material Zenon Panel

High production capacity
قدرة إنتاجية عالية

Zenon panel factory and dealer network provides technical support for all projects

Economic

اقتصادى

The implementation of assembly specifications and guidelines is very important

Safe against earthquaqes

أمن ضد الزلازل

A village primary school construction in Turkey. All is done by Zenon Panel building system

Saves formwork costs

توفير فى تكلفة
الشدات والقوالب

The cost of Zenon Panel structures are at least 20% lower than reinforced concrete structures

No wastage

لا فقد فى المواد

Arche, dome and amorphous designs can easily be implemented with Zenon Panel

Provides design freedom

يدعم حرية
فى التصميم

Roof floors are the most problem experienced parts of the structures. With Zenon Panel construction technology, hassle free permanent roof solutions, perfect insulation and large spans are now possible.

ZENON PANEL
(ROOF SYSTEM APPLICATIONS)
تطبيقات أنظمة الأسقف

High qulity heat and sound insulation, comfortable and permanent roof floors

Excellent thermal and sound insulation

عزل ممتاز للحرارة و الصوت

Durable, lightweight concrete-based roof floor solution

Light-weight 4,5 kg/m²

خفيف الوزن 4.5 كج/متر مربع

Zenon Panel minimizes formwork and reinforcement labour

Fast

سريع

Resistant to earthquake and severe wind loads

Safe against earthquakes

أمن ضد الزلازل

Also masonry block walls cen be preferred instead of Zenon Panel walls

Provides design freedom

يدعم حرية
فى التصميم

Necessary additional reinforcement is tied on Zenon Panels. 5-8 cm concrete is poured

Economic

اقتصادى

Zenon panel serve as three tasks 1 - Formwork 2 - Thermal insulation 3 - Reinforcement

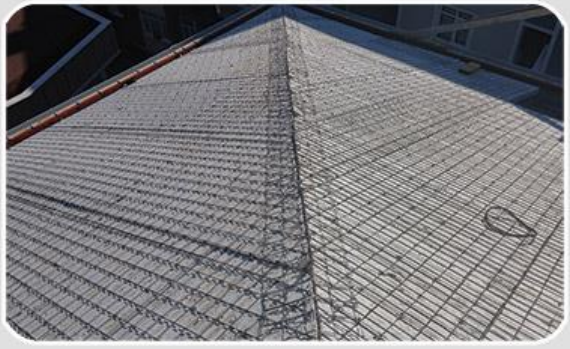
Saves formwork costs

توفير فى تكلفة
الشدات والقوالب

EPS of panel that coincide over the wall lines is emptied. By this way beam sections are created

No need to special mastership

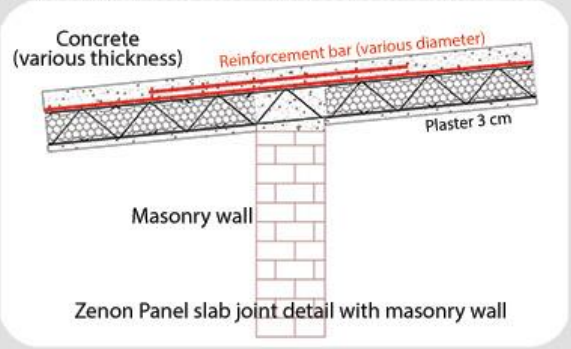
لا يحتاج مهارات
خاصة



The upper floor loads transmitted directly to the masonry walls. So beam costs are eliminated

Saving the cost of lintels and beams

توفير تكلفة
العوارض و الأعتاب



Zenon Panel slab joint detail with masonry wall

Without generating additional costs and loss of time, you can apply originally designed structures

Provides design freedom

يدعم حرية في التصميم

The panels are easily cut to the desired size and are easily tied to each other

No wastage

لا فقد فى المواد

After pouring the concrete, the surface can be covered with any kind of material for waterproofing

Economic

اقتصادى

At large-span roof applications, after laying the beam panels at axis lines, floor panels are placed

Fast

سريع

It is enough to place roof ridges with 60 cm spacings before pouring the concrete

Light-weight
4,5 kg/m²

خفيف الوزن
4.5 كج/متر مربع

To construct large-span roofs with Zenon Panel is more cost-effective and more comfortable

Easy transportation

سهولة النقل

Get rid of the Formwork material and labor loads! Low formwork and labor costs

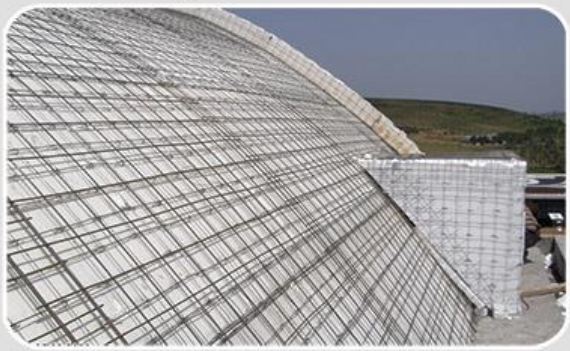
Excellent thermal and sound insulation

عزل ممتاز للحرارة و الصوت

Zenon Panel is a sought solution material for hassle-free wide-span vault roofs

Saves formwork costs

توفير فى تكلفة الشدات والقوالب



The application is very practical with Zenon Panel horizontal beam system

Safe against earthquakes

أمن ضد الزلازل

Zenon Panel is the solution address of all 3D ideas that can be imagined

Provides design freedom

بدعم حرية فى التصميم

Thanks to Zenon Panel's high thermal and sound insulation capability and safety property against seismic loads, it is the ideal interior and exterior wall system.

ZENON PANEL

(WALL SYSTEM APPLICATIONS)

تطبيقات أنظمة الجدران

The reinforced concrete frame structure is coated with panels, there is no need to block wall

Fast

سريع

The panels are anchored to the carcass. Both surfaces are plastered by cement-based mortar

Excellent thermal and sound insulation

عزل ممتاز للحرارة و الصوت

Zenon Panel can be shaped into unlimited forms and desired aesthetic facade is obtained

Light-weight 4,5 kg/m²

خفيف الوزن 4.5 كج/متر مربع

Zenon Panel provides excellent thermal insulation, with it's EPS insulation board

Provides design freedom

يدعم حرية في التصميم

There is no need to lintel or beams, it is extremely practical for all solutions

Economic

اقتصادى

Thanks to the steel truss and 3 cm plaster layers on either side, Zenon Panel wall is very stable

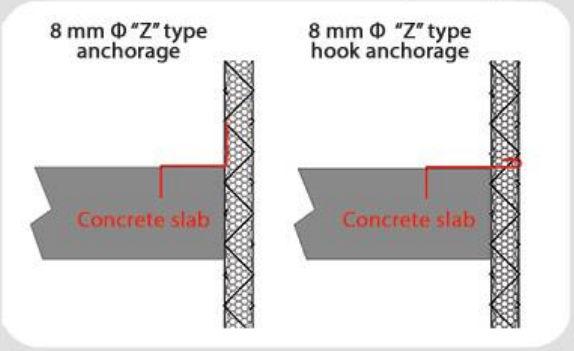
Not affected by the storms up to 200 km/hour

لا تأثير للعواصف و الرياح الى سرعة 200كم/ساعة

The seismic performance Zenon Panel wall which is anchored with 20 cm intervals, is very high

Safe against earthquaqes

أمن ضد الزلازل



If requested, the panels can be produced in custom sizes, the facades are covered very quickly

Saving the cost of lintels and beams

توفير تكلفة العوارض و الأعتاب

Panels are applied outside of the carcass, so 25 cm space is gained on every linear meter

Strong

قوى ضد الصدمات

Up to 70% lighter than block wall

No need to special mastership

لا يحتاج مهارات خاصة

7.5 - 10.5 cm EPS is placed within Zenon Panel so there is no need for additional thermal insulation

Strong

قوى ضد الصدمات

Does not require lintel or beams, door and window installation is very practical

Saving area up to %10

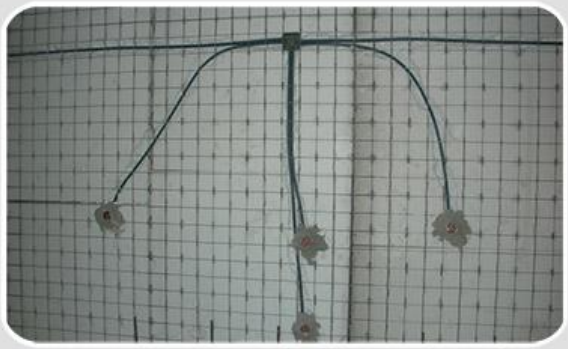
توفير فى مساحة المبانى الى 10%

If a building is coated with panels without thermal bridge, it is insulatated in real terms

Excellent thermal and sound insulation

عزل ممتاز للحرارة و الصوت

Electrical and plumbing pipes, can be easily installed between the mesh and EPS



Practical installations

عملي فى التركيب و التجميع

Thanks to the light weightness of the panels, horizontal and vertical transport is very easy

Fast

سريع

Windows can be opened in any desired size and position

Economic

اقتصادى

Panels are anchored to the frame and by it's steel truss system it strengthens columns and beams

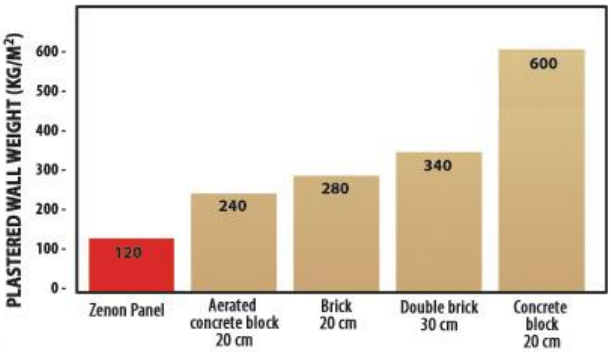
Safe against earthquaqes

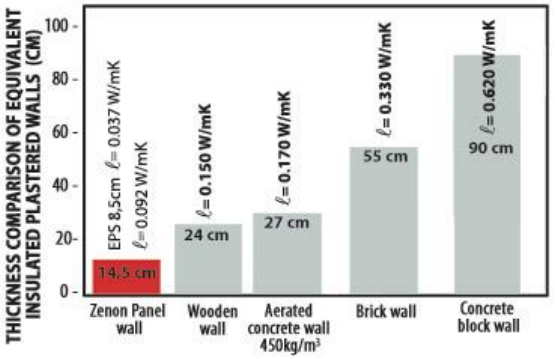
أمن ضد الزلازل

With it's steel truss system, Zenon Panel wall is resistant to impacts.

Saving the cost of lintels and beams

توفير تكلفة العوارض و الأعتاب





Zenon Panel steel truss system provides superior resistance capacity against horizontal and vertical loads.

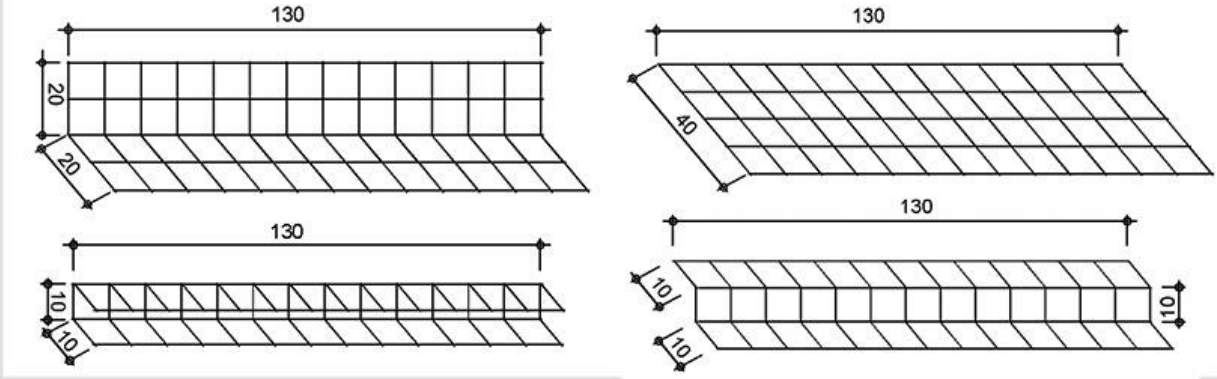
ZENON PANEL

(ASSEMBLY AND PLASTER)

التركيب و التجميع و اللياسة الاسمنتية

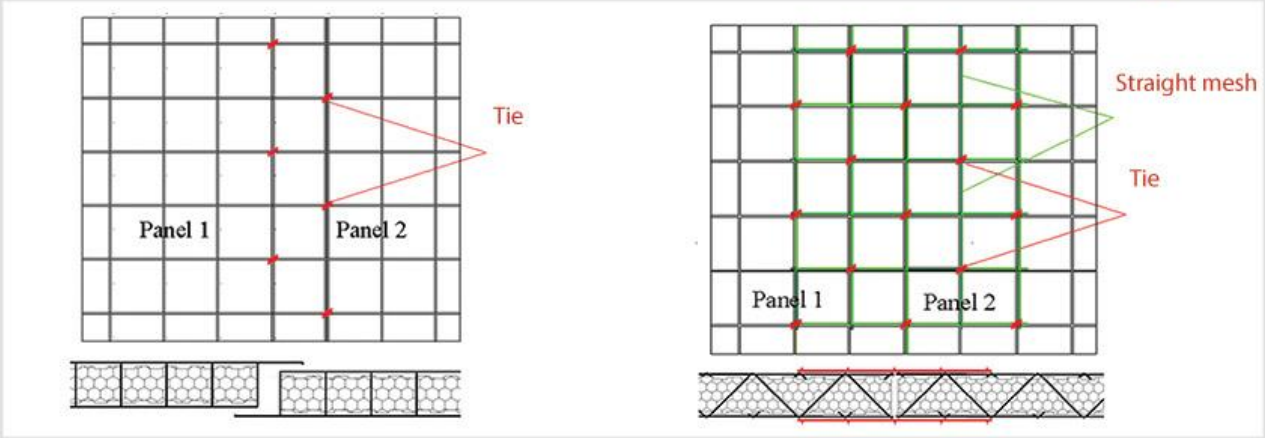
■ Connection meshes (dimensions in cm)

■ شبكات الربط والتوصيل - الابعاد سنتيمتر



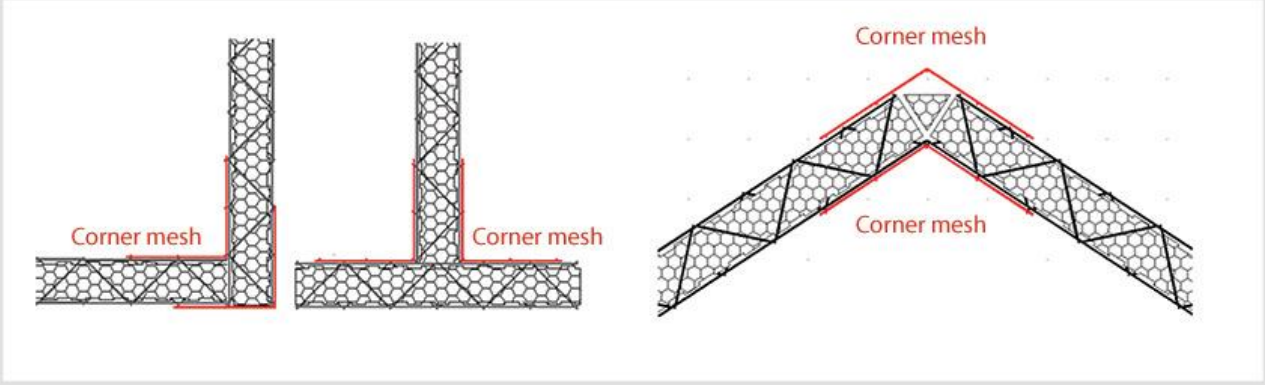
■ The connection details of two panels by overlap meshes or straight meshes

■ تفاصيل توصيل لوحين بشبكة الربط المتداخلة أو المسطحة



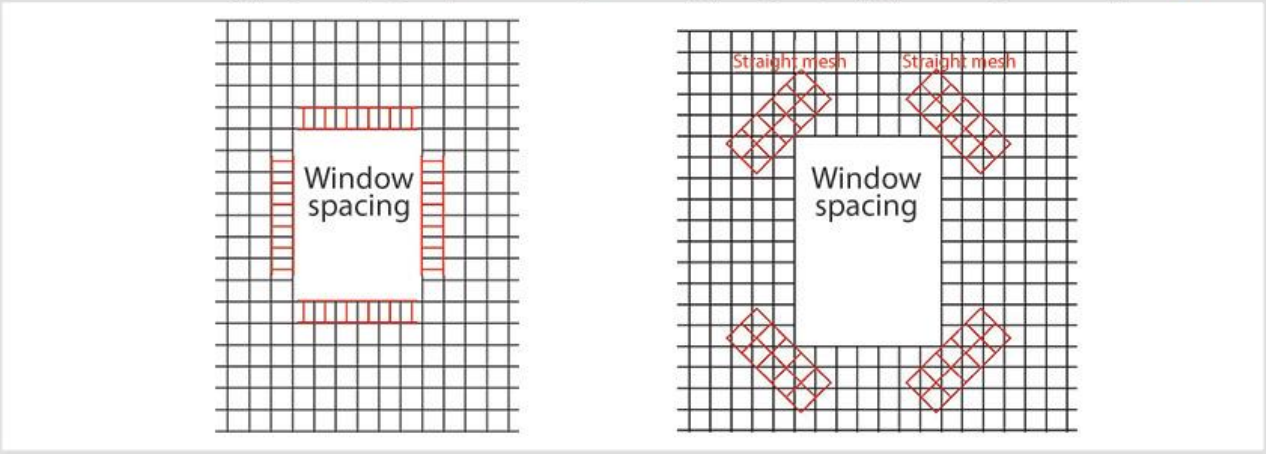
■ Angular junction of two panles by corner meshes

■ وصلة زاوية لربط لوحين فى ركن الزاوية



Reinforcement of door and window spacings by straight mesh and "U" mesh

تقوية حافة فراغات الأبواب و النوافذ بواسطة الشبكة المستقيمة وشبكة حرف يو

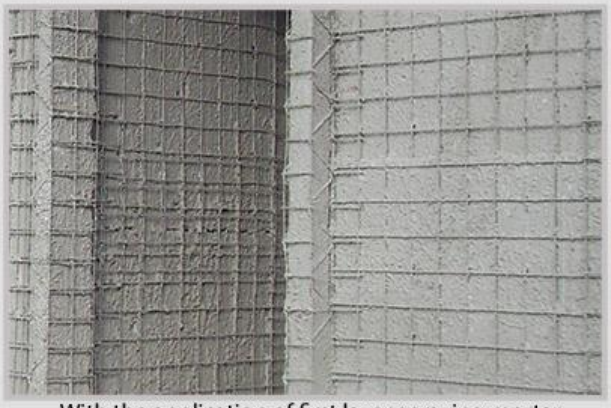


Plastering application

تطبيق و تنفيذ اللياسة

Zenon Panel can be plastered by hand or machine. Importantly, compressive strength of plaster should be 12 MPa or higher. To avoid the corrosion of galvanized steel truss, mortar should not contain corrosive substances such as lime. The thickness of the plaster should be about 3 cm on both surfaces.
In traditional block wall application 2 cm plaster is applied both sides. When we sum the amount of adhesive mortar used in the time of installing blocks and the amount of the mortar that is used for plastering into account, it will be seen that the total amount of mortar used for traditional block wall is higher than Zenon Panel wall's mortar.

For 1 m^3 of mortar, 1m^3 0-4 mm particule size of sand, 300 kg portland cement and 200 liters of water should be mixed.
After plaster applied to the surface of the panel, it should let to dry one day, the next day the other surface of panel can be plastered.



With the application of first layer spraying mortar the space between EPS and mesh is closed

Application with palstering machine

After the completion of coarse plaster, the plaster should be watered periodically and plaster should be drawn intermittently with nail tip as seen in the right photo. This enables easy adhesion of the thin plaster and prevents shrinkage cracks.

TESTS AND CERTIFICATION
الاختبارات و شهادات الجودة

The **Technical Aproval Certification** process that is managed by Turkish Construction Technical Sciencetific Research committee (ITBAK is member of EOTA), tested Zenon Panel due to the European Quality Standards.

ULUSAL TEKNİK ONAY

ITB

EOTA
EUROPEAN ORGANISATION FOR TECHNICAL ASSESSMENT
İTB Araştırma Kurumu EOTA Üyesidir

UTO 2014 / 036

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Faks : + 90 312 285 63 82
e-posta : itbak@itbak.org

TEKNİK ONAY KONUSU ÜRÜNÜN	
İsmi	Zenon Panel
Sahibi	İkmat Müh. Zenon Panel Yapı Tek. San. ve Tic. Ltd. Şti.
Kullanım amacı	Yapılarda iç-dış duvarların ve kalıcı kalıpların oluşturulması
Üretim tesisi	Feruzpaşa 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 Kriterler 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/m²K)	0.65	0.57	0.48	0.43
Düşey Yukarı Yönde Isıl Geçirgenlik Hesap Değeri, (W/m²K)	0.65	0.57	0.49	0.43
Yangına Dayanım	EI60/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.			
Görültüye karşı koruma, Rw (C; Ctr) (dB)	38.7 (-2.7; -4.5)			
Su Buharı Difüzyonu Direnç Katsayısı, μ	33.36			

Thermal insulation capacity قياس العزل الحرارى

Thermal conductivity coefficiency at 23C - %80 relative humidity conditions

10 cm panel: U_{wall} < 0,65 W/m².K - U_{Roof} < 0,65 W/m².K
11 cm panel: U_{wall} < 0,57 W/m².K - U_{Roof} < 0,57 W/m².K
13 cm panel: U_{wall} < 0,48 W/m².K - U_{Roof} < 0,49 W/m².K

Sound insulation capacity قياس العزل الصوتى

Due to E**N ISO 10140-2:2010** standards acoustic insulation capacity

10 cm panel = 38,7(-2,7 ; -4,5) dB
11 cm panel > 38,7(-2,7 ; -4,5) dB
13 cm panel > 38,7(-2,7 ; -4,5) dB

Resistance to the fire مقاومة الحريق

Zenon Panel wall is placed to an oven which reaches to 800 C at 15th minute and reaches up to 1000 C temperature.
By this test resistance capacity of Zenon Panel to the fire was tested. In accordance with regulations on the protection of buildings from fire, Zenon Panel can be used as interior or exterior wall.

Fire resistance class = E90 - EI60 (EN 13501-2)

Impact resistance مقاومة الصدمات

By its steel truss reinforcement system, Zenon Panel wall performs excellent resistance against impacts. The hits at specified speeds defined by the standards, are applied to the 3 m x 4.5 m sized Zenon Panel wall, and as result even the slightest crack did not emerge.

Impact resistance class: E5 (TS EN 14019)

Resistance to wind loads مقاومة أحمال الرياح

According to the EN 12179 standards, dimensions of 4.5 m x 6 m 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.

Water wapor diffusion واقى من مرور بخار الماء

Water vapor diffusion resistance coefficient μ = 33.36

Ballistic test إختبار القذائف

Bullet proof wall - Zenon Panel wall does not pass any kind of pistol bullets by it's high cement dosage double plaster layers.
In the test done by the Turkish special operations troops, many kinds of the rifles are tried with the most effective distance and angle, and successful results were obtained.

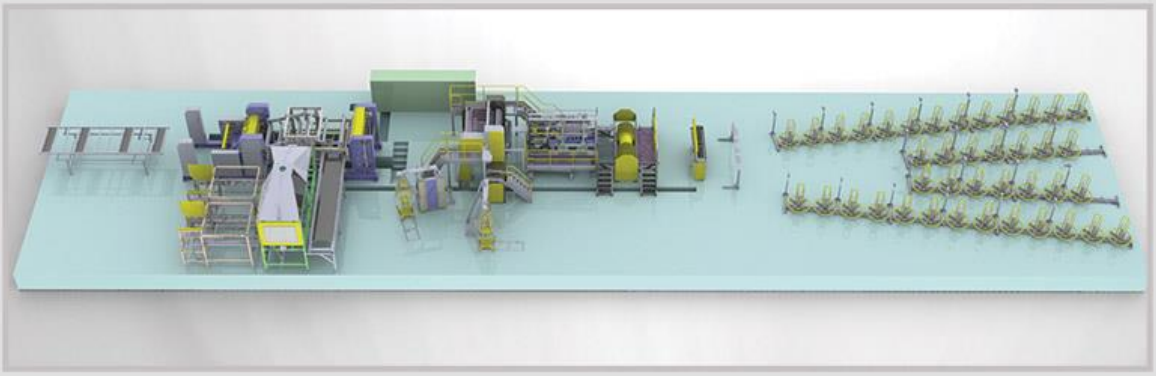
Load bearing test

أختبار تحميل ألاوزان

**Zenon Panel was reinforced with 6 mm diameter mesh and 10 cm C30 concrete was poured over the panel.
Up to 39 tons of linear vibratory live load is applied to the test slab. Thanks to the special steel truss of Zenon Panel system, slap absorbed this enormous load and demonstrated superior performance.
Please visit our website for the video.**

PRODUCTION TECHNOLOGY & INVESTMENT

تكنولوجيا الانتاج والاستثمار



There is no handwork in the mass production of Zenon Panel. The panels are produced in context of quality control processes. All stages of production is performed in a full automated production line consisting of synchronous units.
Our Istanbul factory is based on 8.000 m^2 of industrial land, our full automated production line is capable of producing 1.500.000 m^2 Zenon Panel per year.

Investment

**Also we produce Zenon Panel production lines. Zenon Panel production lines are designed for mass housing projects in Asia, Africa and the Middle East with innovative technology and equipment.
We offer Zenon Panel production lines and Zenon Panel construction technology know-how to the attention of investors. To get rid of all the shipping and customs charges produce Zenon Panel in your region.
Please contact us for the production investments.**

الاستثمار

و نحن ايضا نصنع خطوط انتاج لوحه زينون. خط تصنيع لوحه زينون مصمم للمشاريع الاسكانية فى مناطق أسيا و افريقيا و الشرق الآوسط بتكنلوجيا حديثة و معدات مبتكرة

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