

Mineral Wool & Eps Sandwich Panel Production Line



IL KWANG is committed to provide total solutions for sandwich panel production lines, roll forming machines in the construction and automotive industries.



Mineral Wool & Eps Sandwich Panel Production Line

Mineral wool sandwich panel production line (Continuous)

Expanded Polystyrene(EPS) sandwich panel production line (Continuous)

Passion

Since its establishment in 1988, IL KWANG METAL FORMING CO., LTD. started developing various sandwich panel production lines (sandwich panel machines) with different isolating materials such as polyurethane, mineral wool and expandable polystyrene (EPS). IL KWANG has been successfully developing and integrating its technology of roll forming equipment and insulation materials into sandwich panel production lines which was a keystone of becoming the leading manufacturer in both domestic and overseas market.

Nowadays, IL KWANG METAL FORMING CO., LTD. is the leading manufacturer of sandwich panel production equipment in the world market. with several business partnerships with other global companies such as FRAMECAD, CANNON, OMS GROUP, HENNECKE, and others, IL KWANG has managed to deliver its technology to over the world as well as boost its brand awareness around the globe.

With its usual invariability, IL KWANG has always been focusing on differentiated technology to meet customer's needs and expectations.

Being the first company to develop sandwich panel production equipment with a variety of insulation materials, IL KWANG has succeeded in exporting business by providing reasonable and competitive rates, high durability and quality of products and excellent after-sales service.

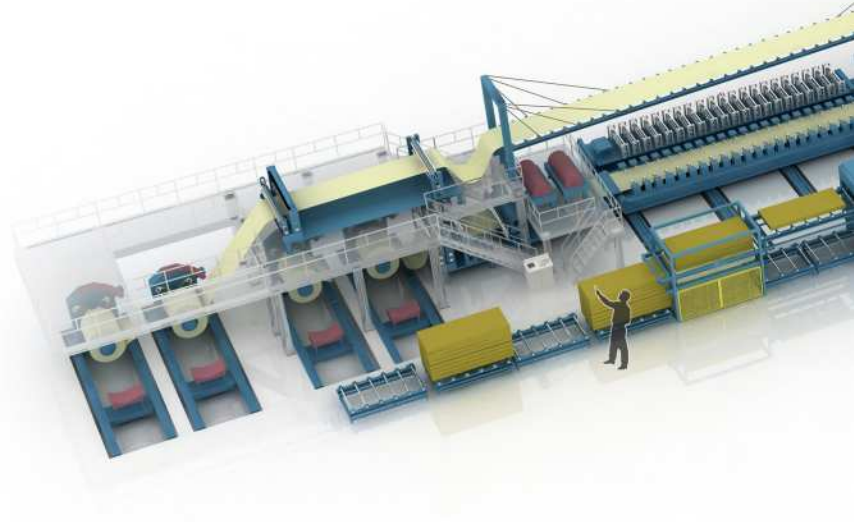
All sandwich panel production equipment presented in this catalogue is fully automatic, requires minimum control by operators and can continuously and efficiently produce sandwich panels of exquisite and diverse shapes. This equipment is designed and manufactured with such advantages as high durability, easy management, and Technology superior to the largest European competitors. Its relatively competitive price and outstanding quality has attracted many customers and has been exported to over 70 countries as well as domestic market.



Mineral Wool Sandwich Panel Production Line

The general specification of product (Mineral wool sandwich panel)

- Product width of Wall : 1000mm(with 1070mm / 1070mm)
Product width of Roof : 1000mm(with 1250mm / 1070mm)
- Product thickness : 50 ~ 250mm
- Product length : Minimum 2000mm in Auto mode



Mineral wool board supplying system



Thermal lock



Specification

- Production line speed
- In case if panels are longer than 3 meters
 - Mineral wool 50mm : Max. 8m/min
 - Mineral wool 75mm : Max. 7.5m/min
 - Mineral wool 100mm : Max. 7m/min
 - Mineral wool 150mm : Max. 4.5m/min

EPS 50-100mm : Max. 10m/min

EPS 150mm : Max. 10m/min

Factory Electricity : 380V x 50Hz x 3Ph(User's choice available)

Controlling Electricity : A.C. 220V(User's choice available)

Total Power(standard) : 200kW

Factory's Area : 100-120m(L) x 30m(W) x 6m(H)

Personnel : 4 – 5 person



The Mineral wool panel has low thermal conductivity and excellent insulating effect, excellent sound absorption and thermal insulation, and is widely used for construction of fireproof buildings ranging from agricultural to industrial sector.

Mineral Wool Sandwich Panel Production Line consists of Un-coiler that inputs and releases coil, Roll Forming Unit that forms and shapes coil, Mineral Wool Supplying System that inputs mineral wool boards into the line properly cutting/processing it, Glue

Application System that applies bond material to attach steel plate to mineral wool, Laminating Unit that makes the shape of sandwich panel, Panel Cutting Unit that cuts fabricated sandwich panels, Auto Stacking Unit that loads finished panels, and Panel Packing Unit that packs the loaded panels with plastic wrap and discharges them.



- CONROCK –is a pre-made mineral wool board with vertical wool layer.
- LAMROCK –is a pre-cut mineral wool board.
- There are two ways to feed “CONROCK” and “LAMROCK”. One is manual and the other is automatic.
- **Manual feeding way :** Manual Feeding table +side belt & trimming unit
- **Automatic feeding way :** Auto Feeding table +side belt & trimming unit

Mineral wool board handling unit in case of

“CONROCK” feeding type or “LAMROCK, Pre-cut board” feeding type

In general, there are three ways of mineral wool board feeding, according to mineral wool board type. They are “CONROCK”, “LAMROCK”, “SPANROCK”.

- 1 Mineral wool board handling unit (LAMROCK handling system)
- 2 Mineral wool board handling unit (CONROCK handling system)



- **No. 100 & 200 conveyor** : are used to feed the mineral wool board bundle to the lifter.
- **Lifter & pusher** : are used to push the board one by one to the board cutting unit.
- **Board cutting unit** : is used to cut the board as per required thickness of panel.
- **Turning (Tumbling) conveyor** : is used to turn the cut board by 90 degrees to form a vertical layer.
- **In-feed conveyor** : is used to transport the turned boards to the side belt conveyor.
- **Side belt & trimming unit** : are used to accumulate and transport the boards to side trimmer.
- The side trimmer is used to make male & female lock type shape of boards.
- **Thermal lock trimmer (option)** : This option is used to improve thermal efficiency of insulation joint.



Mineral wool board handling unit in case of

"SPANROCK" Automatic cutting, turning type

- 1 Board cutting unit
- 2 ATT conveyor

SPANROCK – is normal mineral wool board to be cut by our machine. This unit consists of the units presented in the following pictures, "no. 100, 200 conveyor", "lifter & pusher", "Board cutting unit", "Turning conveyor", "In-feed conveyor", "no.400 conveyor", "Side belt & trimming unit".





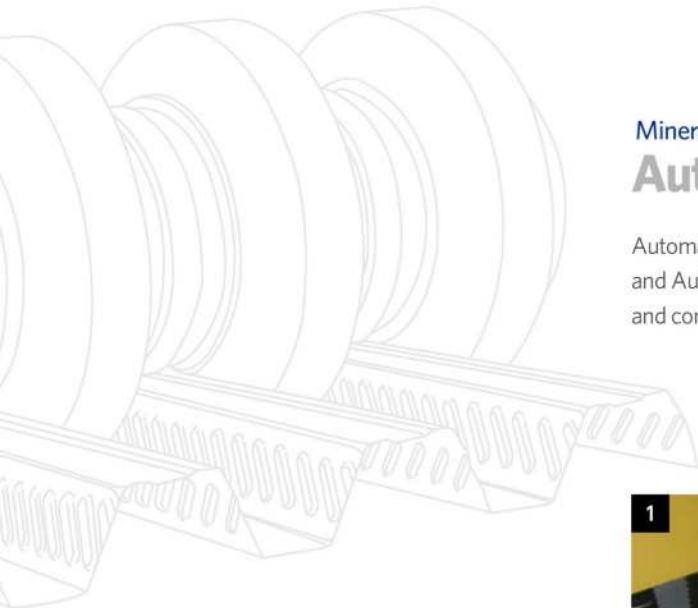
Mineral wool board handing unit in case of "SPANROCK"

Mineral wool supplying system

Mineral Wool Supplying System #1 consists of Lifter, Board Cutter and Turning Conveyor, cutting mineral wool material in accordance with the thickness of sandwich panel, and continuously supplying it to the equipment.

- 1 Board cutting system
- 2 Board Lifter
- 3 Palletizing system
- 4 ATT conveyor
- 5 Board lifter & pusher
- 6 7 Auto roof pad supplying system





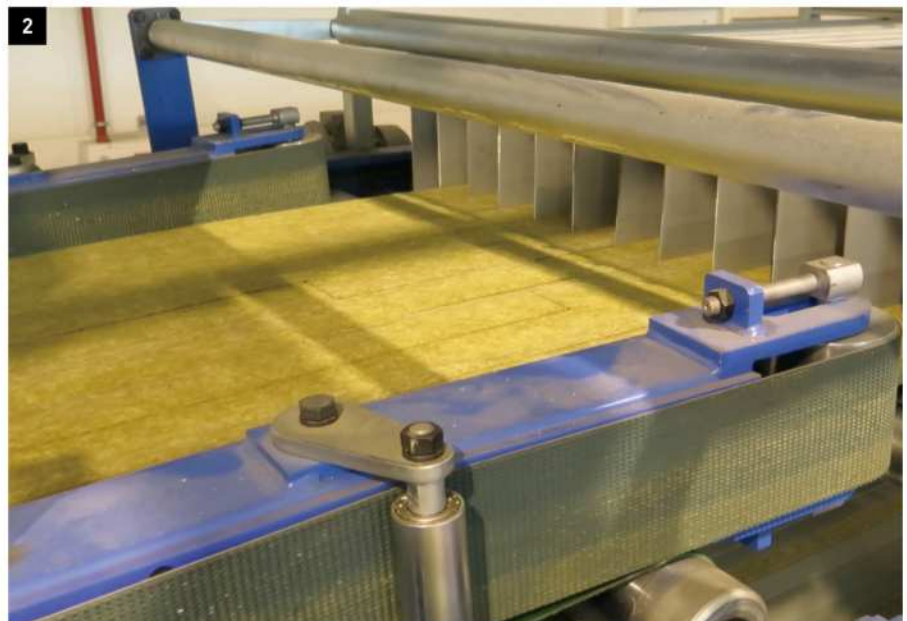
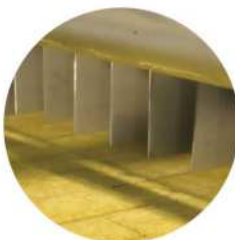
Mineral wool board handing unit in case of "SPANROCK"

Automatic Board side trimming & supplying

Automatic Board side trimming & supplying system consists of Side Trimmer, In-feed Conveyor and Auto Pad Supplying Unit/Option, adequately processing the supplied mineral wool material, and continuously supplying it to the equipment.



1 Side trimming system
2 Side belt conveyor





Cement board (or OSB) handling system

Cement board(or OSB) handling system

This system is used to produce "Cement board (OSB) sandwich panel", without using steel sheet.

In order to produce this panel type, the additional equipment is required for "Feeding", "loading", "turning", and upgrades of the cutting machine.

- **Feeding unit** : The cement boards on pallet are transported to the loading unit.
- **Loading unit** : Is used to feed the cement board one by one into the line.
- **Turning unit** : Is required if surface of boards has different condition depending on type of cement boards. If buyer can provide boards with consistent and good condition of surface to the line, this unit is not required.
- **Upgrade of cutting machine** : The cement board must be cut by wheel saw.
- Some special sensors and control are required to measure the cement board cut length as connecting parts must be cut.



Sandwich panel with Cement board



- 1 Laminating machine
- 2 Laminating machine with protect fence
- 3 Laminating machine with glue adhesive system

Laminating unit

This is a device that makes shape of sandwich panel applying constant pressure and heat to the upper and lower steel plates where glue is applied. A rubber roller system laminating unit with acquired patent applications (Patent No.0,304,450) has low power consumption and inexpensive compared to the double belt conveyor system and flatness of the product remains consistent.





Panel cutting system (bandsaw)

This is a device that automatically stacks the finished panels of a quantity desired by users. Panels can be loaded continuously by loading pattern of vacuum suction plates or lift conveyor. And in case of roof panels, cross stacking (overturning) is available, if necessary.

- 1 Cutting (band saw) unit
- 2 The view of the Auto stacker unit (vacuum system)
- 3 The view of the Auto stacker unit (mechanical lift system)





Auto Stacking and Packing system

This system can stack and pack the finished panels of a quantity desired by users, automatically. Sandwich panel can be loaded continuously by loading pattern of vacuum suction plates or lift conveyor and in case of roof panels, cross stacking (overturning) is available, if necessary. After stacking, packing unit can pack with plastic wrap on 4 sides or 6 sides (option) and discharges finished panels. Application of the pallet system of inserting EPS blocks automatically makes it handy for cargo transportation and storage of panels.

- 4 Stacked panels by saddle movement of the auto stacker
- 5 The view of the Auto packing unit
- 6 Packed sandwich panels



Roll former exchange way

"Carriage (rail) moving" system, "cassette" system and "double layer" system to exchange profile type.



Rail system

- Used to exchange profile type by moving roll former on rails.
- **Advantage** : Easy to change 2 - 3 different profiles.
- **Disadvantage** : Requires more space
- **Main drive** : 1.5kw A.C. cyclo-reducer with brake
- **Rail** : 22kg/m (4 rows)
- **Moving speed** : 1.44m/min
- **Wheel material** : S45C
- Foundation work will be done by buyer



Cassette system

- Used to exchange profile type by moving roll former cassettes with overhead crane
- **Advantage** : Able to produce various types of panel, easily exchanging the roll former.
- **Disadvantage** : The most expensive way
- **Main drive** : A.C geared motor & worm reducer
- **Power transmission** : One touch clutch
- **Measuring stand** : Roll pressing by spring tensile
- Speed control by frequency control of encoder



Double deck system

- Used to exchange profile type by moving 1st layer or 2nd layer of the double deck.
- **Advantage** : The most economical way to exchange profile.
- **Disadvantage** : Available number of profiles is only 2 as the layer consists of only 2 types.
- **Stand type** : Steel plate
- **Driving** : A.C. geared type

Necessary units (options)



Roof pad cutting machine

- Is used to make mineral wool pad for roof panels to fill up its ribs.
- Per standard, there are 9 knives for upper side and 9 knives for lower side to make Trapezoidal rib pads.
- **Board size** : (W)600mm × (L)1500mm × (H)height of rib
- **Cutting speed** : Max. 9m/min



Roof pad board cutting machine

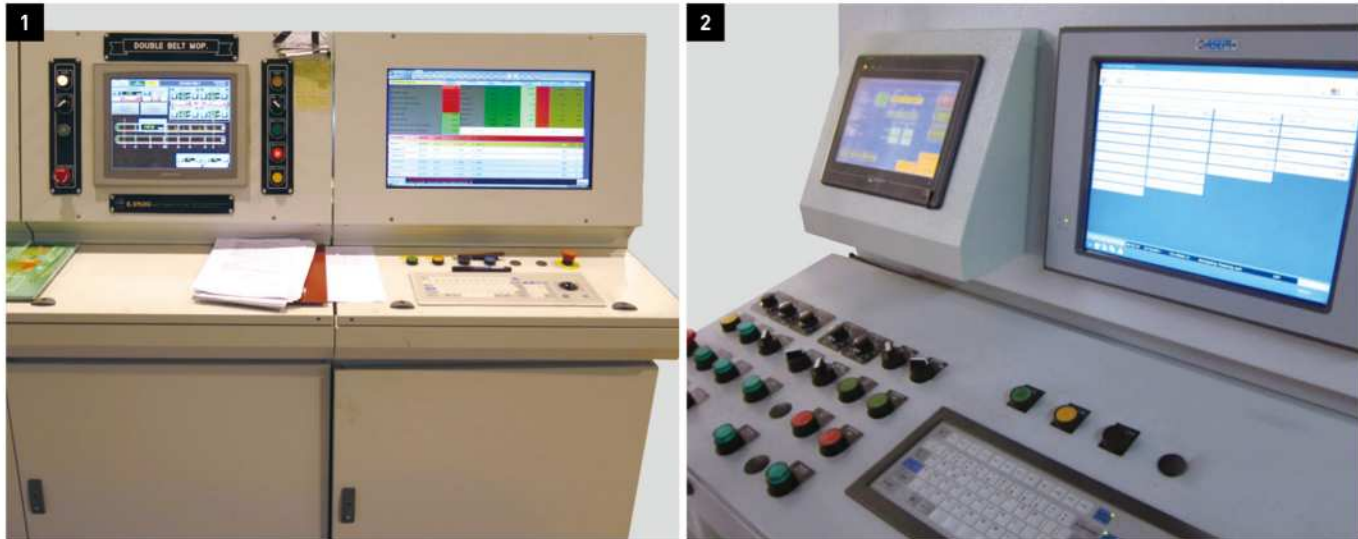
- Is used to make pad board that are used in the pad cutting machine pictured above.
- **Type** : Band saw (Double type)
- 5.5kw motors – set
- **Board size** : (W)600mm × (L)1500mm × (H)height of rib



Dust collector

- Is used to collect dust from the line during mineral wool sandwich panel production.
- It is recommended to assemble this equipment according to the drawing & information provided by Seller.
- **The dust collector consists of the following** : Filter bag, Bag cage, Venturi, Blow tube, Pulse V/V, Air header, Fan motor, Damper Silencer, Rotary V/V, Control panel, Steel plate, Walk way & ladder, Stack & Cap, duct, painting according to detailed drawing of seller.
- **Ratio of mineral wool dust** : 4.0mgr/m³
- **Capacity** : 600m³/min
- **The parts in the line where dust is collected** : "all trimming units", "board cutting machine", and "panel cutting machine".

Electric control system

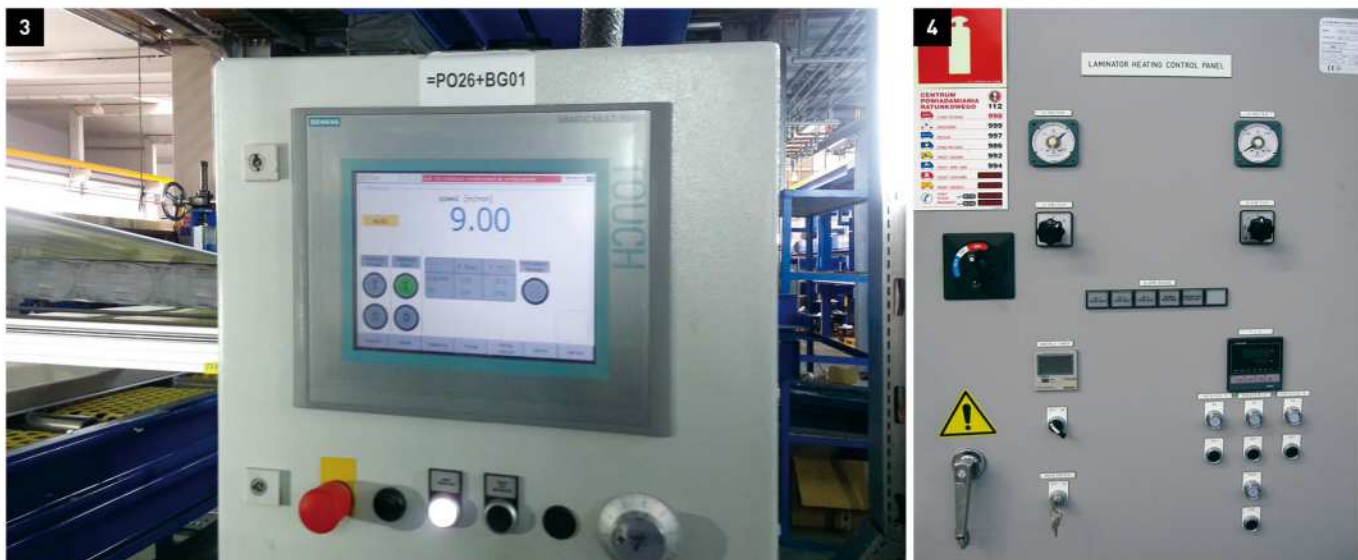


Electric control system consists of the M.C.C. (Motor Control Center) cabinet, Main Operating panel, Substitute Operating Panel, and unique Software. The operating panel is able to show all functions visually and let operator control the whole line easily and effectively. Features of the control panel system are as following:

- Touch screen panel
- Network system
- (Programmable, therefore allows you to add features)
- SKADA

All of our control units and components are inspected and approved to meet C.E and UL codes. Since our equipment is delivered all over the world, we know what requirements and applications are needed for any country.

- 1 2 Operating panel – touch screen type
- 3 Sub operating panel
- 4 MCC unit



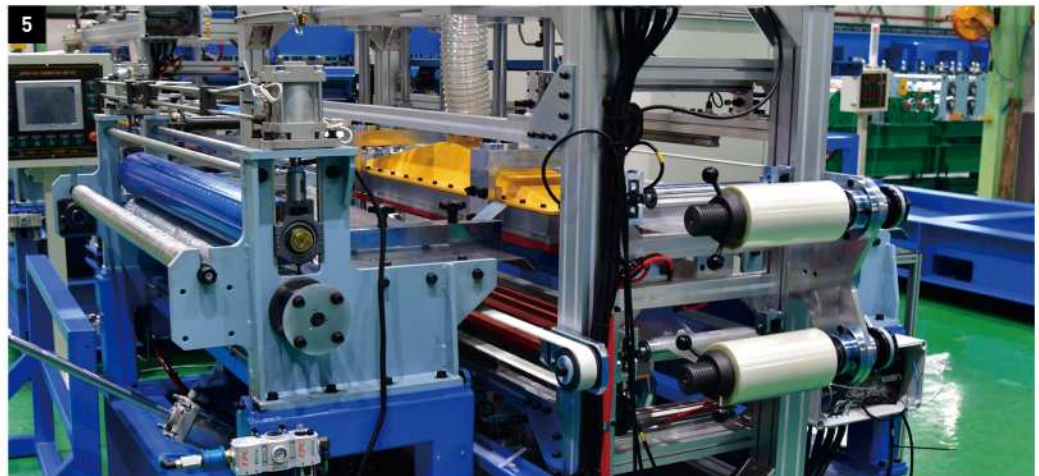
Glue application system

This is a device that is used to apply glue, and is designed in two types such as Mixing type and Spray type. Mixing type is widely used throughout the world, as it is relatively inexpensive and durable. Spray type can save the discharge and application quantity of glue, while the price is somewhat higher.



Coil junction system (automatic type)

It is used to connect the end of 1st coil and the beginning of 2nd coil, placing 4 un-coilers.



- 1 Glue Mixing (adhesive) nozzle for upper coil
- 2 Glue spraying system
- 3 Glue spraying nozzle
- 4 Glue tank
- 5 Auto coil taping system

EPS Sandwich Panel Production Line

Specification

Product width of wall : 1000mm(with 1070mm / 1070mm)

Product width of roof : 1000mm(with 1250mm / 1070mm)

Product thickness : 50 - 200mm

Product length : Minimum 2000mm in Auto mode



Two 500mm width boards feeding



Finger joint feeding unit



Production Speed: Max. 7-12m/min Coil thickness : 0.4 - 0.7mm

EPS. board : (L)3600mm x (W)500mm x (T) 50-200mm (User's choice available)

Total Power(standard) : 130kW

Factory Electricity : 380V x 50Hz x 3Ph (User's choice available)

Controlling Electricity : A.C. 220V (User's choice available)

Factory's Area : 80-100m(L) x 30m(W) x 6m(H)

Personnel : 3 - 4 person



Our EPS continuous production line is designed to produce roof and wall panels that can be used for cold storage, general storage, factory buildings, temporary buildings, prefabricated buildings, and are produced in the most cost-effective way. Designed with production rate of 5 - 12m / min, production facilities can be easily expanded by addition of a molding machine to produce panels of various types. Expanded Polystyrene Sandwich Panel Production Line consists of Un-coiler that inputs and releases coil, Roll Forming Unit that makes shape of coil, E.P.S. Board Supplying System that inputs expanded

polystyrene boards by properly cutting/processing them, Side & Surface Trimming System that cuts the binding sites and surface of panel in accordance with the required specification, Glue Applying System that applies bond material to attach steel plate to expanded polystyrene, Laminating Unit that makes the shape of sandwich panel, Panel Cutting Unit that cuts the fabricated sandwich panel, Auto Stacking Unit that loads the finished panels, and Panel Packing Unit that packs the loaded panels with plastic wrap and discharges them.

EPS board storage and supplying unit to apply two width of EPS board

It is designed for thick and rigid sandwich panels used at cold storage, and the system continuously supplies boards in front and rear sides using the grooves of finger joint.

- It is used to feed EPS board, PU board and trim the EPS board. After trimming the front and rear sides of EPS board with so called "finger joint", the trimmed EPS board will be fed into the laminating machine.
- **Storage height** : TBD.
- **Supply method** : By chain attachment
- **Storage capacity** : (L)3m or 6m / (W)1.2m / as per thickness 38mm - 360mm
- To feed one 1018mm width of EPS board. In this, the connection of two boards will be done by "finger joint".
- **Feeding motor** : Geared motor
- **Speed control** : Frequency control



EPS board storage and supplying device

Side & surface trimming system

This device trims the combining parts and surface of panels in accordance with the required specification.
The cut is sophisticated and elegant according to the shape of the panel.



- Trims the both sides of EPS and PU + PIR pad as male and female shape, Surface, Thermo lock
- **Drive(cutting) motor** : Induction motor
- **Cutter** : Ø150 mm (Side trimming & male-female shape)
- **Cutter material** : Tip saw
- **Adjusting point** : By handle(manual)
- The male & female joint trimming unit is necessary unit for jointing two panels.
- The Surface trimming unit is necessary in case of feeding one width EPS board.

*Dust collector is required. Buyer should make it according to the drawing & information by seller.

EPS edge side trimming machine

Panel cutting system

A device that cuts sandwich panel fabricated in the Laminating Unit to the length desired by users.
Different cutting types have been developed to correspond to customers' needs.



Thermo lock joint connection



Panel cutting machine for EPS sandwich panel

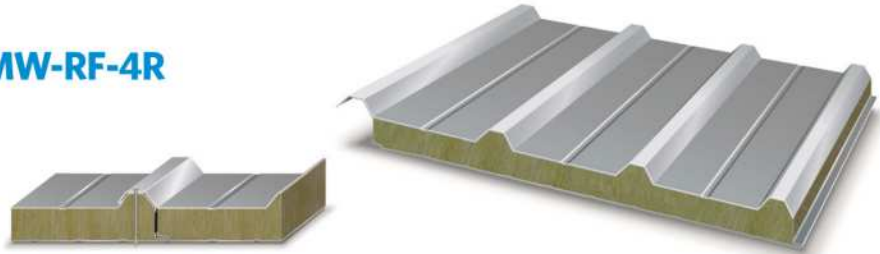
Profiles



Mineral wool & Glasswool panels

Coil Width	1219 / 1070mm
Product Width	1000mm
Panel Thickness	50, 75, 100, 125mm
Coil Thickness	0.4 - 0.7mm
Depth of Roof	38mm

+ IKMW-RF-4R



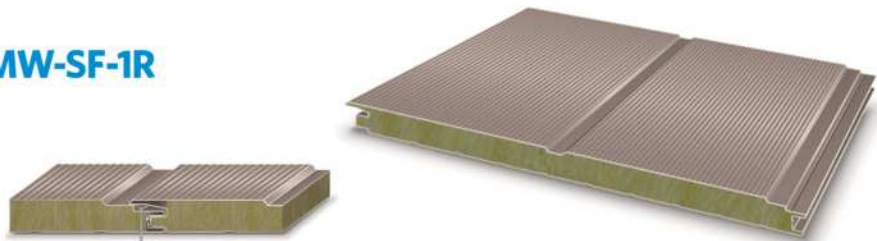
Coil Width	1070 / 1070mm
Product Width	1000mm
Panel Thickness	50, 75, 100, 125mm
Coil Thickness	0.4 - 0.7mm

+ IKMW-WA-G



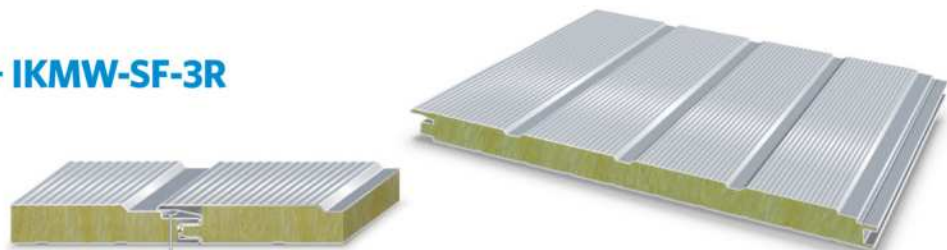
Coil Width	1219 / 1070mm
Product Width	1000mm
Panel Thickness	50, 75, 100, 125mm
Coil Thickness	0.4 - 0.7mm

+ IKMW-SF-1R



Coil Width	1219 / 1070mm
Product Width	1000mm
Panel Thickness	50, 75, 100, 125mm
Coil Thickness	0.4 - 0.7mm

+ IKMW-SF-3R





Mineral wool & Glasswool panels

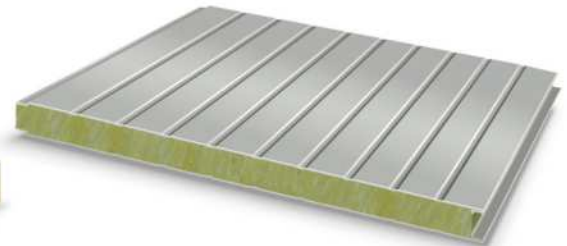
Coil Width	1250 / 1100mm
Product Width	1000mm
Panel Thickness	40 - 200mm
Coil Thickness	0.4 - 0.7mm
Depth of Roof	35mm

+ IKMW-ZRF-5R



Coil Width	1250 / 1100mm
Product Width	1000mm
Panel Thickness	40 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKMW-ZWA-G



Coil Width	1250 / 1100mm
Product Width	1000mm
Panel Thickness	40 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKMW-ZSF-G



Coil Width	1250 / 1100mm
Product Width	1000mm
Panel Thickness	40 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKMW-ZSF-M



Profiles



EPS panels

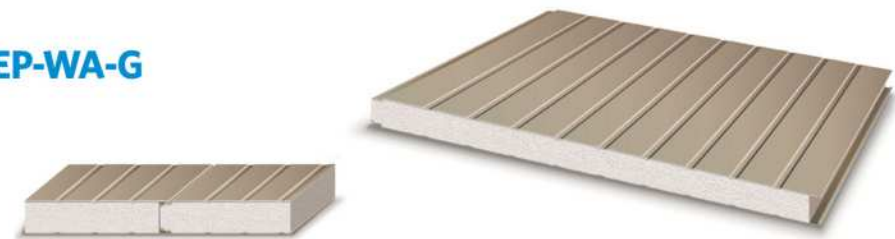
Coil Width	1219 / 1040mm
Product Width	1000mm
Panel Thickness	40 - 200mm
Coil Thickness	0.4 - 0.7mm
Depth of Roof	35mm

+ IKEP-RF-4R



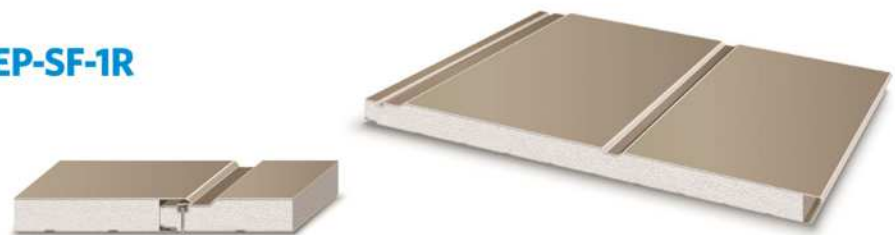
Coil Width	1040 / 1040mm
Product Width	1000mm
Panel Thickness	40 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKEP-WA-G



Coil Width	1105 / 1040mm
Product Width	1000mm
Panel Thickness	40 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKEP-SF-1R



Coil Width	1219 / 1040mm
Product Width	1000mm
Panel Thickness	40 - 200mm
Coil Thickness	0.4 - 0.7mm

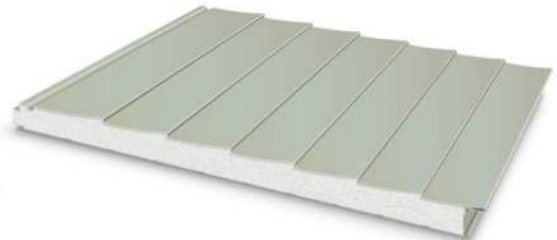
+ IKEP-SF-3R



+ EPS panels

Coil Width	1219 / 1040mm
Product Width	1000mm
Panel Thickness	50 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKEP-SF-SD



Coil Width	1160 / 1040mm
Product Width	1000mm
Panel Thickness	50 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKEP-ZSF-M



Profiles



EPS panels

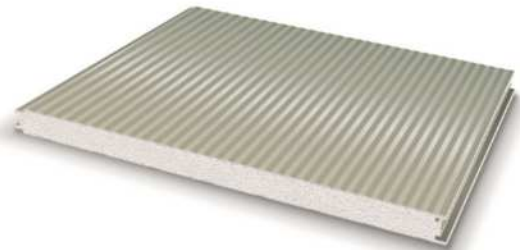
Coil Width	1250 / 1100mm
Product Width	1000mm
Panel Thickness	50 - 200mm
Coil Thickness	0.4 - 0.7mm
Depth of Roof	34mm

+ IKEP-ZRF-5R



Coil Width	1250 / 1100mm
Product Width	1000mm
Panel Thickness	50 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKEP-ZWA-M



Coil Width	1250 / 1100mm
Product Width	1000mm
Panel Thickness	50 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKEP-ZWA-P



Coil Width	1250 / 1100mm
Product Width	1000mm
Panel Thickness	50 - 200mm
Coil Thickness	0.4 - 0.7mm

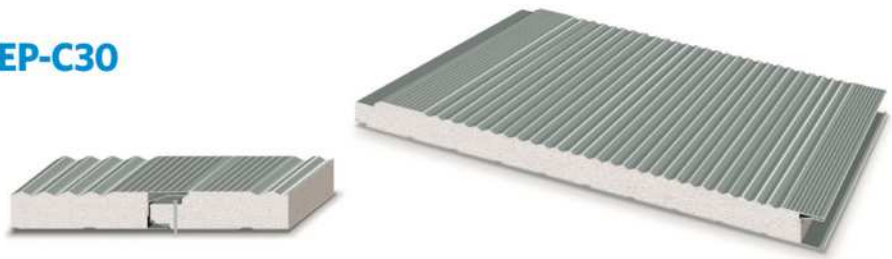
+ IKEP-ZSF-P



+ EPS panels

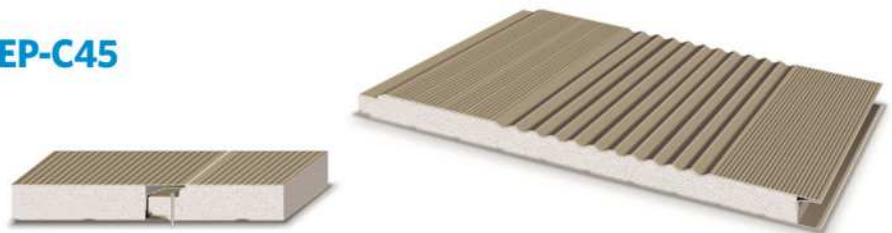
Coil Width	1219 / 1070mm
Product Width	1040mm
Panel Thickness	50 - 200mm
Coil Thickness	0.4 - 0.7mm
Depth of Roof	34mm

+ IKEP-C30



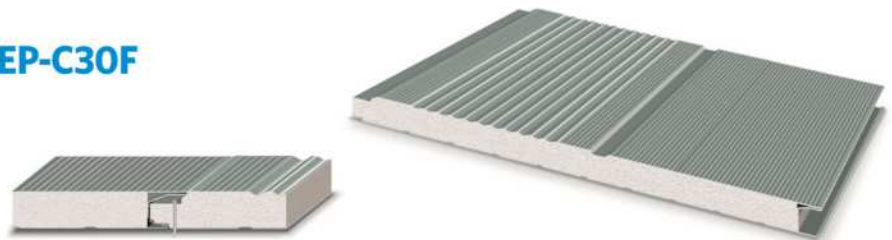
Coil Width	1219 / 1070mm
Product Width	1000mm
Panel Thickness	50 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKEP-C45



Coil Width	1219 / 1070mm
Product Width	1000mm
Panel Thickness	50 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKEP-C30F



Coil Width	1219 / 1070mm
Product Width	1000mm
Panel Thickness	50 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKEP-V50



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