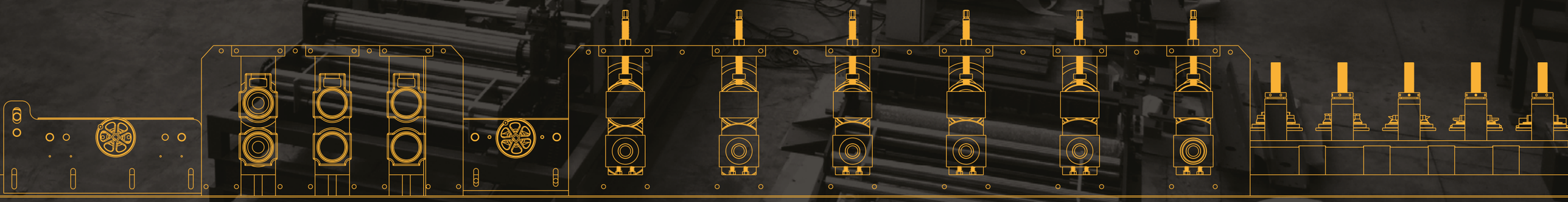
FINEAGLES
Advance engineering

PU & PIR Sandwich Panel Production Line

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Branch Office : Şekerpınar Mah. Ayça Sokak No: 46 B Blok 2. Kat Kapı No: 22 Marmara İş Merkezi, Çayırova / KOCAELİ
Factory : Adana Yumurtalık Free Zone / TURKEY



FINEAGLES

Always Lead,
Never Follow

Advance Engineering

in Sandwich Panel production line with world class Technology and Design

Welcome to Fineagles Advance Engineering, a pioneering force in the realm of all types of sandwich panel production lines. We take immense pride in manufacturing sandwich panel production lines that exemplify top-notch quality. We are committed to delivering cutting-edge sandwich panel production lines that not only meet the highest standards of quality but also come with a reasonable price tag.

At Fineagles, versatility is our hallmark. We possess the expertise and capabilities to manufacture all type of sandwich panel production lines within our state-of-the-art facility. Whether you require standard configurations or custom solutions, rest assured that we can bring your vision to life.

As we continue to forge ahead, our vision remains unwavering; to be a leading force in the sandwich panel machine industry, renowned for our exceptional quality, competitive pricing, and unwavering commitment to customer satisfaction. Join us in this journey as we build a future where sandwich panel production is efficient, cost-effective, and headache-free. Contact us today to experience the difference in firsthand.

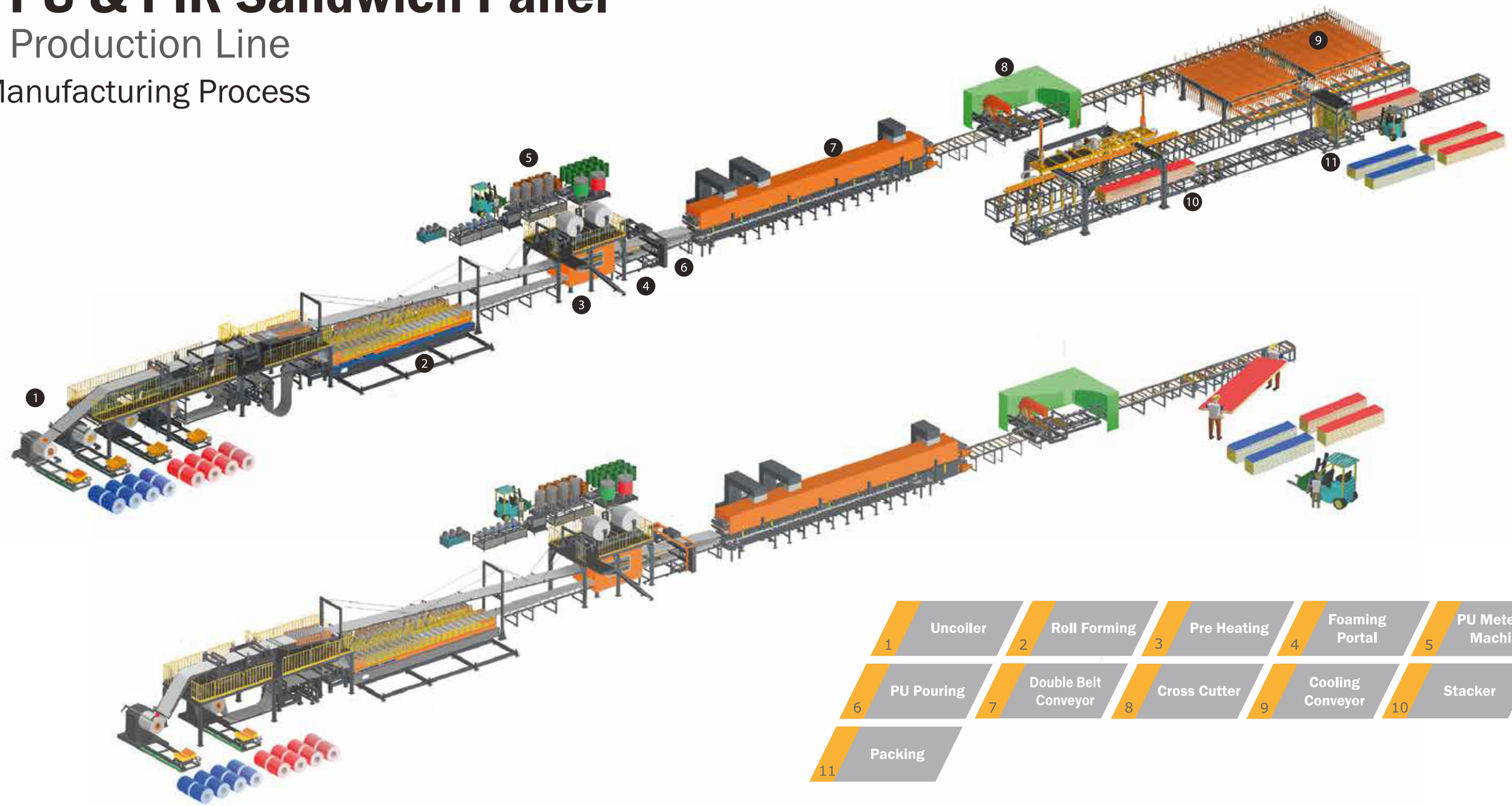
We are not just shaping machines; we are shaping the future of the industry.



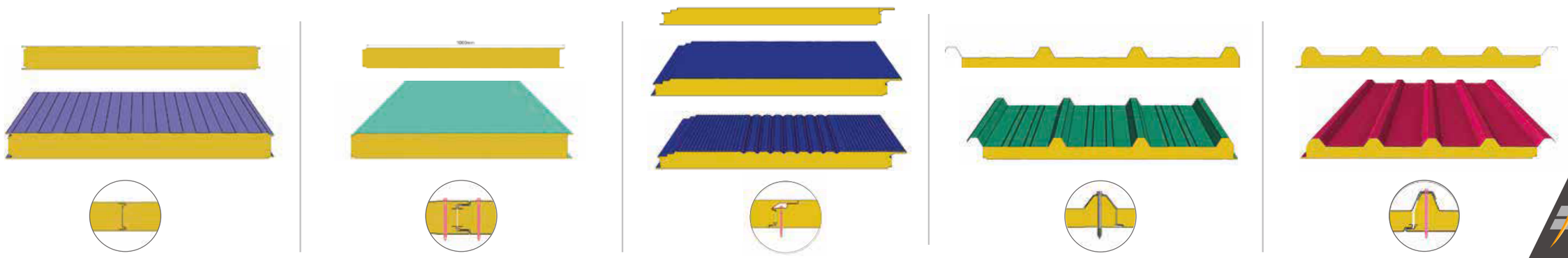
PU & PIR Sandwich Panel

Production Line

Manufacturing Process



1. Uncoiler
2. Roll Forming
3. Pre Heating
4. Foaming Portal
5. PU Metering Machine
6. PU Pouring
7. Double Belt Conveyor
8. Cross Cutter
9. Cooling Conveyor
10. Stacker
11. Packing



Uncoiler and Coil Car

Coil car feeds the coils into the uncoilers.Vertical movement of coils on coil cars is achieved by the use of hydraulic cylinder and horizontal moves are achieved by the use of electric motors. These movements are supported by four wheels on rails.

- Minimum of two units are needed for upper coil and lower coil operation.
- The steel sheet (coil) is mounted on an uncoiler by the coil car at which point four wedges are expanded and fixed by hydraulic power, and then driven by a motor.
- A rubber roller is mounted above the uncoiler for the purpose of preventing the coil (steel sheet) from suddenly uncoiling and over-uncoiling in motion.



Roll Forming

The upper and lower roll forming machines consists of a series of rolls and gradually shape the metal sheet which is coming from uncoiler.

- As the metal sheet passes through each station, it undergoes various forming operations. The rolls are designed to bend the material into the desired shape, such as wall, roof, hidden screw sandwich panels.
- The system is driven by gear box and controlled by PLC.





Pre Heating

This unit is used for preheating the upper and lower steel sheet to a moderate temperature before PU pouring process.

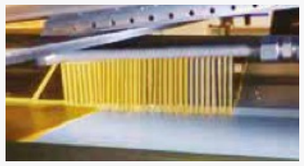
- As polyurethane reacts chemically under moderate heat, the heating process for the steel sheet is needed which activates PIR and helps with improvements in adhesive strength between the steel sheet and PU foam.

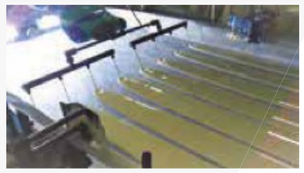


PU Metering & PU Foaming

The oscillating movement of the mixing head is essential to achieve an optimum application of the PUR-mixture onto the lower facing layer.

- The mixing head is actuated by means of an A.C servo motor and its toothed belt enables a free programmable oscillating movement across the total panel width.







Double Belt Conveyor

The PU foam component mixture applied to the lower facing layer is conveyed in a synchronization motion with the upper facing layer along the double belt for curing.

- This unit is a crucial part and plays a core role ensuring the highest standards of sandwich panel.
- This unit principally consists of driving motors, upper and lower slats, screw jacks powered by electrical motors and side guide and side blocks to prevent PU material leaking from out of the sides



Heating System for Double Belt Conveyor

PU foam dispensed between the upper and lower coil reaches the perfect chemical reaction and curing process at regular temperature.

This unit is designed for providing a heated air to maintain a regular temperature for such a process.



Side Guide System

This unit is designed for preventing PU foam from leaking out of panel lateral by PE blocks and maintaining uniform foaming while double belt conveyor presses PU foaming pressure and conveys PU panel.



Cross Cutter (Band Saw + Disk Saw)

The cutting speed is precisely synchronized with the panel conveying speed.

This cutting unit can be operated both manually and automaticlly.

The gantry is set at the rear and the saw unit is positioned on the right-hand side as viewed from direction of production.



Cooling Conveyor

During the production of PIR and PU panels depending on the thickness of panels, heat would be generated due to chemical reactions. In the case of PIR and thicker PU panels, products must be cooled down to room temperature in order to avoid defects in the final product. Cooling device is designed in a way that takes the panels after cutting and delays their arrival for stacking and packing. The speed of cooling could be adjusted as required.



Stacker

This process is designed to stack finished panels efficiently at the production speed.

It is very important that the stacking speed should not be slower than panel production speed.

It is possible to stack panels by an automatic or manual operation.

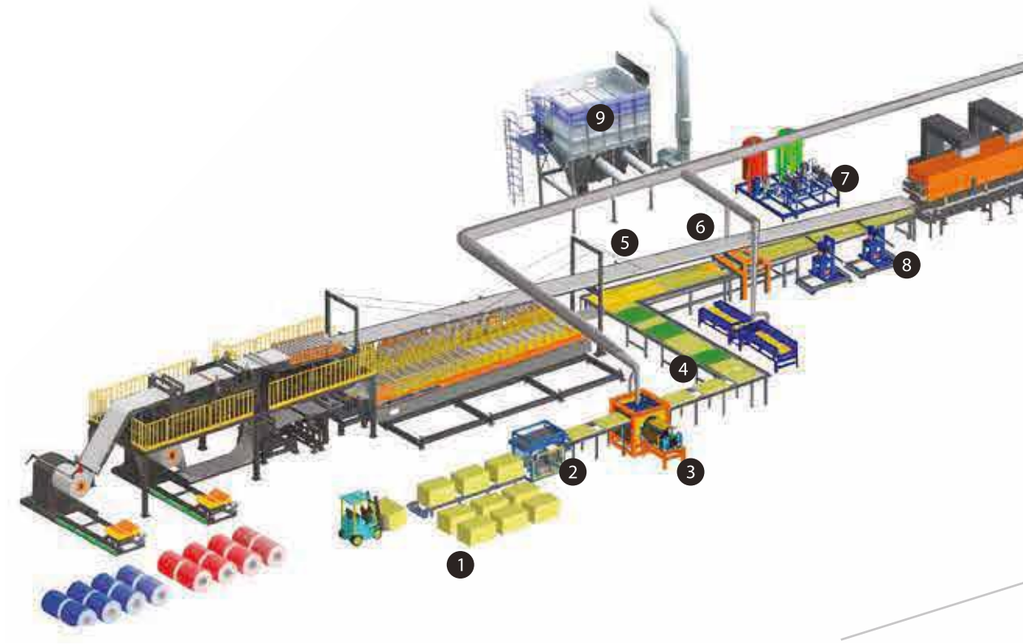


Packing Machine (PVC Wrapping)

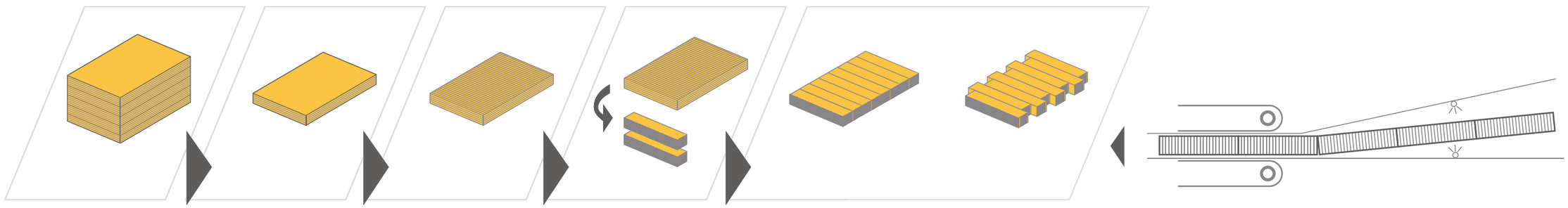
This process is designed to pack panel bondless by use of PVC stretch wraps before final delivery.



Mineral Wool(Glass Wool)
Sandwich Panel Production Line
Manufacturing Process



1 Transport Slat Conveyor
2 Up-down Lift
3 Cutting
4 Conveyor
5 90° Turning
6 Arrangement Conveyor
7 PU Glue
8 Double Belt Conveyor
9 Dust Collector



Transport slat conveyor
One by one by Up-Down lift
Cutting
90° Turning
Arrangement
Double conveyor

Mineral Wool Board Supply, Cutting & Turning System

Transport Slat Conveyor



Up-Down Lift



Board Side Trimming & Supplying

Cutting



Conveyor



90° Turning



Arrangement Conveyor



Glue Applying System

Side Trimming



PU Glue



Insert to Double Conveyor

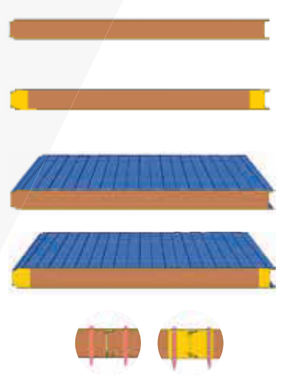
Pad Cutting



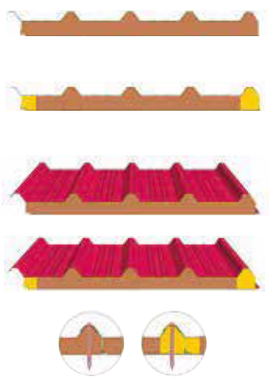
Side PU Injection



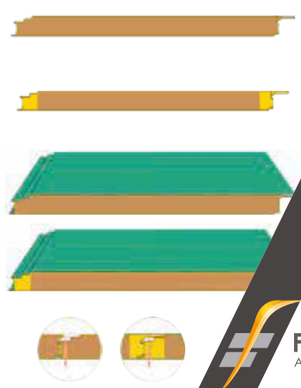
Wall Panel



Roof Panel



Boltless Panel

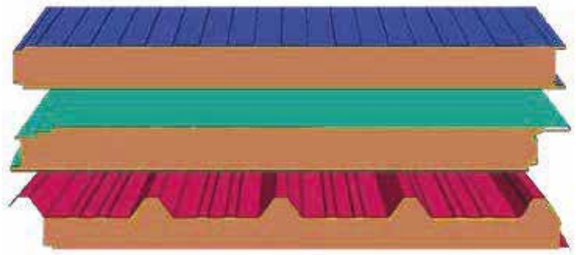


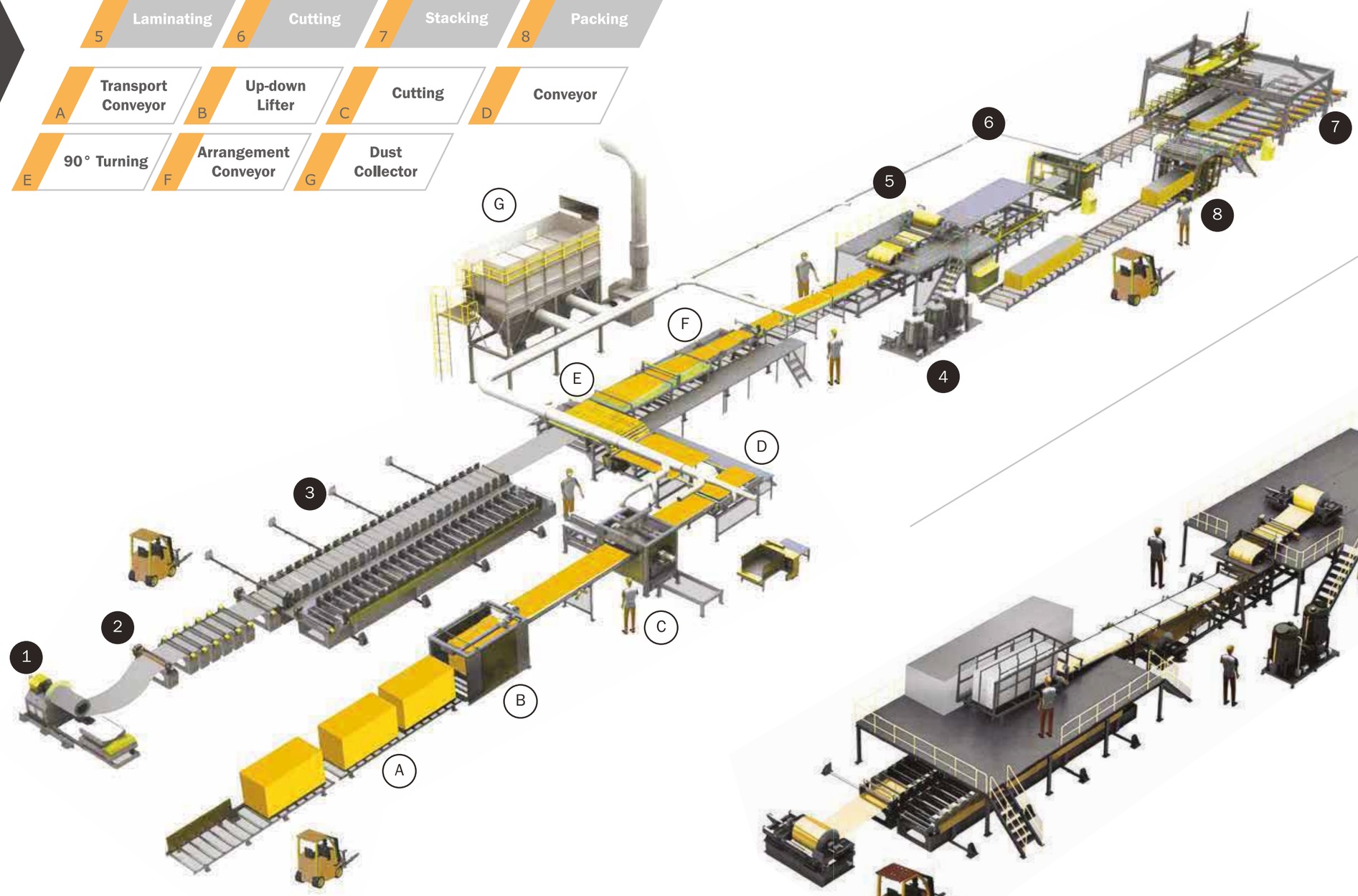
Mineral Wool/EPS Sandwich Panel
Production Line

Manufacturing Process

1 Uncoiler
2 Shearing
3 Roll Forming
4 PU Glue
5 Laminating
6 Cutting
7 Stacking
8 Packing

A Transport Conveyor
B Up-down Lifter
C Cutting
D Conveyor
E 90° Turning
F Arrangement Conveyor
G Dust Collector





EPS Panel Line

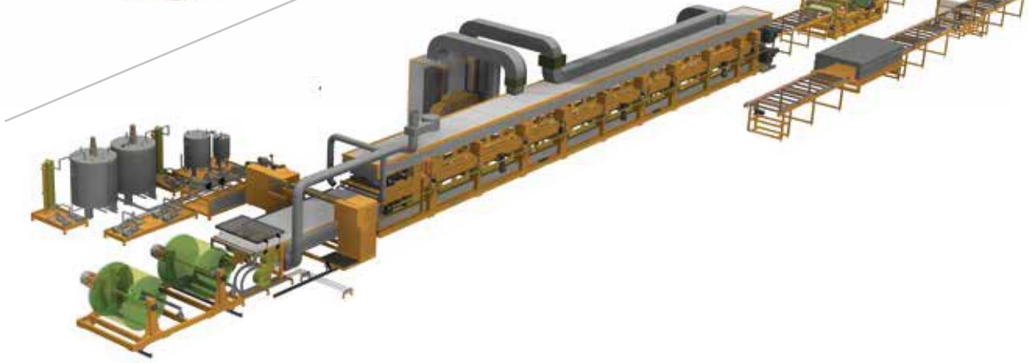
PU/PIR/Phenolic Board Panel
Production Line

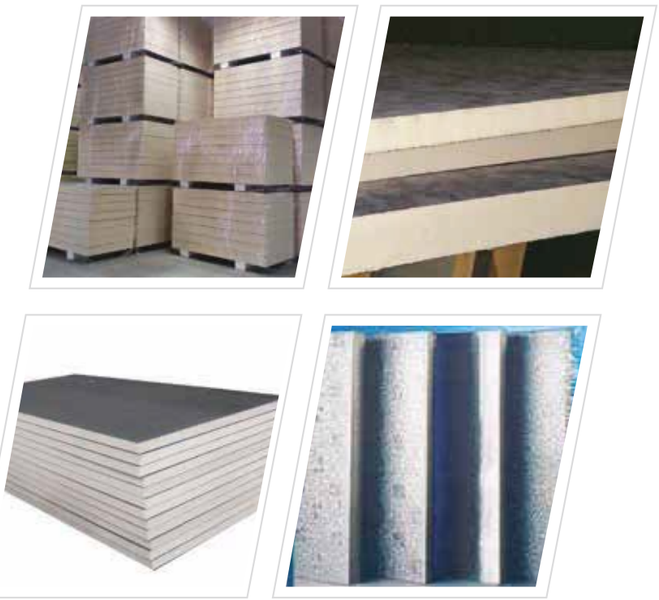
Manufacturing Process

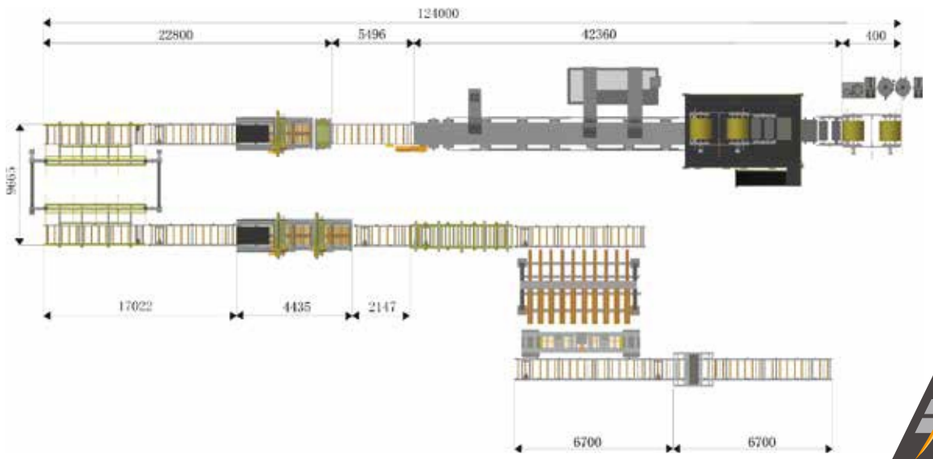
1 Uncoiler
2 Pre Heating
3 Foaming Portal
4 PU Foaming Machine
5 PU Injection
6 Double Belt Conveyor
7 Cutting
8 Cooling Conveyor
9 Stacking
10 Packing



Simple Type







PU/PIR/Phenolic Board Panel Production Line

Uncoiler

- Uncoiler is no drive type, and is installed two each at the upper part and the lower part separately.
- Consists of : Uncoiler, Auto tension unit, Auto centering unit.





PU Injection

- PU material is discharged from the outlet pipe of the mixing head onto the lower facing layer while moving crosswise along the Foaming Portal (Coating Gantry).





PU Metering & Foaming Portal

- The oscillanting movement of the mixing head is essential to achieve an optimum application of the PUR-mixture onto the lower facing layer.
- The mixing head is actuated by means of an A.C servo motor and its toothed belt enables a free programmable ascillating movement acroos the total panel width.
- The is no noise from the movement of the foaming portal.





- The PU foam component mixture applied to the lower facing layer is conveyed in a synchronization motion with the upper facing layer along the double belt for curing.
- This unit is a crucial part and plays a critical role ensuring the highest standards of sandwich panel.
- This unit principally consists of driving motors, upper and lower slats, screw jacks powered by electrical motors and side guide and side blocks to prevent PU material leaking from out of the sides.





Cutting (Disk Saw)

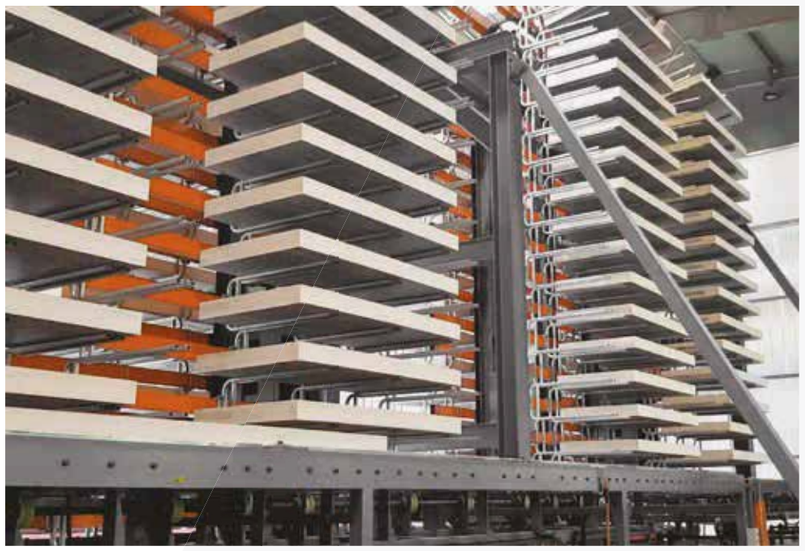
- The cutting speed is precisely synchronized with the panel conveying speed.
- This cutting unit can be operated both manually and automaticlly.
- The gantry is set at the rear and the saw unit is positioned on the right-hand side as viewed from direction of production.





Cooling

During the production of PIR and PU panels depending on the thickness of panels, heat would be generated due to chemical reactions. In the case of PIR and thicker PU panels, products must be cooled down to room temperature in order to avoid defects in the final products. Cooling device is designed in a way that takes the panels after cutting and delays their arrival for stacking and packing. The speed of cooling could be adjusted as required.



Stacker (Lift Type)

- This process is designed to stack finished panels efficiently at the production speed.
- It is very important that the stacking speed should not be slower than panel production speed.
- It is possible to stack panels by an automatic or manual operation.



Packing (PVC Wrapping)

- This process is designed to pack panel bondless by use of PVC stretch wraps before final delivery.



Aluminum Foil Embossing Machine

- This machine is specially designed for embossing aluminum foils with the thickness of lower than 0.1mm. The use of aluminum foils or other materials with thickness exceeding 0.2mm is not recommended.

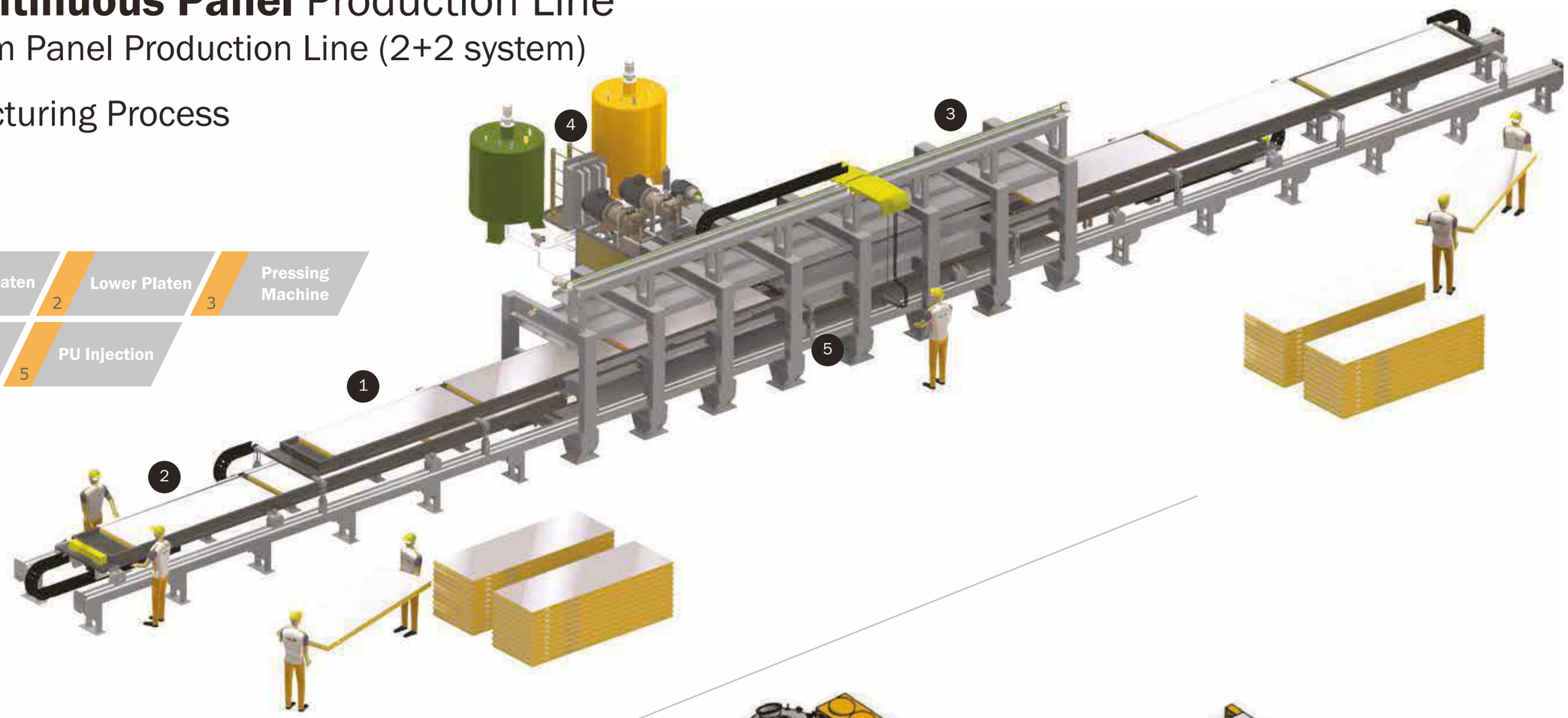


Discontinuous Panel Production Line

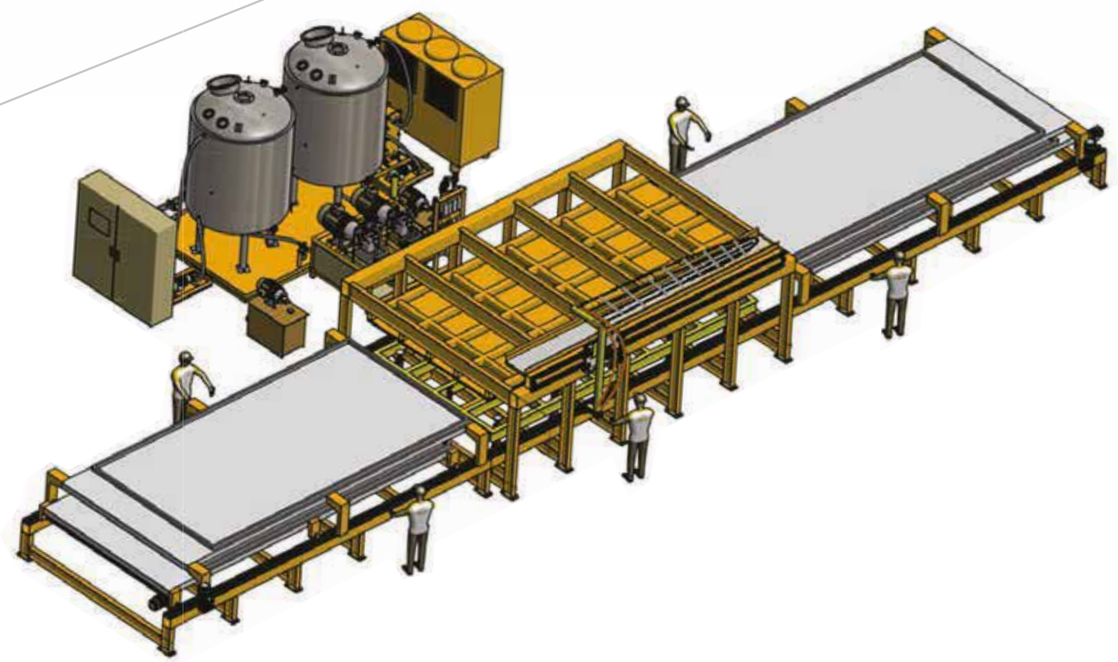
Cold Room Panel Production Line (2+2 system)

Manufacturing Process

1 Upper Platen
2 Lower Platen
3 Pressing Machine
4 PU Foaming Machine
5 PU Injection

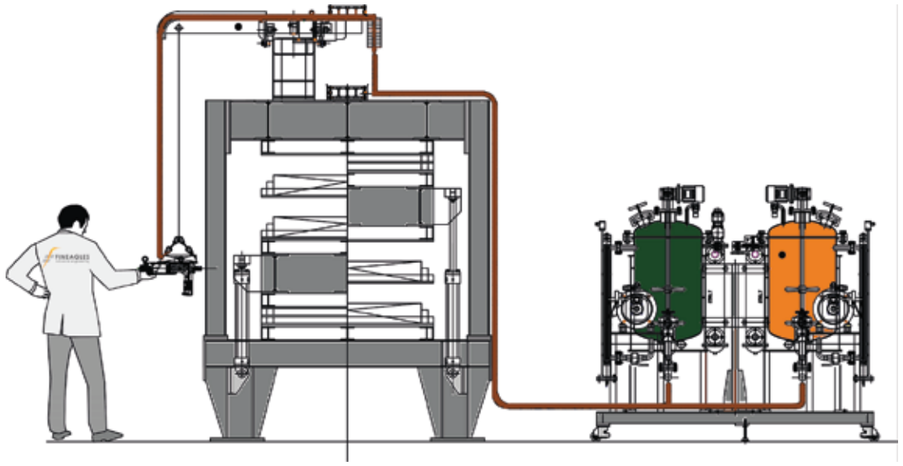






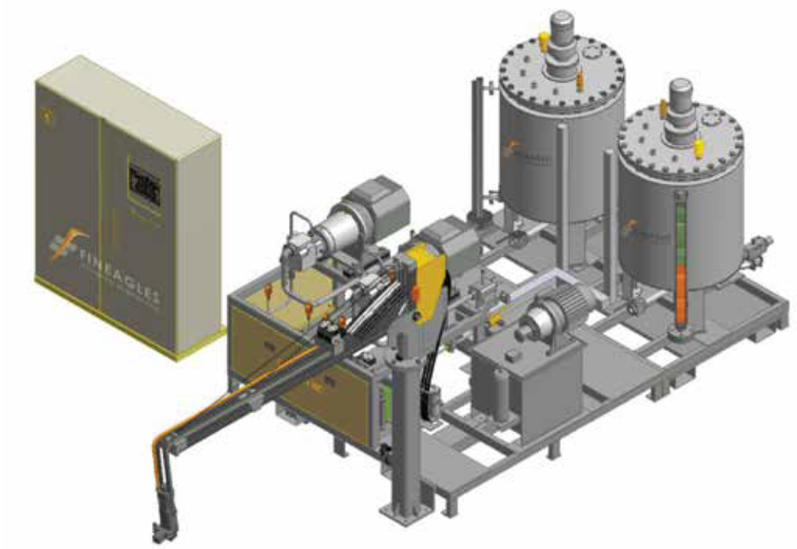
Consist of :

- 2+ 2 platen system by Hydraulic cylinder, Loading & Unloading system, Heating system for platen, PU Foaming machine

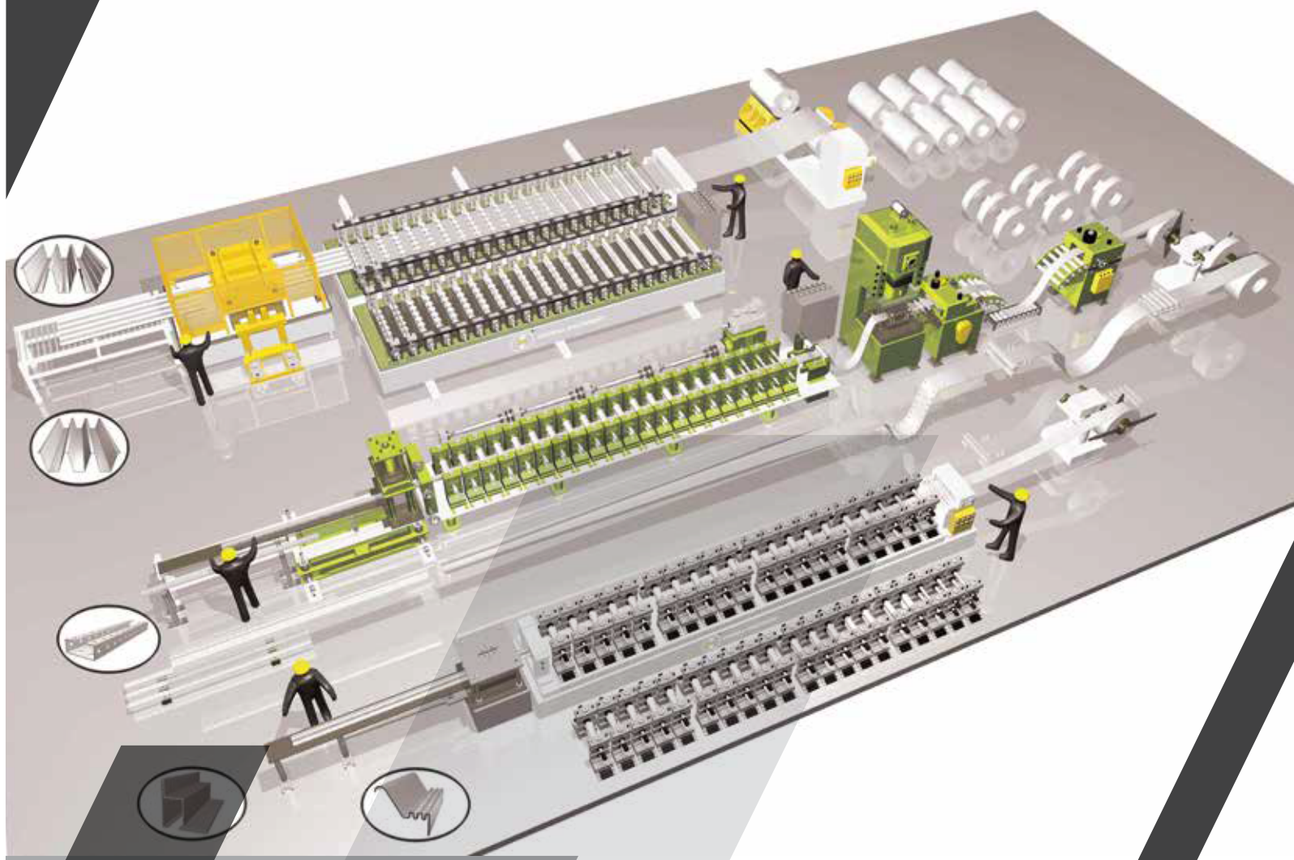


PU Foaming Machine

- There is a common base frame made of welded steel construction for supporting the metering units, filters and electrical pressure switches.
- Each metering unit is separately fitted for the Polyol and Isocyanate, and consists of an axial piston pump, coupling, flanged A.C motor, pump support and safety valve.
- The pump output can be adjusted infinitely by hand-wheel and scales fitted to the pump housing.



All Kinds of Roll Forming Machines

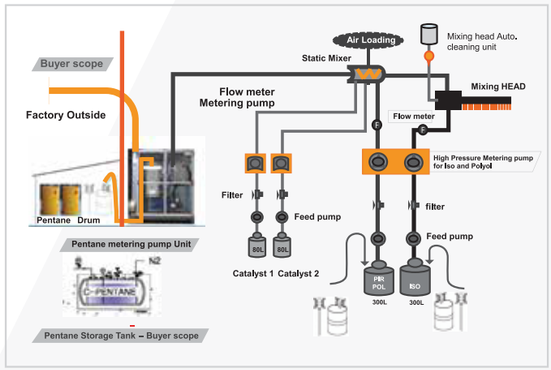


4~6 comp. PU Metering Machines
(Pentane Version) & Pentane Storage Tanks

- One of the most important part of the sandwich panel line is the PU foaming machine. Panel quality depends on the performance PU machine. The PU foaming machine consists of pump for: ISO - Polyol - Catalyst (1/2/3) - Blowing agent (Pentane)
  Depending on the number of catalysts used, the components of PU machine are determined. 4-6 component machines are mostly used.

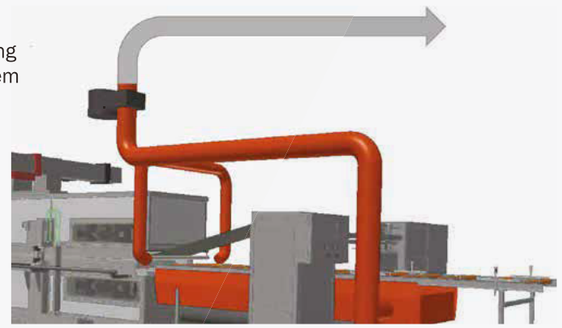


5 Component with Pentane system



Pentane Gas Suction System at Foaming Zone

- Gas sensors are installed in PU machine area along with Pentane metering and Pentane gas suction system in the PU Foaming area.These would prevent the risk of explosion



PU Metering Machine & Main Parts























We take immense pride in our collaborations with some of the world's most renowned parts suppliers:

Hydra-Cell (USA - England): They play a vital role in helping us deliver top-class high pressure dosage pumps and low-maintenance units through their seal-less pump systems.
Fluitec (Switzerland): Their specially designed high-pressure static mixers and heat exchangers for Fineagles Advance Engineering empower us to offer one of the best temperature-controlled polyurethane material mixtures in the industry.
Bosch (Germany): We rely on Bosch's Rexroth pumps for our primary ISO and POLY pumps, which we couple magnetically with
ABB electromotors (Germany), ensuring we have the most up-to-date high-pressure dosage pumps for injection.
Endress+Hauser and Siemens (Germany): We utilize Endress+Hauser mass flow meters connected to the Siemens drivers to fully automate the PU injection process using PID control technology.
WIKA (Germany): In high-pressure PU machines, precise control of pressure and temperature is of utmost importance to prevent any damage. To achieve this, we utilize the most sensitive analog sensors for monitoring and controlling both pressure and temperature throughout the cycle.
Drager (Germany): Drager is our trusted supplier for pentane safety control devices, enabling us to provide our customers with the latest safety methods that reduce risks to nearly %0 in their factories.
VEGA (Germany): In our PU machine, the loading of raw material tanks is entirely automated, thanks to our VEGA analog monitoring level sensors. Furthermore, the safety limits for material levels are digitally controlled through VEGA switch sensors. In addition, we collaborate with well-known brands like
Kracht (Germany), Motovario (Italy), Fer-ro (Italy), Swagelok (USA), Rael (Italy) and more. These partnerships enable us to manufacture high-end PU machines, ensuring that our customers experience a seamless PU pouring operation.

Pentane Metering System & Safety Control

The PU foaming machine and Pentane Metering system use the pump and parts already verified. FINEAGLES uses only approved parts for all machinery.









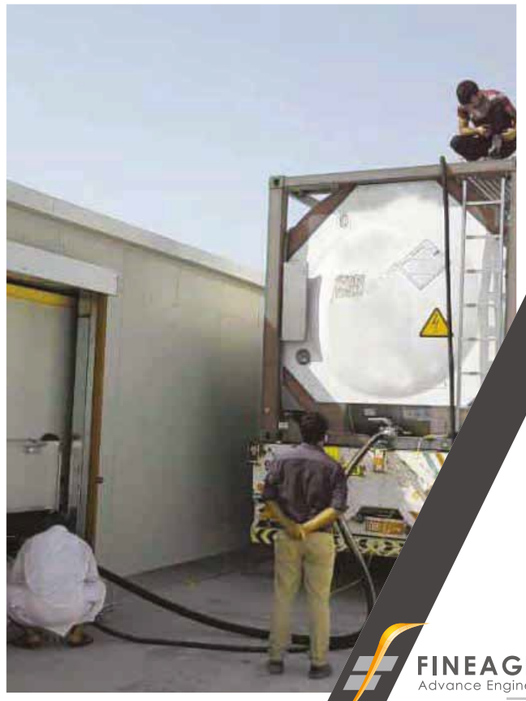
Pentane, Iso & Polyol Storage Tanks

Pentane storage tank has a different regulation depending on the country. Most countries require underground installation of pentane tanks. The pentane tank must be double-walled and safety control devices for leakage of pentane gas shall be installed. The pentane tanks have a capacity of about 30 to 40 kiloliters.





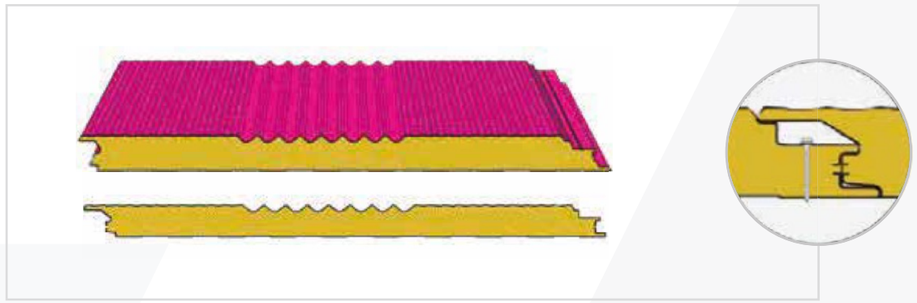




PU/PIR Sandwich Panels

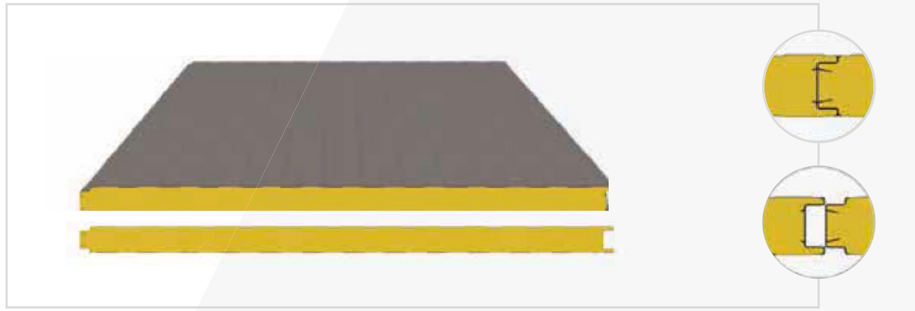
BOLTLESS WALL PANEL



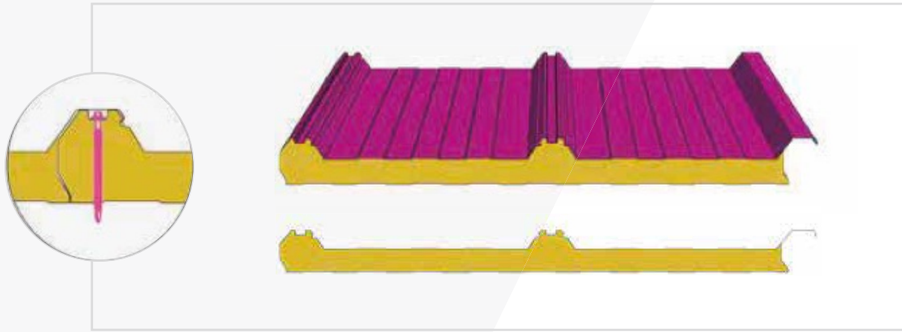


WALL(SS, COLD ROOM) PANEL

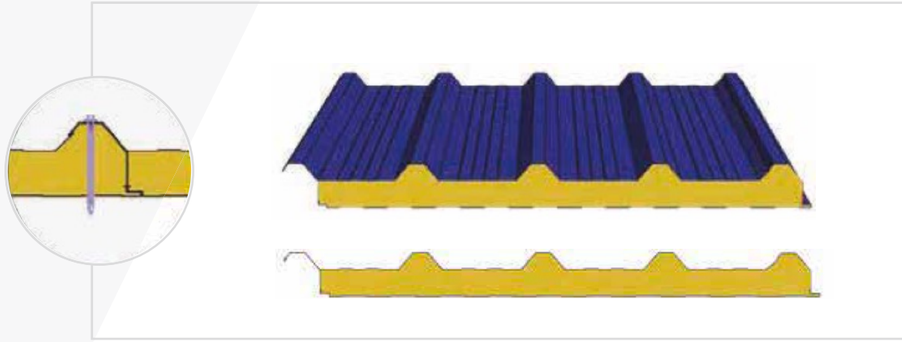


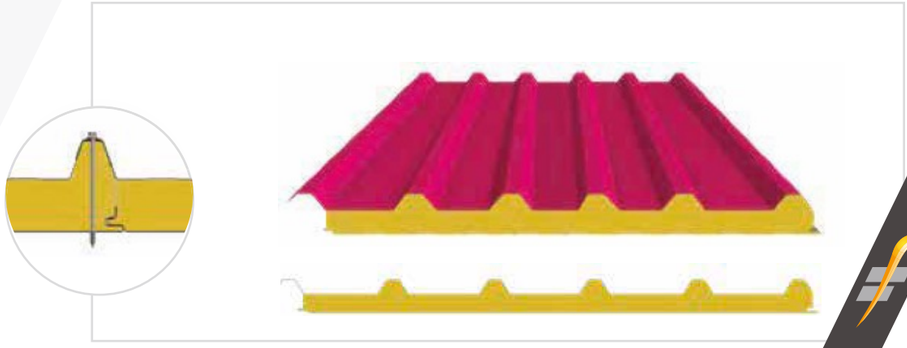


ROOF PANEL







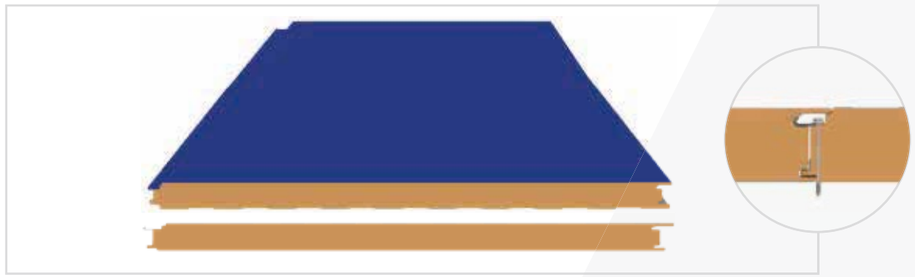


Mineral Wool Sandwich Panels

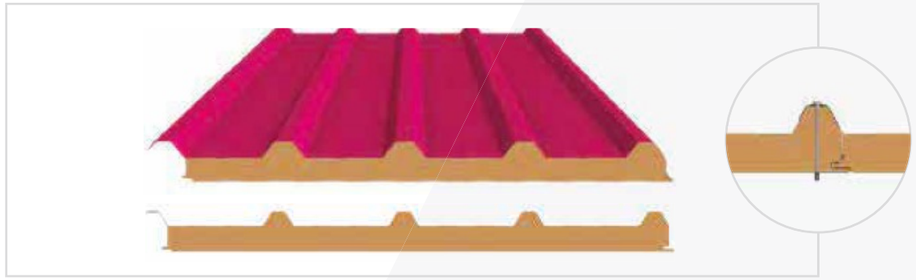
MINERAL WOOL Wall PANEL



MINERAL WOOL BOLTLESS PANEL



MINERAL WOOL ROOF PANEL



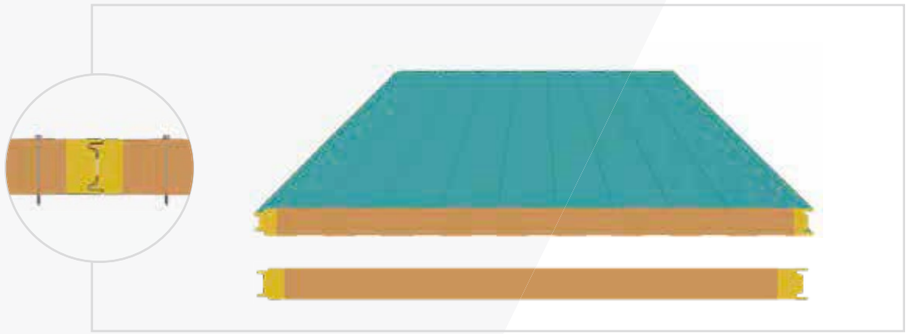
PU BOARD PANEL

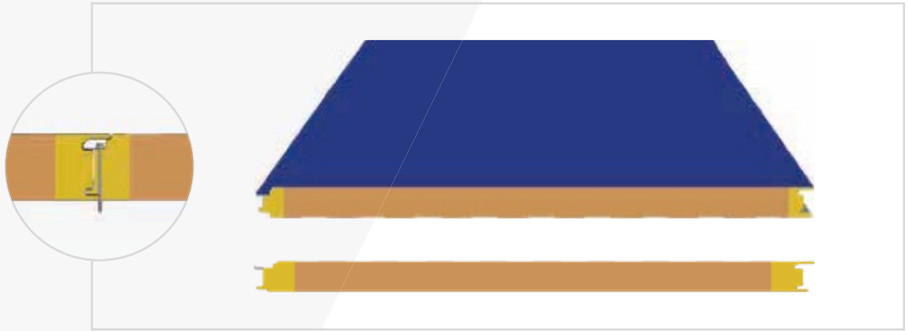


PU AL DUCT PANEL



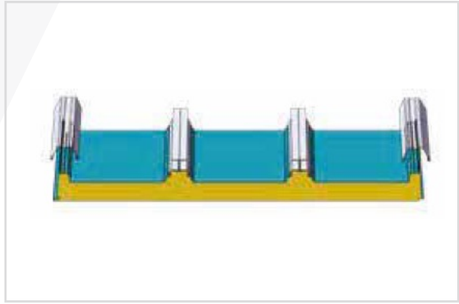
MINERAL WOOL + SIDE PU PANEL







SOLAR PANEL



DECORATIVE SIDING PANEL



Advance Engineering

in Sandwich Panel Production Line
with world class technology and design