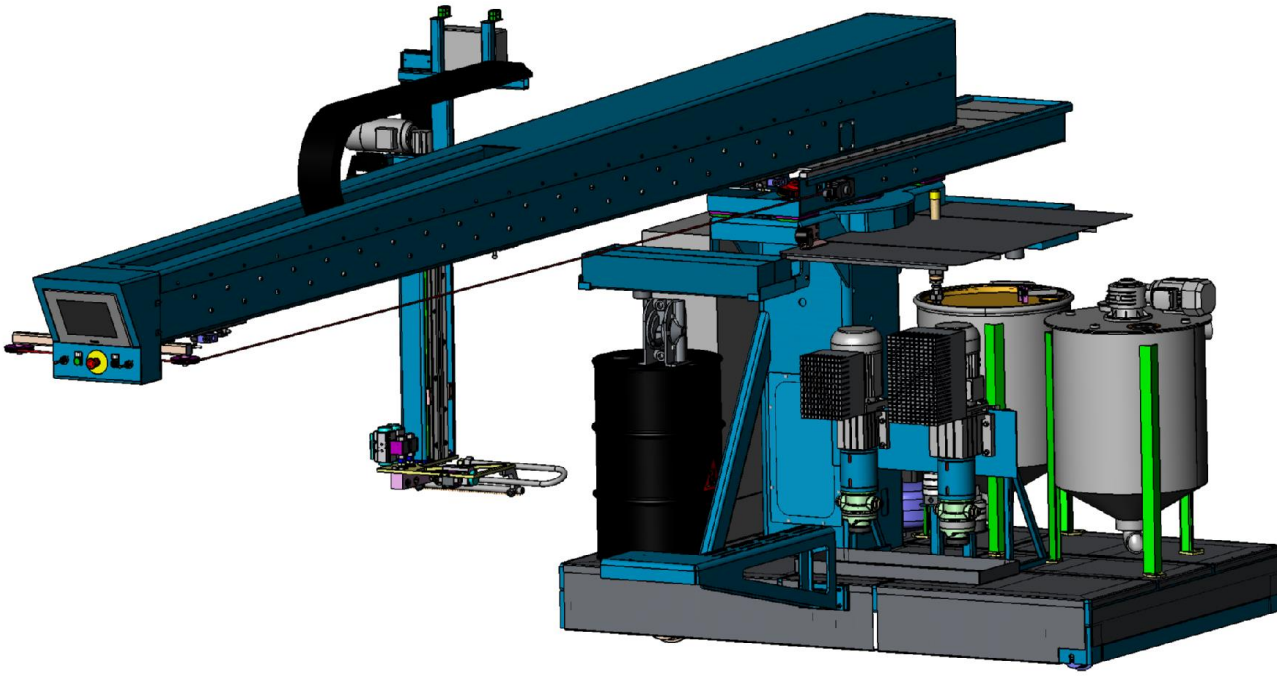
VETACS
ADHESIVE SYSTEMS

Machine Specification



Machine Type: 1230A

2 Component: 1x Base 1x Hardener

Adhesive pump system

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1230A MACHINE SPECIFICATION

Automatic Adhesive Application System type 1230A for two-component polyurethane adhesive.

The machine is designed as a moving spreader beam with a reciprocating spreader applying adhesive across a lay-up table. As the spreader is reciprocating over the lay-up table in the Y-direction, the whole set-up is moving in the X-direction and thus creating a “diamond pattern”.

The application unit is designed as a moving spreader beam with chassis fabricated from carbon steel box section, automatic step less vertical adjustment of the spreader up to 500mm to allow for variations in panel thickness.
The reciprocating spreader applies the adhesive across a lay-up table. As the spreader is reciprocating over the lay-up table in the Y-direction, the whole machine is moving in the X-direction thus creating a “diamond pattern” of adhesive application which gives excellent surface coverage.

Picture of diamond pattern.

The coat weight is controlled by a flow controller measuring the adhesive flow with gear flow meters. By calculating the volumetric amount of adhesive per second compared to the set point value, the output to the adhesive pump can be controlled and adjusted in order to achieve very accurate coat weight.
The mixing unit is supplied from base and curing agent pumps. Rotary pumps are used for the base and curing agent components for application of adhesive.

SYSTEM DESCRIPTION

A: Drive unit.

Chassis with 180° aluminium swing-beam and automatic step less vertical adjustment of the spreader up to 600mm. Chassis in mild steel and powder coated. Cable reels for electrical cables and air supply hose.

B: Adhesive system

The adhesive is supplied in fluid bags. The fluid bags are placed on fluid bag stands complete with stretchers for the proper emptying of the fluid bags and including containment sump for collection of spillage. For transport of the base and curing agent from the fluid bags to the drive unit Pneumatic driven piston pumps are used which are mounted on the fluid bag stands.
Placed on the drive unit are buffer tanks for base and for the curing agent. The buffer tanks are equipped with level sensors. The level sensors register and send an alarm when the level is at minimum.
During filling of the tanks, the level sensors automatically start the pumps when the adhesive reaches the low level switch and stop the pumps when high level switch is reached.
The main application pumps are rotary pumps. The mixing ratio and flow are controlled by PLC.
Base and curing agent is pumped separately to the static mixer and spreader and there mixed and dispensed in the right ratio and quantity.

C: Cleaning / flushing system

An online automatic cleaning system for the spreaders and mixers is included. When the cleaning cycle is initiated the spreader moves over the purge tray and the bulk of the mixed adhesive is blown out with compressed air. The spreader then moves automatically over the flush tray and a cleaning fluid is pumped through the mixer and spreader. The cleaning fluid is in a recirculation system and the cleaning fluid is reused. After a pre-set time the cleaning cycle stops and the residual cleaning fluid is blown out with compressed air. The spreader finally moves back over the purge tray cleaned and ready for bonding.

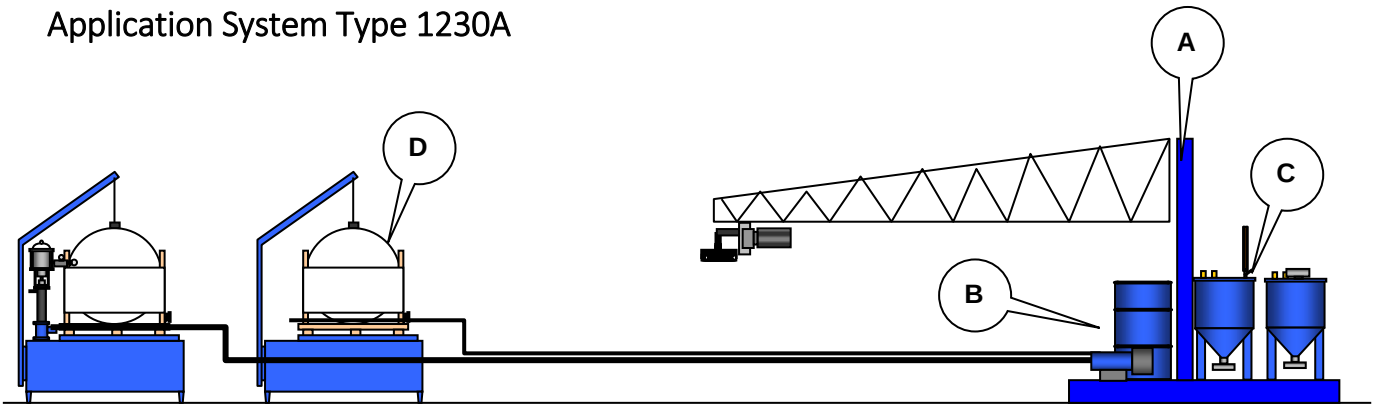
D: Pneumatic system.

For transport pump drives, air motor, the control valves and cleaning system.

E: Control system.

There is a control panel with an HMI graphic operator panel. The control system consists of a PLC control system used to control all machine functions, servo controls for the spreader movement X and Y direction and flow control for the bases and curing agent. A PID regulation uses the information from the gear flow meters to control the pump speed by frequency inverters. The control panel also gives alarms for routine maintenance and errors within the pump system, including mix ratio and coat weight.

Application System Type 1230A



Pos	Description
A	**Drive unit with servo drives and swing-arm**
B	**Rotor pumps**
C	**Base and curing agent tanks**
D	**Fluid bag stands for base and curing agent**

TECHNICAL DATA

Pump capacity	Approx. 5.0 Kg/min.
Application speed	At a machine speed of 20 m/min (X-axis) and a application speed of 40 m/min (Y-axis) and a coat weight of 250 g/m2 the application time of a panel with the dimensions of 3 x 8 m is less than 2.0 min.
Coat weight adjustable from	150 to 400 g/m2
Coat weight tolerance	± 1% Average
Air pressure required	Approx. 800 litre/min. at 6 bar
Mixing ratio	100:25 Vol. Adjustable
Spreader width	500 mm

ELECTRICAL SPECIFICATION

The control system is based on PLC-servo technology and the control of the machine is performed through an operator panel with graphic display to display the selected application layer, panel size and coat weight and configuration of essential machine parameters can be done from the HMI.
Further a Recipe system and templates for machine configuration settings are available.

The control system can handle panels with up to 10 layers, with following data (example)

Panel size (mm)	X: **8000** Y: **2800**	Order no: **123456** Recipe name: **ABCDEFG**			No of layers: **4** Actual layer: **2**	
Layer	Coat weight (g/m^2)	Frame X1 (mm)	Frame X2 (mm)	Frame Y1 (mm)	Frame Y2 (mm)	Thickness (mm)
1	**400**	**10**	**10**	**10**	**10**	**8**
2	**150**	**15**	**20**	**20**	**20**	**15**
3	**250**	**10**	**10**	**10**	**10**	**30**
4	**300**	**20**	**20**	**20**	**20**	**45**
5	0	0	0	0	0	0

The coat weight is controlled by measuring the volumetric displacement of the base pump with a rotary pulse counter. By calculating the amount of base and comparing with the set point value, the rotation speed of the pumps is controlled and adjusted by a frequency converter in order to achieve the desired coat weight.

The frame dimension (X1, X2, Y1 and Y2) is the distance from the panel outer edge to the adhesive application area in order to avoid adhesive to be pressed out of the panel when under pressure.

The Recipe system is integrated in the operator panel, and gives possibility to store essential production data such as panel size, coat weight and number of layers as a unique recipe number. The recipe feature facilitates repetitive production of panels with the same physical properties.

The recipes can be created from the operator panel.

Manual panel targeting system and jog function are available by means of a joy-stick for the manual movement of the machine and another joy stick for the up and down movement of the spreader.

The Vetacs adhesive application machine type 1230A has a control panel which contains PLC, Motor control unit and Operator interface for local operation (Preparation of mechanical calibration etc.).

The machine needs a dedicated electrical group and supply connection, only this machine will use. The group should not have a conventional earth-leakage circuit breakers (e.l.c.bs) installed, since the machine is installed with EMC-filters and AC/DC-conversion on servo and inverter drives. These drives filters/drives leak current to ground and can therefore cancel the protective function of the relay OR trigger the relay. An Universal-current sensitive e.l.c.bs. (>=300mA) can be used. The electrical group should be fused with 16A fuse or similar.

Supply specification:

- Power supply min.: 3x400V ±5%, 50 Hz + PE
- Consumption max.: ~12 A
- Recommended fuses: 16 A
- Ikmax: 10 kA

Hardware documentation:

- Will be supplied in paper version only (2 off) and CD-Rom, with the following documents:

- System block diagram – language: English
- Instrumentation diagram – language: English
- Operator instruction – language: Local
- Circuit diagram – language: English
- Parts lists/Spare parts list (Electrical and mechanical) – language: English
- Lay-out/Location drawing – language: English

Vetacs supplies all internal cabling between our units, and all systems are tested prior to shipment.
Further Vetacs supply the electrical wire and the air hose through the cat groove in the floor.

The complete system is in conformity with the Machine Directive 89/392, EN 60204-1 and EN 50 081-1.

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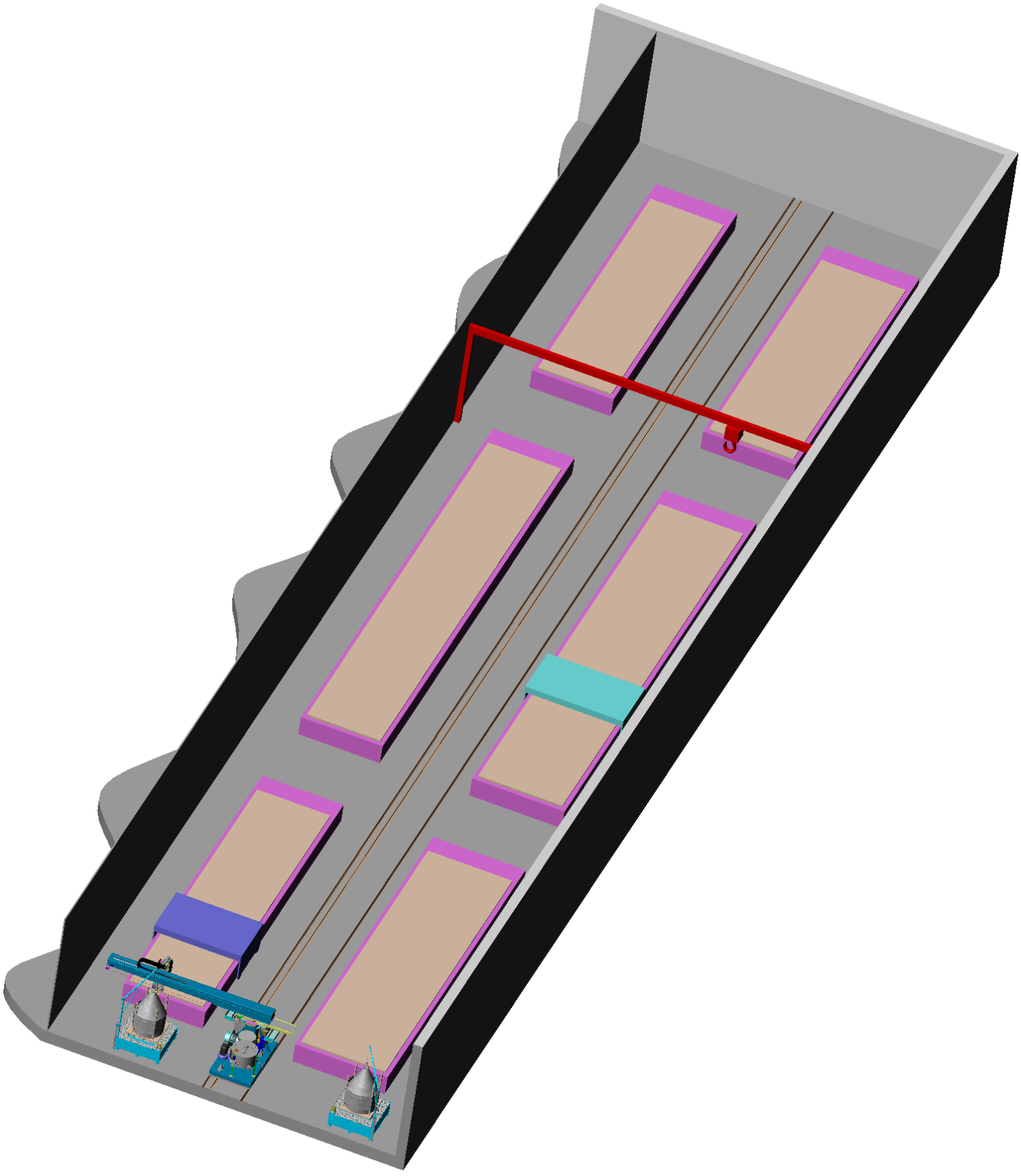
EXAMPLE OF FACTORY LAY-OUT



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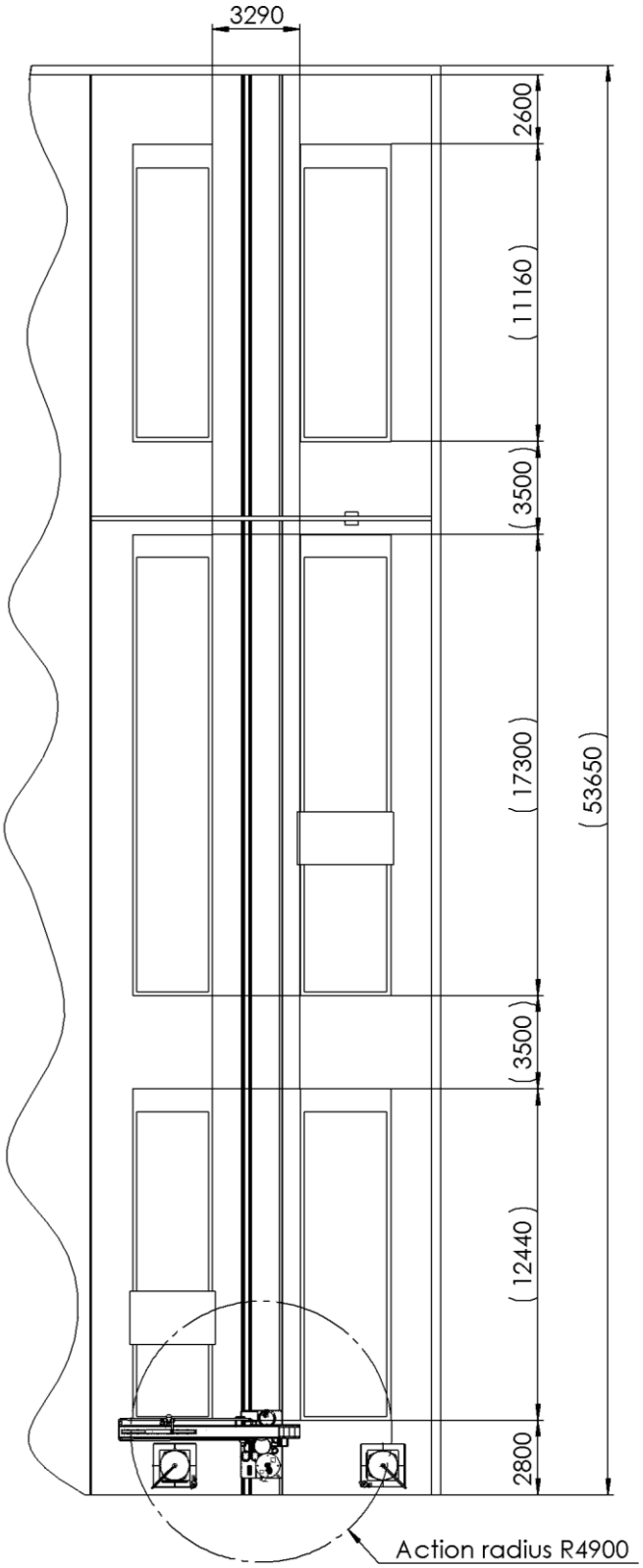
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