Proposal and Specification for the supply of continuous Caterpillar Laminating Press to manufacture insulated Wall and DPR Roof panels from Mineral Wool and Expanded Polystyrene (EPS) and PIR/PUR (PU BLOCK)

Automatic Laminating Line

1. STANDARD CONTINUOUS LAMINATING MACHINE FOR THE PRODUCTION OF FLAT WALL PANELS

1.1 STEEL PROCESSING SYSTEM

MATERIAL SPECIFICATION

Maximum coil width	1250mm
Maximum coil diameter	1170mm
Coil Internal diameter	500mm
Maximum coil weight	8 TONS
Material gauge	0.5MM -0.7MM
Material	Steel / Aluminium

1.1.1 COIL MANDRELS

2 Off Coil Holders. Each Holder is supplied with 1 off expanding mandrels; each mandrel incorporates a disk brake to eliminate over running of the coil.

1.1.2 STRIP CUT OFF

2 Off Strip cutters are supplied. The function is to cut through the strip at the end of the run to minimise waste on shutdown. The unit comprises a mortised shear that slices through the strip.

1.1.3 STRIP GUIDE

As the strip is decoiled it is necessary to assure the correct alignment of the strip prior to rollforming.

The guides are adjustable for different width strip and reference location. They are mounted on linear guides and adjusted by hand wheel with positioning indicators.

1.1.4 STRIP PROFILES

2 Off strip beader profiles are supplied with each machine. 1 for the top the other for the lower strip. These profiled rollers are designed to apply a shallow rib across the panel. They are designed to apply a shallow rib across the panel. They can easily be disengaged during production run. Alternative profiles are available. Up to three styles can be incorporated on either level of the machine.

1.1.5 JOINT ROLL FORMERS

Comprises Precision full form rollforming rollers to shape and form the interlocking male and female joint at the edge of the strip. Steel is initially pulled through the roll forms by driven nip rollers. Each bank of rollformers is mounted on slide rails to allow easy adjustment of module width and reference edge. Adjustment is by hand wheel with positioning indicators.

1.1.6 STRIP PRE-HEATERS

Comprises banks of strip heaters. Strip heaters are provided before and after the adhesive station. Normally 2 heaters are provided before the adhesive unit and 2 pairs after the adhesive station to ensure correct operation of the adhesives... The heaters are controlled from the main control panel to ensure correct operating conditions are met.

PLEASE NOTE NO PROVISION FOR LOADING OF THE COILS IS INCLUDED

1.2 LOADING OF CORE MATERIALS

Material specification

Material Types	Mineral wool lamellas/EPS and PIR/PUR
	Mineral wool slabs
Maximum Length (Foam materials)	4000mm
Minimum Length	1200mm
For automatic loading	2x 1200 mm
Maximum thickness	300mm
Minimum thickness	40mm
Module width	1210mm

1.2.0 OPTIONAL PNEUMATIC CORE MATERIAL INFEED TABLE

Comprises a fabricated table with in feed pneumatic pusher ram. The operator loads the core material onto the pusher table. A load button is pressed and the pusher cylinder feed the material forward down the line under continuous pressure. When the pusher has completed its forward stroke it automatically returns ready for the next load cycle.


FIG 1

PNEUMATIC PUSHER STEPPED WITH AUTOMATIC LOADERFOR FEEDING PRE-CUT LAMELLAS

1.2.1 MOTORIZED INFEED PINCH ROLLERS

Comprises a pair of rubber coated steel rollers driven via a variable speed drive to allow the core materials to be fed into the main laminator under pressure. The rollers are adjustable for height to allow different thickness core material to be loaded. Pneumatic cylinders apply pressure to the upper roller to allow different core material to be loaded without damage.

1.2.2 CORE EDGE PROFILING

2 Off motorised spindle units are incorporated. They are fitted with one set of tungsten carbide tipped cutters. The cutters are designed to trim the core material to the exact module width and rebate the edge to accommodate the joint profile.

1.3 ADHESIVE APPLICATION SYSTEM

1.3.1 ADHESIVE BULK STORAGE

1 Off drum stand unit for mounting 2 off 200 litre drums of adhesive together with space for 2-off 200 litre holding drums. The stand is complete with interconnecting pipework, control panel and 2 pairs of metering pumps are provided to deliver the correct ratio of the 2 component adhesive to each face of the panel.

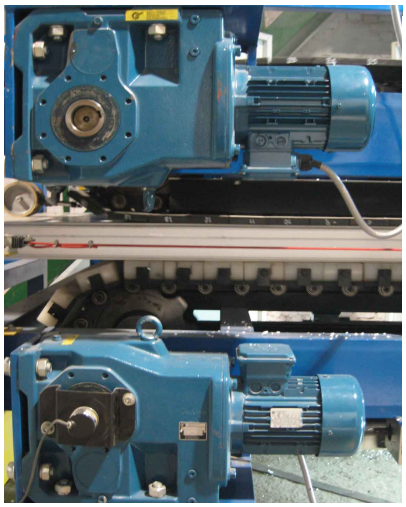
1.3.2 ADHESIVE CURING HEATERS

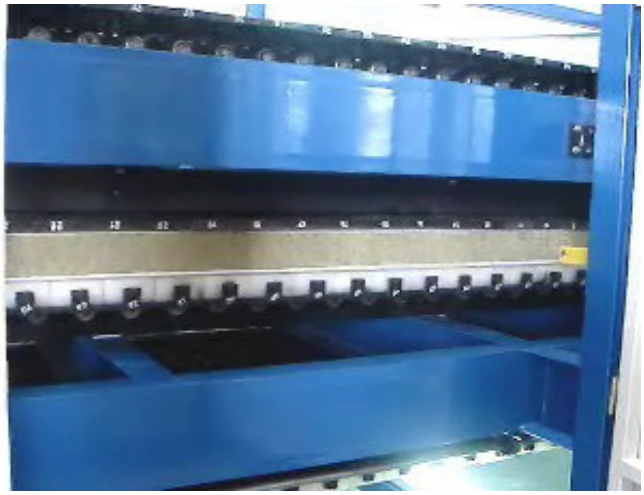
Electrically controlled strip heaters are utilized to accelerate the adhesive cure.

1.4 MAIN PRESSING AND CURING SECTION

1.4.1 MAIN CATERPILLAR PRESS

Comprising twin chain caterpillar style press for holding the panel under constant pressure whilst the adhesive cures. The caterpillar press is driven via a variable speed AC Motor Gearbox. Maximum speed of the press is 5 metres per minute. Average laminating speeds are 3 metres per minute for mineral wool panels and 4 metres per minute for cellular foam cored panels. Average operating speed is dictated by factory ambient conditions and materials being processed. The caterpillar press incorporates steel plates that provide a flat moving platen to ensure a quality panel is produced than with presses using rollers. The uniform pressing gives improved bonding on friable material such as mineral wool and PIR.





1.4.2 THICKNESS ADJUSTMENT

The upper caterpillar platen is raised and lowered via motorised screw jacks. This allows the different thickness panels to be easily produced. Height control is controlled and monitored via the main PLC. Height adjustment is provided over the range 50 mm to 300 mm.

1.5 PANEL CUTTING SYSTEM

1.5.1 FLYING BANDSAW

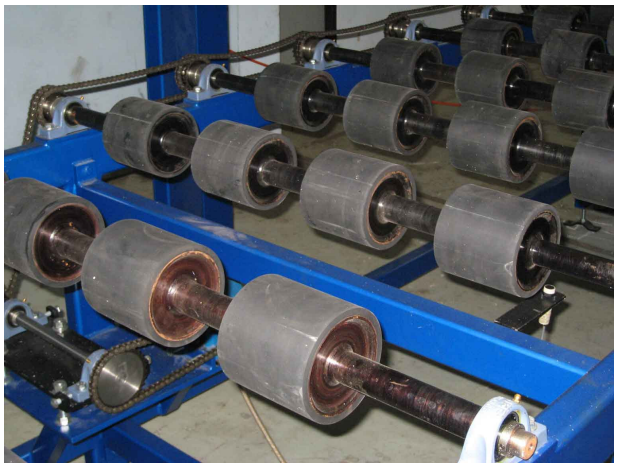
Comprising an automatic band saw for cross cutting the panel. The saw clamps onto the panel as it exits from the caterpillar press. The flying band saw as it cross cuts through the panel producing a straight square cut. The saw is suitable for cutting all recommended skin and core material. The minimum panel length of panel is 2.5 metres. This is governed by the saw cycle time.

FLYING BAND SAW

1.6 PANEL RUN OUT CONVEYOR

1.6.1 RUNOUT CONVEYOR

Situated after the band saw is a 12 meter long run out electric conveyor with rubber rollers.



1.7 DUST EXTRACTION SYSTEM

1.7.1 DUST COLLECTOR

A 3 bag heavy duty dust extraction system is included with interconnecting ducting. The unit is designed to connect to the waste extraction hoods mounted on the core material side trimmers.

1.8 MAIN CONTROL SYSTEM

1.8.1 AUTO START FUNCTION

A central computer with touch screen Man Machine interface is included. This computer controls the entire line. It allows batching of the panels to be entered including different lengths and number of panels. A further feature of the line includes automatic start and stop of the main components of the line to minimise waste of products at start up of the line.

1.9 OPERATING MANUALS AND DOCUMENTATION

1.9.1 DOCUMENTATION

A Full set of operating manuals and documentation is included. ETG is also able to advise further on panel production and application.

1.10 OPTIONS AND UPGRADES

1.10.1 DPR UPGRADE

The DPR upgrade includes Decoiler, Multi stage Rollformer and revised platen arrangement in the press Full .

DPR

1.10.2 AUTOMATIC LOADER FOR MINERAL WOOL

The unit for automatic loading of core material allows both EPS and Mineral wool lamellas to be loaded into the press automatically. Full details of the loader are included in the enclosed brochure.

1.10.3 VACUUM PANEL STACKERS

The vacuum panel lifter and stacker is offered to allow panel to be removed from the line and loaded onto pallets or to the optional pane stretch wrapper. Full details of the vacuum stacker are shown in the enclosed brochure. Profiled roof panels have the option to be stacked trapezoid down or with alternate panels rotated to reduce stack height for economical shipping.

1.10.4 STRETCH WRAPPER AND CONVEYORS

The panels from the vacuum stacker can be loaded direct onto pallets that have been placed on a powered conveyor. The conveyors then pass the panels through a stretch wrapper. Full details of the stretch wrapper are shown in the enclosed brochure.

1.10.5 Mineral Wool Lamella Saw

A saw is required to cut the mineral wool slab into lamellas prior to loading into the line. The saw is offered complete with necessary blades and spacers for the preparation of lamellas in the sizes 50,80,100,120,150 200 mm. Full details of the mineral wool saw are shown in the enclosed brochure.
Waste Extract from the saws is not included

1.10.6 Mineral Wool Trapezoidal Saw

A saw is required to cut the trapezoidal in fills for inserting into the crowns of the DPR Roof Panel. Full details of the trapezoidal saw are shown in the enclosed brochure.
Waste Extract from the saws is not included

1.10.7 Mineral Slab Slitter

A saw is required to cut the standard mineral wool slabs into the required thickness before entering them into the trapezoidal saw. This allows only one thickness of mineral wool to be supplied to the project.. Full details of the slab slitter are shown in the enclosed brochure.
Waste Extract from the saws is not included

Typical Layout of the Line