

Polyurethane 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.



Polyurethane Sandwich Panel Production Line

Polyurethane Sandwich Panel Production Line (Continuous)
Combined sandwich panel production line

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 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

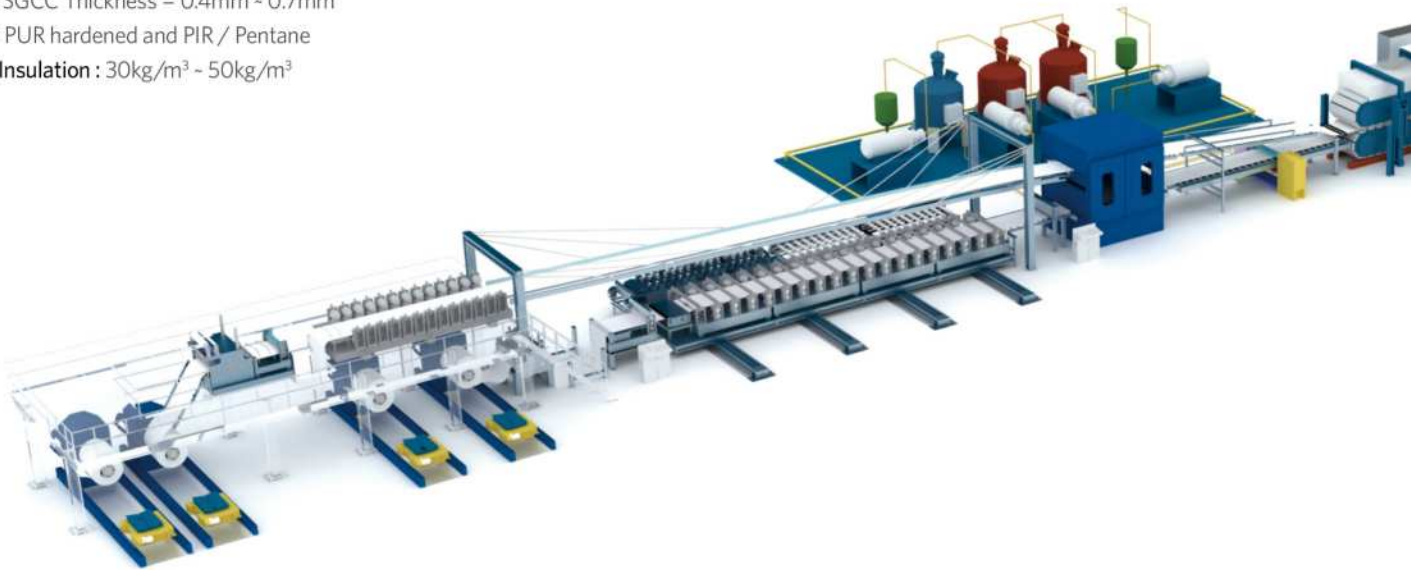
All sandwich panel production equipment presented in this catalogue is fully automatic, requires minimum control by operators and can continuously and efficiently produce sandwich panels of exquisite and diverse shapes. This equipment is designed and manufactured with such advantages as high durability, 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.



Polyurethane Sandwich Panel Production Line

The general specification of product (PU sandwich panel)

- **Panel length** : Min. 2,000mm in auto mode Max. 18,000mm
- **Effective width** : 1000mm for roof / 600mm -1200mm for normal wall
- **Panel thickness** : Available thickness from 30 - 200mm
(depends on height of the side sealing block.)
- **Top and Bottom layer** : Pre-painted Galvanized coil For ASTM A 526-85, JIS G 3302 SGCC Thickness = 0.4mm - 0.7mm
- **Insulation** : PUR hardened and PIR / Pentane
- **Density of Insulation** : 30kg/m³ - 50kg/m³



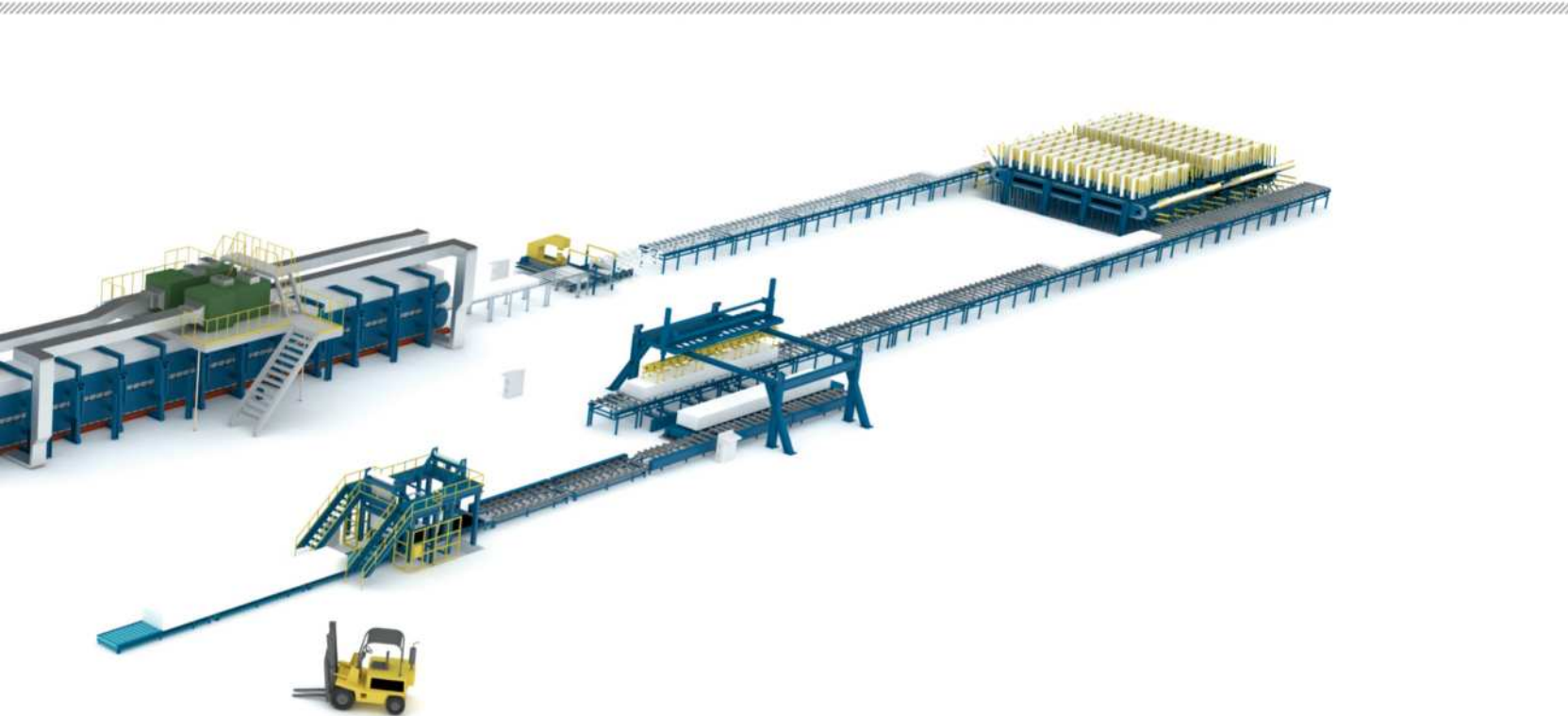
The whole view of the Polyurethane sandwich panel production line

Polyurethane Sandwich Panel Production Line is an automation equipment that can continuously and efficiently produce polyurethane sandwich panels of exquisite and diverse shapes. In partnership with biggest producers of foaming equipment, this line has been delivered to many countries in Europe, Middle East and Asia.

The PU sandwich panel line manufactured by IL KWANG is able to produce panels with high insulating ability and strength. In addition,

Specification

- Production speed : Min. 2meter/min - Max. 15meter/min
- Length of Double belt conveyor : 20 - 40meter
- Factory Electricity : 380V x 50Hz x 3Ph (User's choice available)
- Controlling Electricity : A.C. 220V (User's Choice Available)
- Factory's Area : 130-150(L) x 30m(W) x 6m(H)
- Pressure of compressed air : Over 6 bar required
- Personnel : 4 - 5 person



utilizing PIR (Poly Isocyanurate) component which proved to be flame resistant allows to safely produce panels with high resistance to flame. Also, the HCFC-14b blowing unit and Pentane, the eco-friendly "green" material, limit the amount of pollution which help to preserve the environment and increase safety of production.

Polyurethane Sandwich Panel Production Line consists of Un-coiler that inputs and releases coil, Roll Forming system that forms and shapes coil, PU Foaming system that sprays PU solution,

Laminating system that makes the shape of sandwich panel, Panel Cutting system that cuts the fabricated sandwich panel, Cooling Conveyor system that finishes products hardening of the cut panel sufficiently at intervals, Auto Stacking system that loads the finished panels, and Panel Packing system that packs the loaded panels with plastic wrap and discharges them.



The whole view of the Polyurethane sandwich panel production line



Middle forming units

Un-Coiler & Entry part

Un-coiler & Entry part is a device that inputs steel coil to the upper and lower parts of the sandwich panel line and stably feeds it.

The mandrel is convenient to control and is operated automatically by hydraulics.

The 2+2 system enables non-stop production which helps to increase productive capacity by continually producing high volume of panels.



Roll forming system

This is a device that continuously gives shape to sandwich panel as steel coil fed from the Un-coiler is engaged between the upper and lower sections of metal rollers.

It naturally forms coil into beautiful and delicate shapes of variety of wall and roof panels. It is designed in cassette type and rail way wheel type to easily change rollers to form different shapes.

1 Roll forming machine for normal wall (upper)

2 Roll forming machine for trapezoidal roof profile





PU foaming system

The unit consists of the nozzle and pump that spray polyurethane solution, a tank that stores solution, various catalysts and gas, and a traverse that enables to spray PU solution evenly. The device is designed considering high precision, reliability and easiness of maintenance. A convenient control panel is equipped with manuals for easy control of various data required for the foaming process. Also, equipped with a convenient control panel (Control panel) for easy adjustment of various data required for the firing process.



- 1 Polyurethane daily tanks
- 2 Polyurethane metering & foaming system
- 3 Polyurethane foaming system (poker)





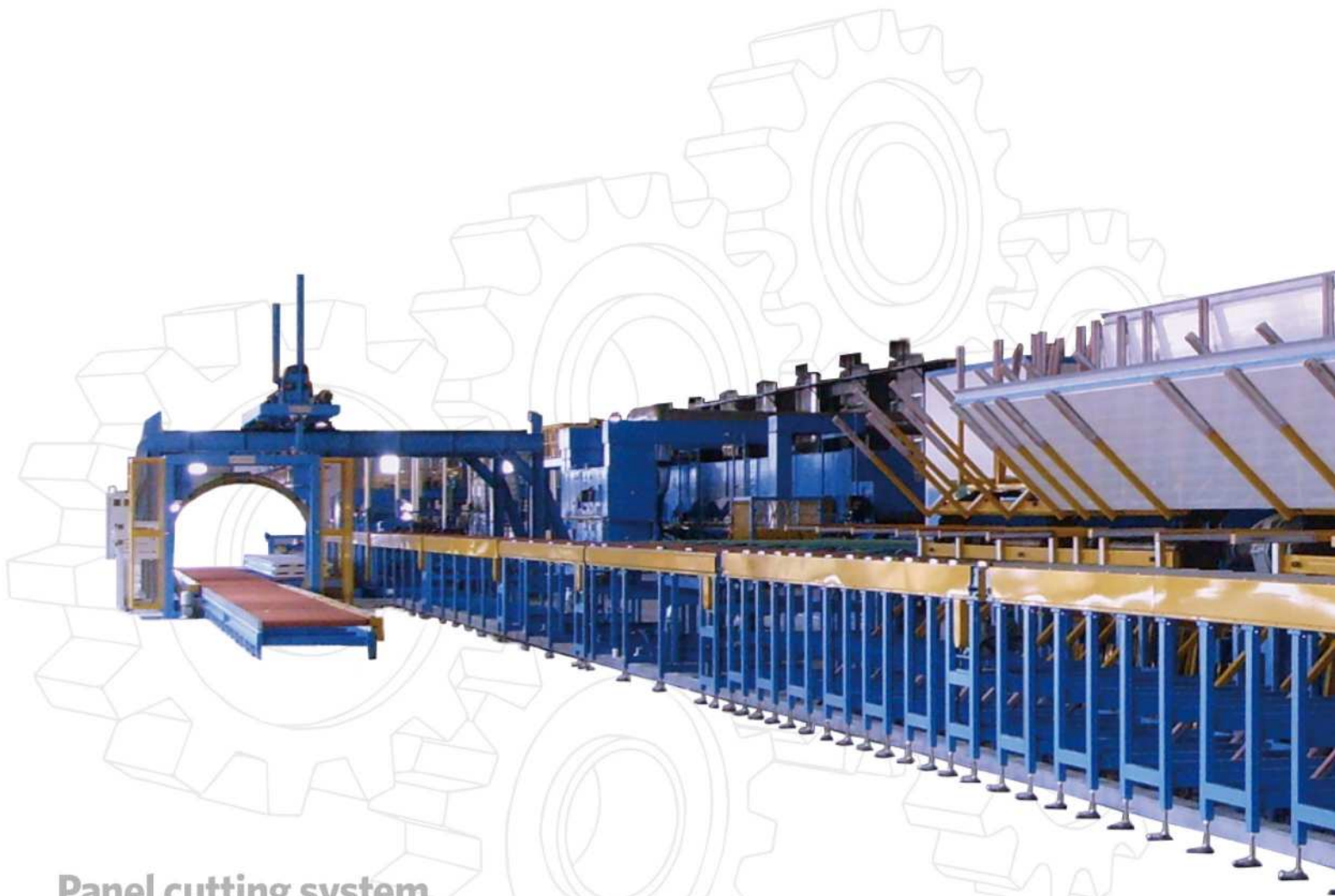
The view of the Double belt conveyor

Laminating system (double belt)

This is a device that shapes sandwich panel applying constant pressure and heat to the upper and lower steel plates foamed with polyurethane. It is designed in a perfect structure of stiffness and durability with the side blocks and double belt to enable rapid replacement.



Double belt system for laminating with support block



Panel cutting system

This is a device that cuts sandwich panel fabricated at the Laminating Unit to the length desired by users. Different types of cutting such as wheel cutting and band saw cutting have been developed to correspond to customers' needs.

1 Cutting (band saw) unit

2 Wheel cutting unit





The view of the Cooling conveyor unit

Cooling conveyor system

In case if a certain time is required to completely finish the hardening (if polyurethane sandwich panel is thick), Cooling Conveyor provides sufficient hardening time prior to panel stacking and packing.





Auto stacking system

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 Stacked panels by saddle movement of the auto stacker
- 2 The view of the Auto stacker unit (vacuum system)
- 3 The view of the Auto stacker unit (mechanical lift system)





Panel packing unit

- 4 The view of the Auto packing unit
(4 sides packing)
- 5 Six sides packing by wrap
- 6 Packed sandwich panels

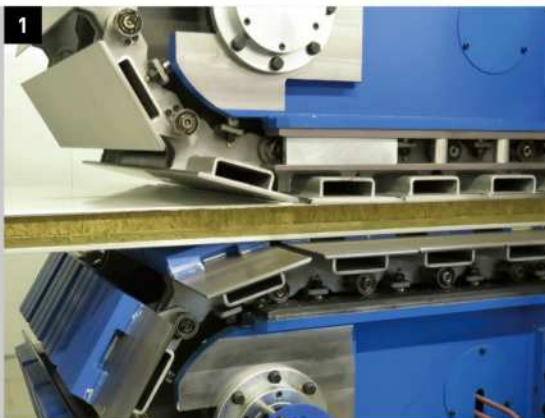
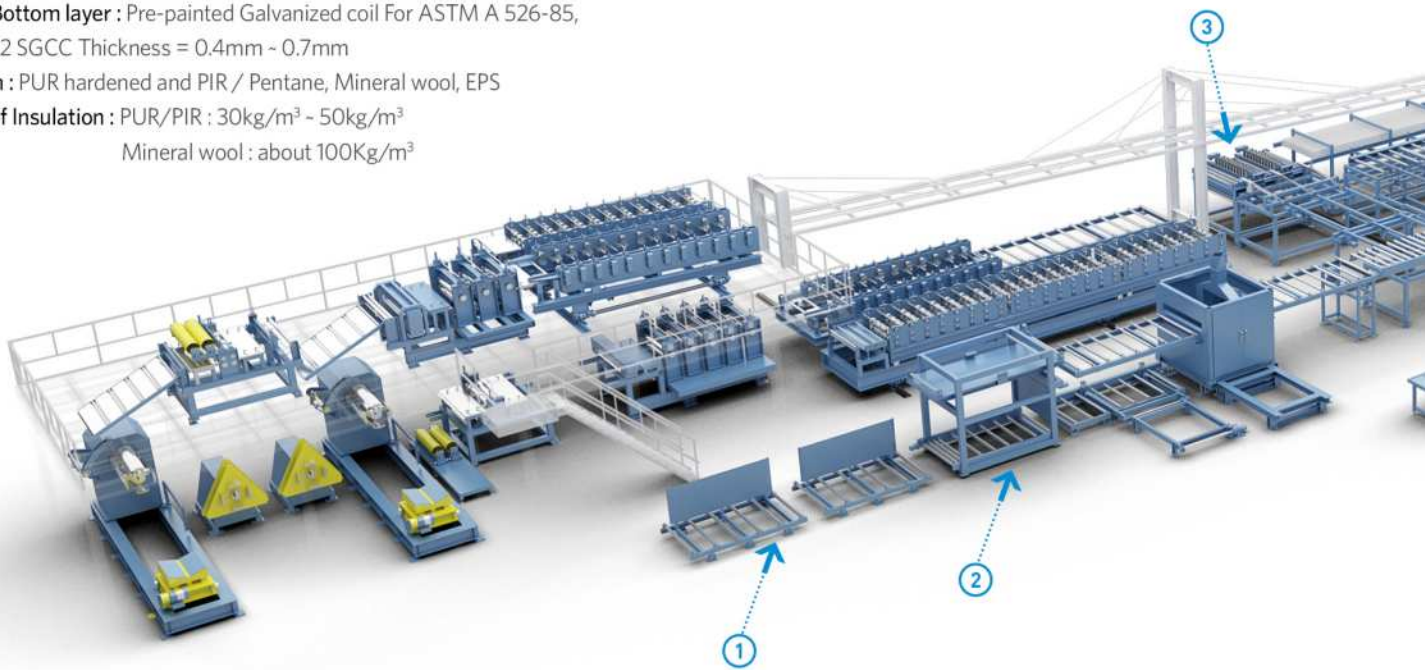
This is a device that packs panels loaded at the Auto Stacking Unit with plastic wrap on 4 sides or 6 sides and discharges them. Application of the pallet system of inserting EPS blocks automatically makes it handy for cargo transportation and storage of panels.



Combined Sandwich Panel Production Line

The general specification of product (PU, Mineral wool, EPS sandwich panels)

- Panel length : Min. 2,000mm in auto mode Max. 18,000mm
- Effective width : 1000mm for roof / 600mm -1200mm for normal wall
- Panel thickness : Available thickness from 30-200mm
(depends on height of the side sealing block.)
- Top and Bottom layer : Pre-painted Galvanized coil For ASTM A 526-85,
JIS G 3302 SGCC Thickness = 0.4mm ~ 0.7mm
- Insulation : PUR hardened and PIR / Pentane, Mineral wool, EPS
- Density of Insulation : PUR/PIR : 30kg/m³ ~ 50kg/m³
Mineral wool : about 100Kg/m³

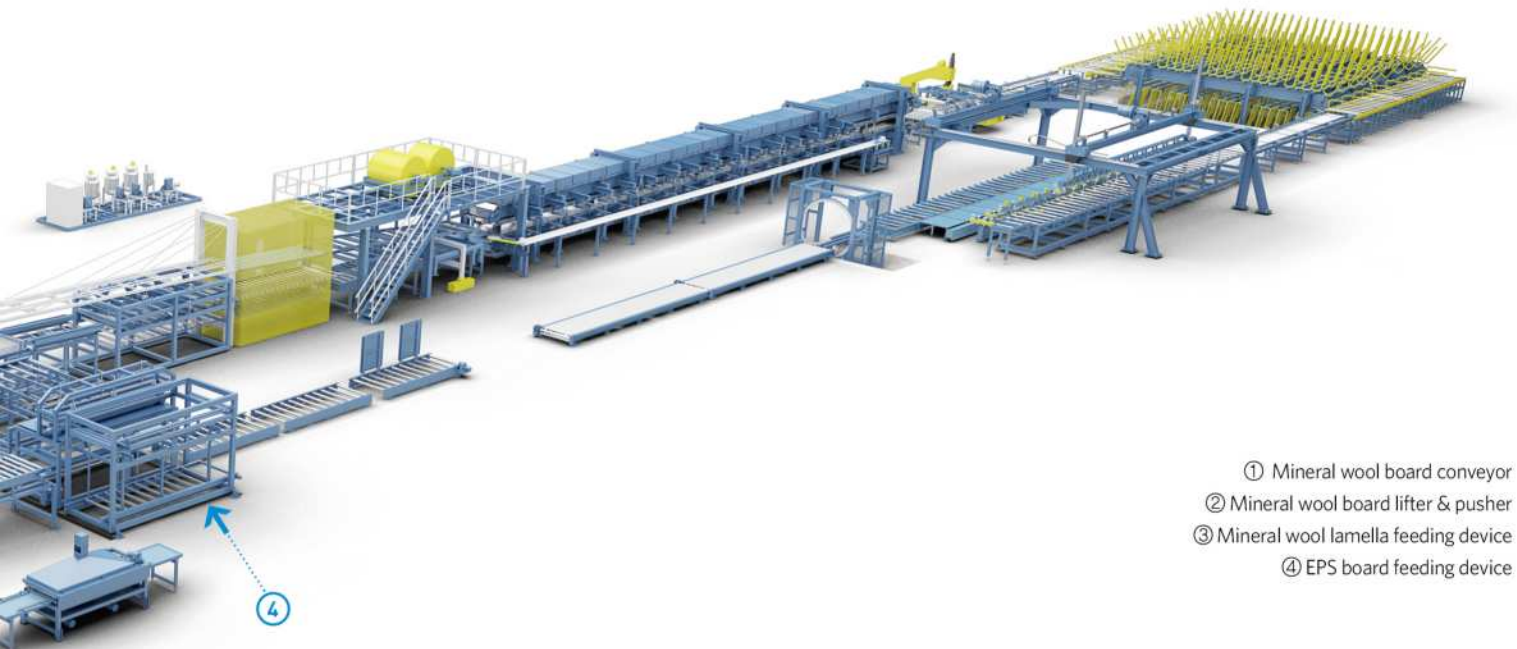


1 Double belt laminating machine for mineral wool sandwich panel

2 EPS board storage

Specification

- Production speed : Min. 2meter/min - Max. 15meter/min
- Length of Double belt conveyor : 20 - 40meter
- Factory Electricity : 380V x 50Hz x 3Ph (User's choice available)
- Controlling Electricity : A.C. 220V (User's Choice Available)
- Factory's Area : 130-150(L) x 30m(W) x 6m(H)
- Pressure of compressed air : Over 6 bar required
- Personnel : 4 - 5 person
- Electric power : App. 1000kW



- ① Mineral wool board conveyor
- ② Mineral wool board lifter & pusher
- ③ Mineral wool lamella feeding device
- ④ EPS board feeding device

The combined sandwich panel production line is able to produce EPS, Mineral/glass wool, and Poly urethane sandwich panels being utilized by one line and is designed for customers who want to produce various kinds of insulated sandwich panels with small production capacity.



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

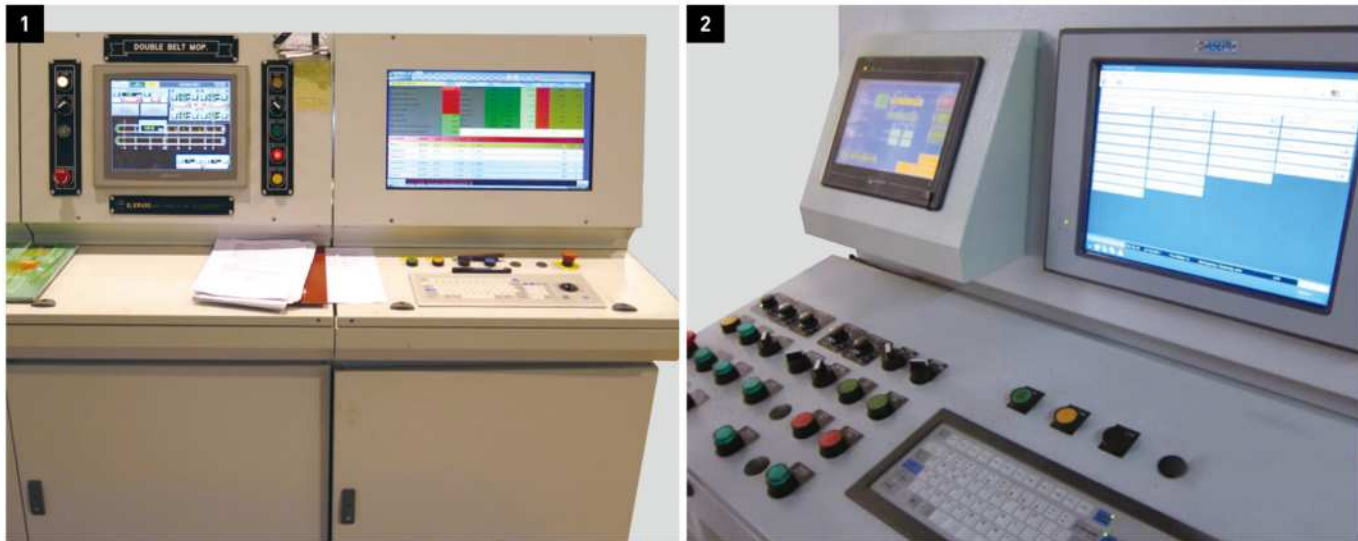
- Is used to make pad board that are used in the pad cutting machine pictured above.
- **Type** : Band saw (Double type)
- 5.5kw motors – set
- **Board size** : (W)600mm × (L)1500mm × (H)height of rib



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

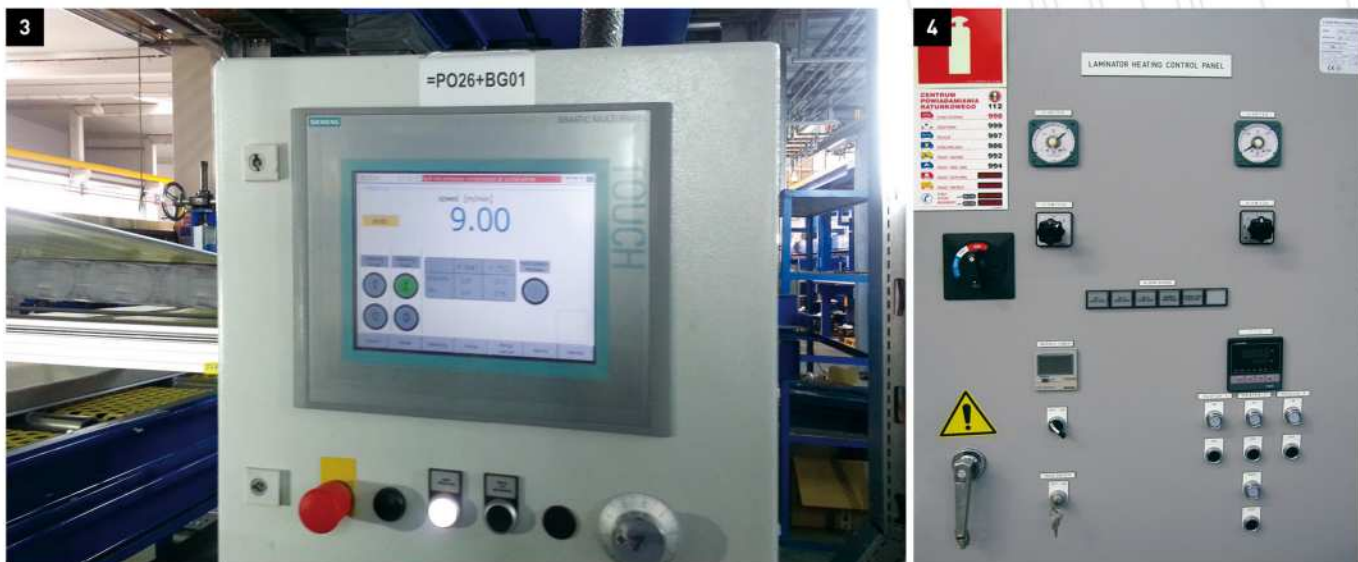


Electric control system consists of the M.C.C. (Motor Control Center) cabinet, Main Operating panel, Substitute Operating Panel, and unique Software. The operating panel is able to show all functions visually and let operator control the whole line easily and effectively. Features of the control panel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

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

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



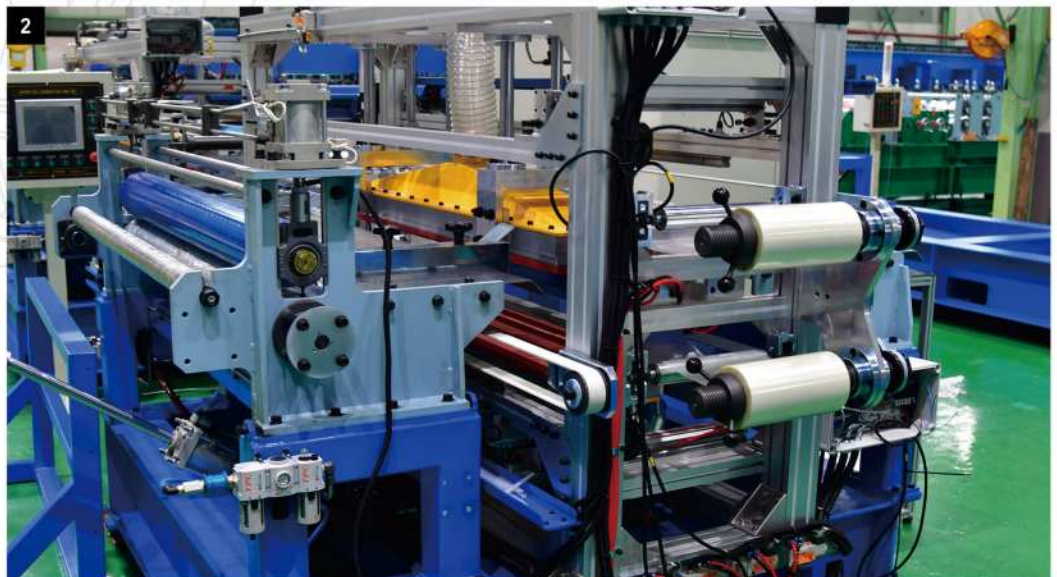
Surface treatment system by corona unit

It is used to clean up the surface of coil, burning up dust on it (plasma type)



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 Corona unit
- 2 Auto coil taping system

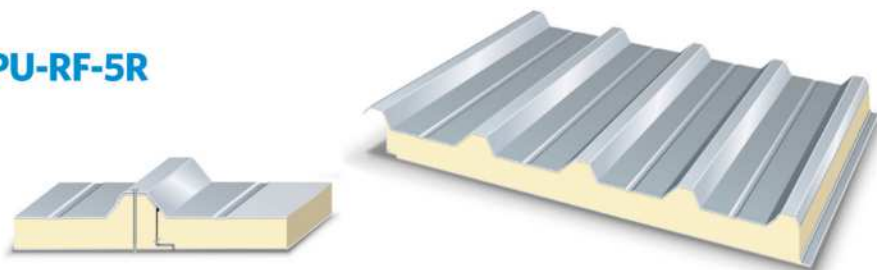
Profiles



Polyurethane panels

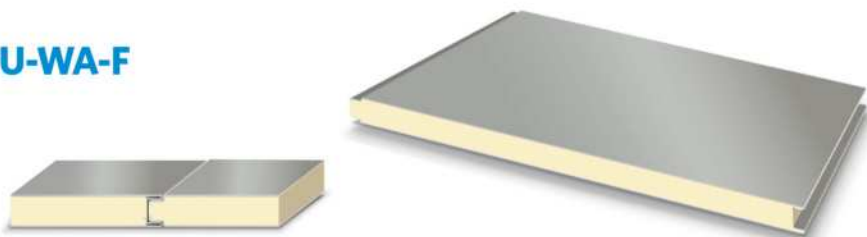
Coil Width	1219 / 1070mm
Product Width	1000mm
Panel Thickness	50 - 200mm
Coil Thickness	0.4 - 0.7mm
Depth of Roof	38mm

+ IKPU-RF-5R



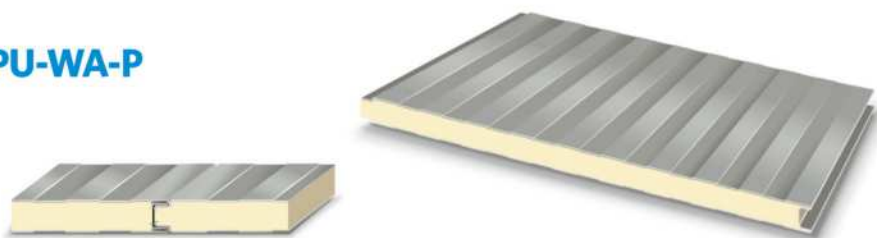
Coil Width	1070 / 1070mm
Product Width	1000mm
Panel Thickness	50 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKPU-WA-F



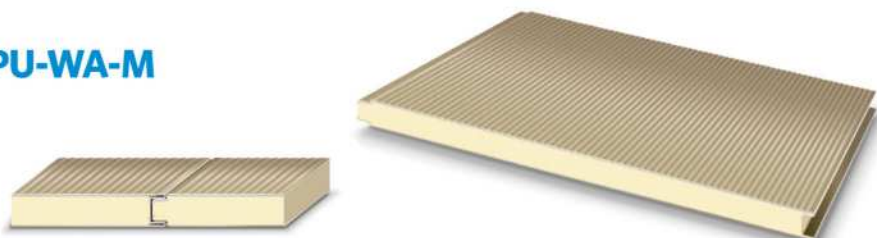
Coil Width	1070 / 1070mm
Product Width	1000mm
Panel Thickness	50 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKPU-WA-P



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

+ IKPU-WA-M





Polyurethane panels

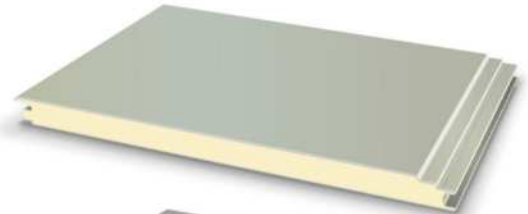
Coil Width 1205 / 1070mm
Product Width 1000mm
Panel Thickness 50 - 200mm
Coil Thickness 0.4 - 0.7mm

+ IKPU-SF-F



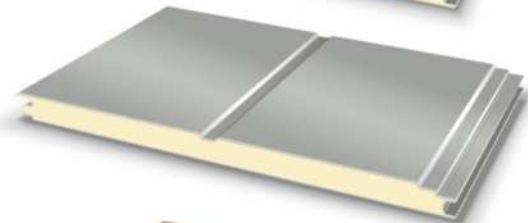
Coil Width 1195 / 1070mm
Product Width 1000mm
Panel Thickness 50 - 200mm
Coil Thickness 0.4 - 0.7mm

+ IKPU-SF-RF



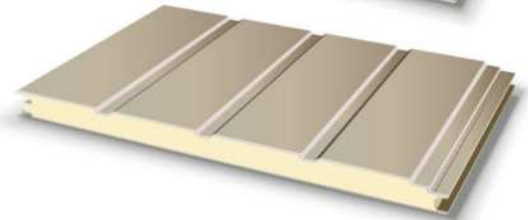
Coil Width 1205 / 1070mm
Product Width 1000mm
Panel Thickness 50 - 200mm
Coil Thickness 0.4 - 0.7mm

+ IKPU-SF-1R



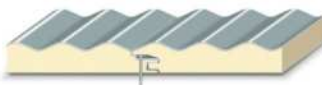
Coil Width 1219 / 1070mm
Product Width 1000mm
Panel Thickness 50 - 200mm
Coil Thickness 0.4 - 0.7mm

+ IKPU-SF-3R



Coil Width 1250 / 1070mm
Product Width 1000mm
Panel Thickness 50 - 200mm
Coil Thickness 0.4 - 0.7mm

+ IKPU-SF-C90



Profiles



Mineral wool & Glasswool panels

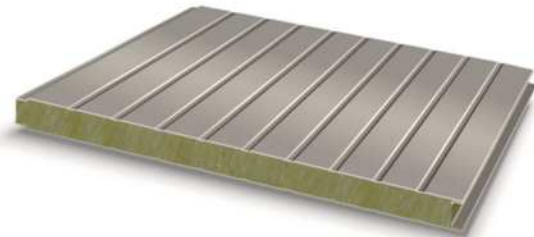
Coil Width	1219 / 1070mm
Product Width	1000mm
Panel Thickness	50, 75, 100, 125mm
Coil Thickness	0.4 - 0.7mm
Depth of Roof	38mm

+ IKMW-RF-4R



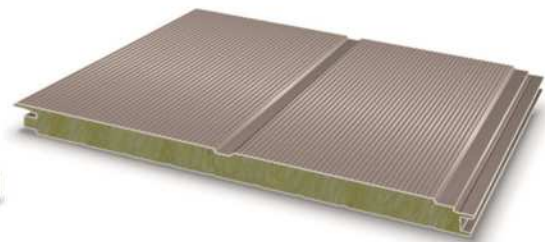
Coil Width	1070 / 1070mm
Product Width	1000mm
Panel Thickness	50, 75, 100, 125mm
Coil Thickness	0.4 - 0.7mm

+ IKMW-WA-G



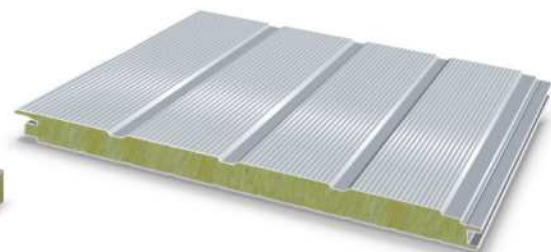
Coil Width	1219 / 1070mm
Product Width	1000mm
Panel Thickness	50, 75, 100, 125mm
Coil Thickness	0.4 - 0.7mm

+ 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



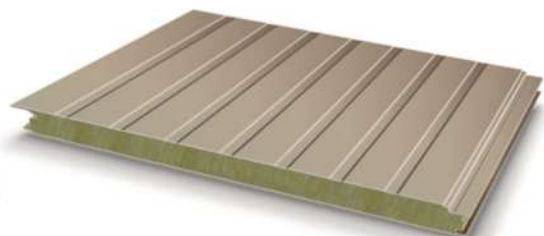
Coil Width	1250 / 1100mm
Product Width	1000mm
Panel Thickness	40 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKMW-ZWA-G



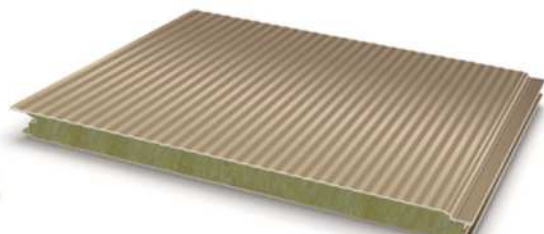
Coil Width	1250 / 1100mm
Product Width	1000mm
Panel Thickness	40 - 200mm
Coil Thickness	0.4 - 0.7mm

+ IKMW-ZSF-G



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

+ IKMW-ZSF-M



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