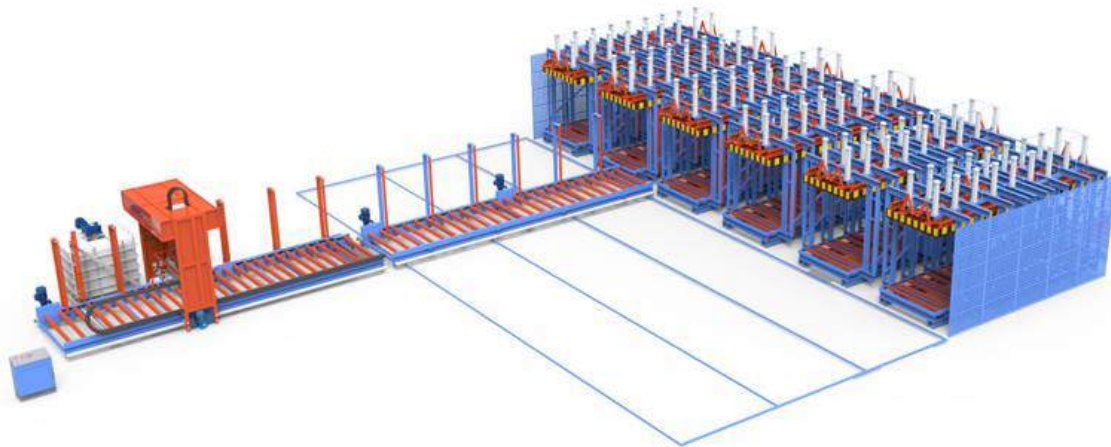


Automated SIPs manufacturing line KAM.PU1.PLWH.F

Universal automatic sandwich panels production line KAM.PU1.PLWH.F, which able to produce panels with dimensions 3000x1250mm. Other modifications of line in accordance with personal demands are available also.

SIPs production line ***KAM.PU1.PLWH.F*** for sandwich-panels production consists from a movable adhesive applying station, combined with a Press Station, equipped with six presses 3000 x 1250mm. The line is intended for gluing **in any combinations** of metals, PVC sheet, OSB boards, MgO boards, fibre-cement boards, particleboards and other materials with different types of core materials, such as expanded polystyrene, extruded polystyrene, PU, mineral wool, etc. The model designed for using 1-component reactive polyurethane adhesives.



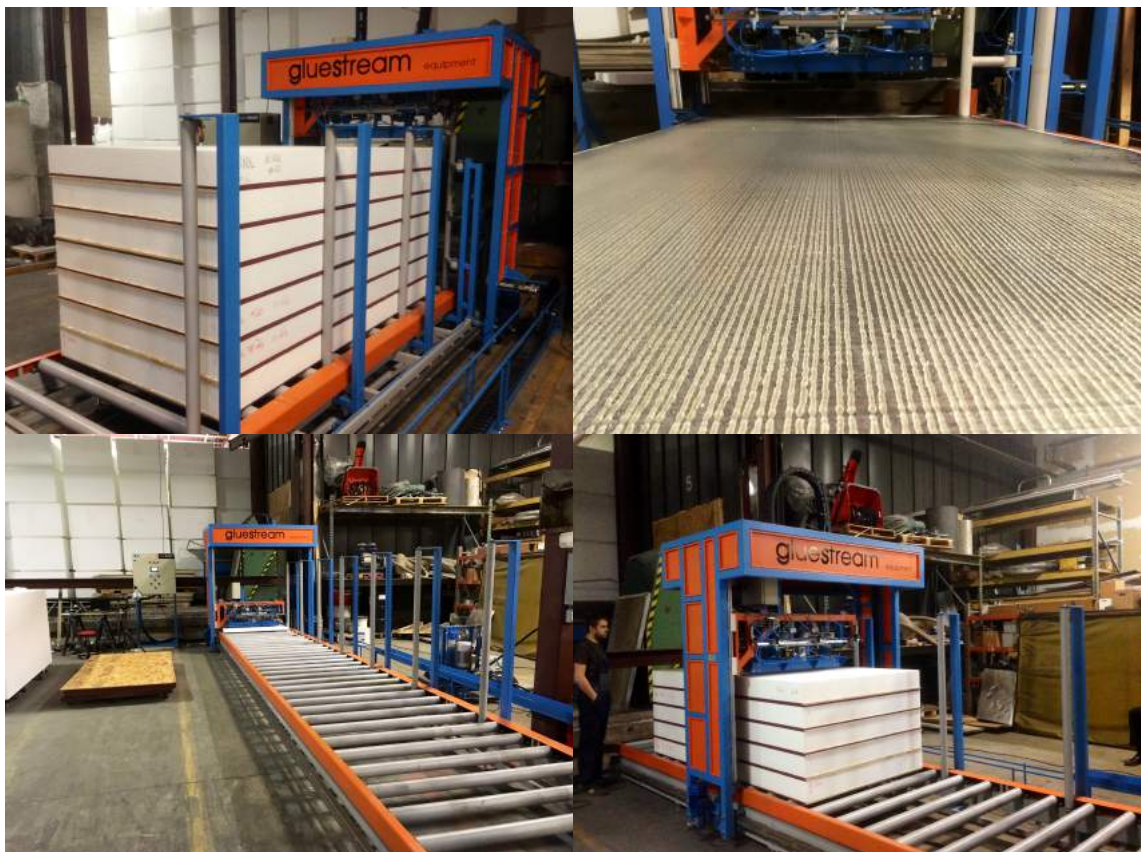
General View *KAM.PU1.PLWH.F* with motorized P-type presses:

Sandwich panel production line KAM.PU1.PLWH.F consists from:

1. Adhesive extruder - motorized portal with adhesive applicator «KAM-Pro» series, equipped with electric drive motor for lifting up and down the adhesive applicator, depending from the height of the stack of the materials, placed on the platform;
2. Motorized roller conveyor with vertical stops for positioning the stack of the materials;
3. Six P-type stationary pneumatic presses, with motorized rollers;
4. Adhesive Pumping station;
5. Control cabinet.

The manufacturing process of SIPs panels:

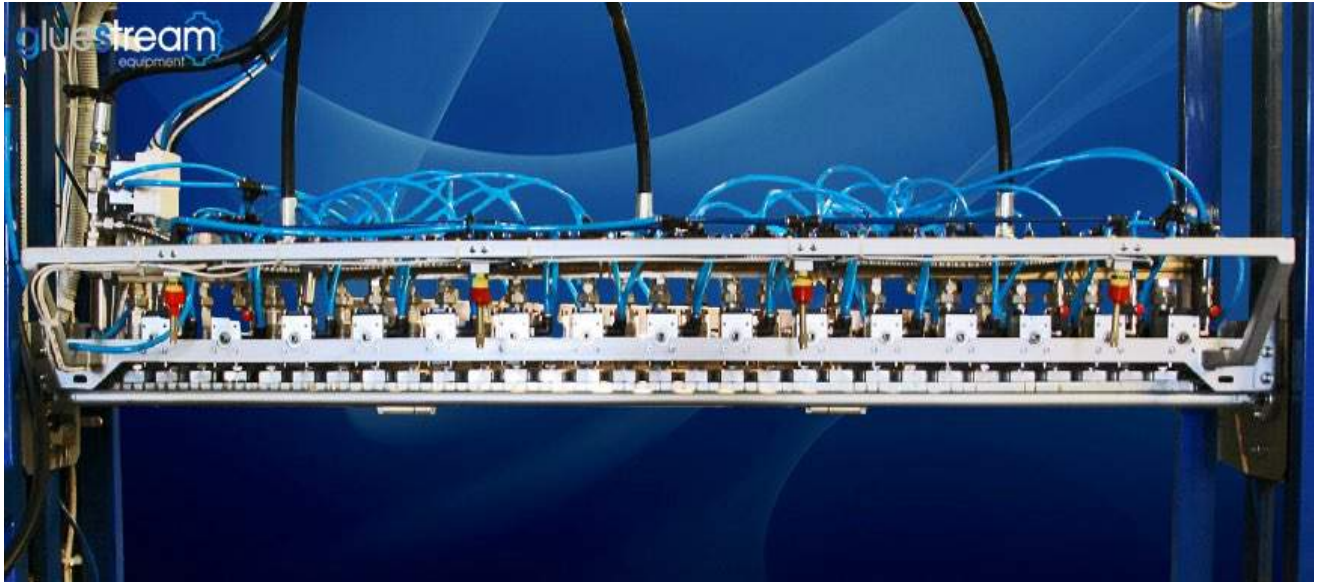
1. The OPERATOR runs the lines on the control panel. The time of the readiness for operation - 2 minutes.
2. The OPERATOR sets the necessary parameters on the control panel (length, height of panel, adhesive consumption).
3. Workers put the bonded materials manually or with Jib Crane on the motorized conveyor, positioning them by pressing to the Stops.
OPERATOR presses the "Start" button.
4. The adhesive applicator starts to move, determining automatically the start and stop line of applying. The exact start and finish line is controlled with operating program.
5. WORKERS assemble a stack of the panels. Application of glue and water occurs in the automatic mode.
6. Having assembled a stack of panels, Operator turn on a conveyor to move the stack into the press station by pressing the button with Number of press on the Control panel. Conveyor determines automatically the press and transfers the panels to.
7. While a first stack of panels is being pressed, a second stack is under assembling and gluing.
8. After pressing the stack of panels moves back for unloading.
Unloading occurs in several ways depending on the requirements:
 - manually or with a folk-lifter.
 - with vacuum lifter.



Line's components description:

https://www.youtube.com/watch?v=77RVumMh_3g

1. A movable frame of the glue extruder «KAM-Pro» series, equipped with electric drive motor for lifting up and down in automatic mode, depending from the quantity of materials, placed on the carriage. Unit applies the adhesive and water mist on the substrate automatically.



Adhesive applicator is equipped with automatic nozzle shutter to prevent the reaction of a polyurethane adhesive inside of the nozzles. This original function eliminates the need of the regular cleaning and makes the work with our machinery more easy and comfortable.

System can be used in automatic and manual modes. The shutdown time of the shutter can be changed on the control panel. Automatic shutdown occurs during the power failure or during pause in operation more than 3 minutes (time value can be changed according the characteristics of the adhesive system).

High accuracy positioning and automatic control system allow to eliminate the glue losing.

The specific taps design allows to operate without current servicing of the adhesive applying unit. No needs to replace the consumables.

GLUESTREAM precision specialized adhesive dosing pumps:

In our machinery we use specialized adhesive dosing pumps. Pumps are made of special metal with high-precision surface treatment of the working areas, radial and axial gaps between the working parts are not more than 6 microns. Our pumps do not have sealing rings, gaskets, bushings, bearings that makes them **almost unbreakable**.

Dosing rate adjustments are ruled by frequency converters (Danfoss, Denmark). When the viscosity of adhesive is changing, the torque rate of the pump will be corrected automatically to meter the exact amount of the glue, leveling its viscosity difference (**±5 g/m²**).

This allows to deal with one-component polyurethane adhesives **of any manufacturers** without reconfiguring the hardware.



The adhesive applying is provided by jets with step 8-10mm. The gluing width can be changed: with step 100mm – by valves; with step 10mm – by replacement the jet to the cover (in 1 minute). Jets are made of PTFE.

During the machine's standby the adhesive jets are closed automatically by the tray with shutter liquid. This prevents the adhesive polymerization on the jets. The adhesive applying occurs in Start/Stop mode. This feature eliminates the adhesive applying between the stack of sheets. The distance from edge can be tuned by software.

2. The stack of panels is assembled at the motorized platform. Having assembled, the stack of the panels moves to the press station, equipped with six pneumatic presses with motorized platforms inside of the each press.

The amount of presses depends from the required production capacity of the factory.

After finishing the pressing of panels they are transferred automatically in the unloading zone where the panels are taken with a folk-lifter.

3. Pumping station is designed for adhesive feeding from the main tank to the applying node. It consists from the frame for IBC container installing, or 200L drum and gear dosing pump system. For adhesive feeding are used chemical resistant high-pressure pipes.

4. Control system is based on PLC and sensor control panel. Frequency inverters are controlling all actuators.

The consumption of the adhesive is changed from the operator panel.

The manual control of the all main functions is also available. The adhesive consumption per 1 sheet and fault indication are shown on the control panel in automatic mode.



Gluestream machinery is equipped with **remote access module** that provides our customers with 24/7 online support.



This system helps our clients to get immediately help in emergency situations, no matter in which part of the world our machinery is situated (Australia, Panama, USA, etc.)

Operator's screen interface may be in English or other language.

Technical details:

№	Name of parameter	Standard	Your request*
1	Type of PU adhesive	One component PU adhesive	
2	Viscosity range, mPas (Brookfield RVT)	4000...10500	
3	Adhesive consumption, gram/m ²	80-150	
4	Steps of changing the gluing width, mm	10; 100	
5	Step of glue tracks, not more than, mm	10	
6	Gluing length (programmable), mm	up to 6200	
7	Gluing speed, m/min	15	-----
8	Precision flow of glue, gram/m ²	+5	-----
9	Programming closing valves for adhesive, sec	0-180	-----
10	Programmable height of the workpiece, mm	0-1350	
11	Automatic fault diagnostics	Yes	-----
12	The press working area: - length, mm: - width, mm: - height, mm:	3000 1250 1350	
13	Size of panels (length x width): - minimum, MM: - maximum, MM:	2440x1000 3000x1250	
14	Pressing force, kg/m ²	600-900	
15	Stroke length of the cylinder, mm	500	

16	Synchronization system lowering plates	Yes	
17	Programmable shut-off cylinders	Yes	
18	Manometer	Yes	
19	Automatic control of pressing time and pressing force with alarm indicator	Option	
20	Insufficient system pressure detector	Yes	-----
21	Compressed air pressure, bar	6-8	-----
22	Compressed air consumption, m3/min (cyclic)	0,04	-----
23	Electricity: Voltage, V / Frequency, Hz	380V / 50 Hz	-----
24	Power consumption, kW	6,0	-----
25	Irrigation water tank, liter	50	-----
26	Overall dimensions, mm: - length - width - height	20 000 2 000 2 200	-----
27	The number of service personnel, pers.	3	-----

* Point in, please, in empty cells Your individual request.

CEO Gluestream s.r.o.
Ing. Igor Garasaian