CUBE 1300

OMAL Horizontal Bore and Dowel Machine

The CUBE 1300 Horizontal **Bore, Glue, and Dowel** machine is a numerically controlled machine to drill, glue and insert dowels on horizontal pieces with FOUR loading zones.

The machine is designed to manufacture furniture or cabinets components.

It can be used as part of a work cell to increase production of point to point and Cnc routers by moving the horizontal drill and dowel operation or as a standalone machine.



Machine Cycle

The program is selected from the machine control and applied to the working list. Parts are manually loaded against one of the four reference stops. Holding clamps are activated for each working station through foot pedals. For longer parts the center reference is excludable and machine can work as single field. Once the parts are clamped the operator can start the drill and dowel operation. Parts are automatically released at the end of the working cycle and the operating head moves to next program provided that another panel has been loaded. The machine works in tandem if parts do not exceed 650 mm (1250 with 2500 mm working field). On each field is also possible to process different programs.

Premium features of Omal drill and dowel inserting machines

The dowel insertion revolver holds a dowel while a dowel is inserted plus checks via **fiber optic** sensor to see if next dowel is present to prevent misfeeds.

The OMAL "**SURE SHOT**" revolver system guarantees a dowel is inserted every time!

Cycle time of approximately **ONE second** for each bore, glue, and dowel insertion when holes are on 32 mm intervals.

No drip glue nozzle: Omal utilizes stainless steel pin and nozzle assembly precisely machined to ensure water/glue does not leak. Omal manufactures is own glue guns using a 3 seal system to avoid glue from seeping back through the needle. Programmable electronic control of glue amount. The injector unit is equipped with an **inductive sensor to verify glue is shot**.

The machine is equipped standard with **three vertical and three horizontal drilling units on 32 mm pitch and a single glue and dowel insertion unit** with standard set up for 8mm dowels (6 or 10 are also available with no extra charge).

The selection of the loading zone (left, left center, right center, or right) is executed by CNC. The center reference is excludable for large panels.

Heavy duty rectangular clamps with **double piston** and **easy setup** for different material thicknesses fully complying with safety regulations.

The standard clamps are suitable to protect **delicate materials** holding panels horizontally for edge drilling.

Each clamp is equipped with a **clamp extension** namely studied to hold narrow pieces loaded lengthwise.

Omal auto-laser allow to run the CUBE 1300 through a standard parametric program without the need to write or call a specific program for the job. Any operator with no specific training will easily run the machine.

Large Vibrator dowel hopper to avoid frequent refilling

Four references and two working fields standard

The machine is suitable to work with **traditional or pre-glued dowels**

Heavy duty steel frame to ensure maximum rigidity and avoid any possible vibration, movement of the carriage by ball screw on linear guides with brushless motor

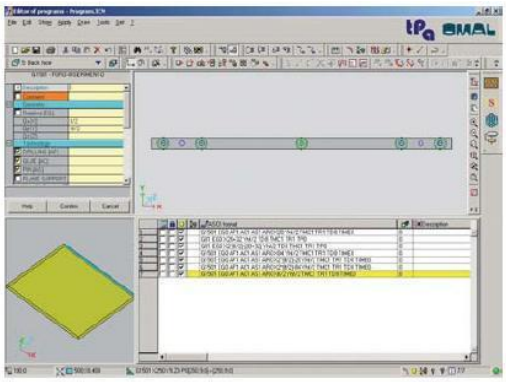
Work bench made of phenolic anti-scratch material to protect most delicate panels and give proper support.

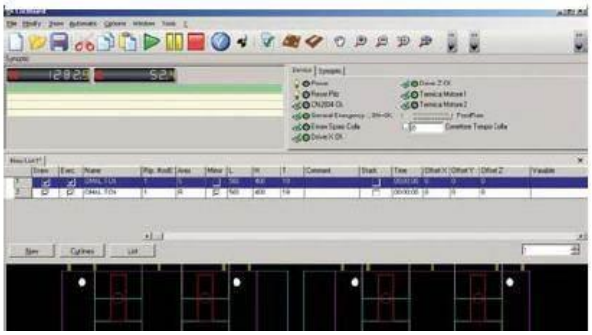
OMAL utilizes Wood System by TPA as the software interface for the machine. The user friendly software makes the machine extremely versatile. The machine is equipped with a full PC interface used for writing

and storing programs. Programs can be written parametrically, can include IF/THEN conditional statements, and are generated using graphical icons (drill, glue, dowel check boxes). The selection of the offset of tools for inserting and for operations on different left and right hand references is automatic.

The machine is programmable in the X axis, Y and Z with precision brushless motor, ball nut and ball screw**.** The movement of the carriage is on linear rails with square guides.

The software has a list manager that allows different parts to be run in each field and to control the production sequence. Lists can be saved for future reference plus the machine can be controlled by bar code list and/or program names.



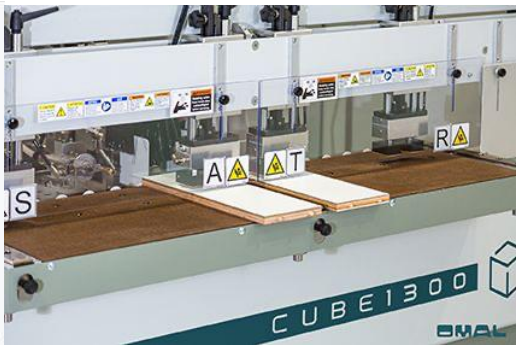


Central sinking fence

Sensor on the bench for panel presence

Open frame <u>on both sides</u> to allow loading of panels larger than 1300 mm. up to **2600 mm**
This option includes 2 side sinking references





Equipped with left and back **safety protection fence**

CE regulations

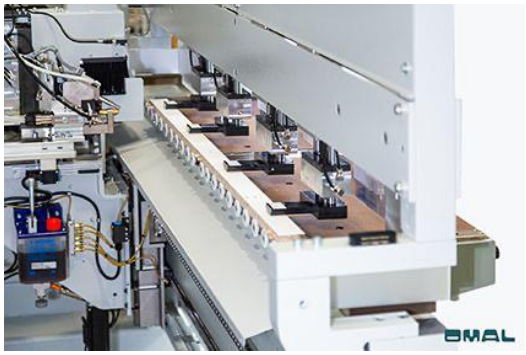
Centralized lubrication system for all linear bearings

Efficient Dust extraction

Auto-laser

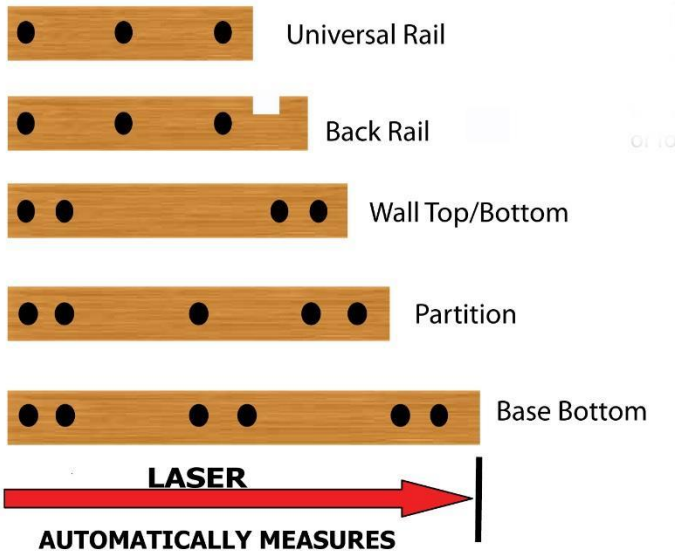
Clamp extension to hold <u>40 mm narrow</u> parts lengthwise

OMAL safety system based on the laser detection of clamp extensions to avoid possible collision when machine is drilling vertically narrow pieces



OMAL's Laser Sensor will automatically measure the part and populate the program list for the part width. Our parametric program will calculate all the dowel locations for the part. The operator just has to load the machine - Run parts in any sequence and never have to call up a program name again!!





Automatic Width LASER Sensor, Measures the width of the panel and calculates number of dowels based on a parametric template file. Width can also be modified from the list. Model the same logic you have in your cabinet design package and create automatic part recognition. No need for bar codes for program retrieval.

PC Numerical control:

Machine equipped with PC for control of all axis Operating System: Windows 10 IOT - Color 17” flat screen monitor
Ram 4 GB DDR4

SSD 128 GB
Complete keyboard + mouse Ethernet network card 10/100 Multitasking CNC
Connection to CNC with USB port

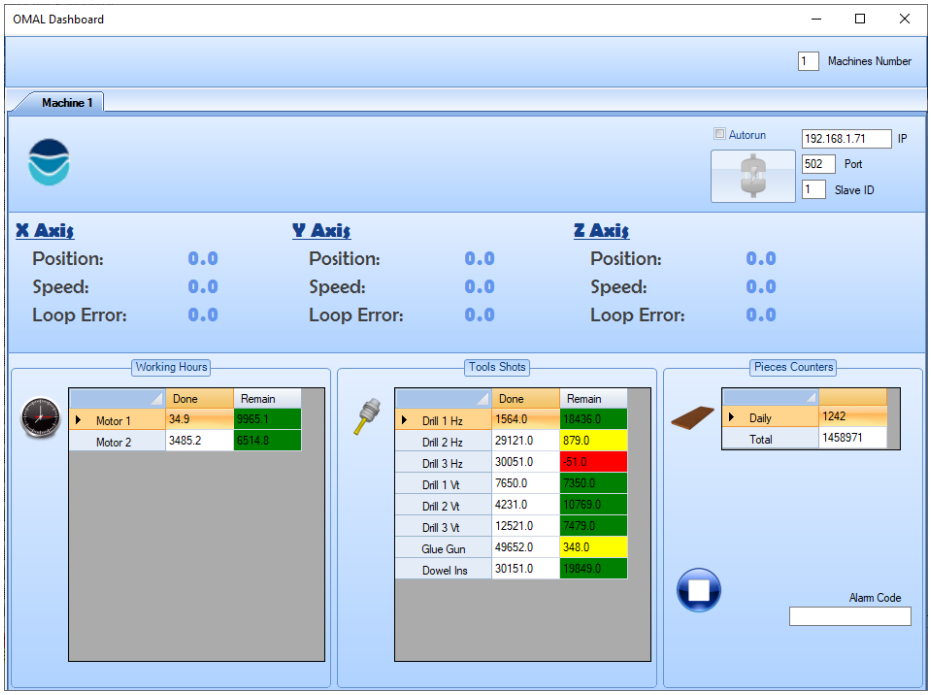
CNC Characteristics

- 3 axis NC
- 3Mbit Fieldbus for input/output remote
- Very simple and intuitive software
- Automatic left, center, and right program
- List manager to sequence programs
- Graphic menu for selection of macros:
- Boring
- Boring + Gluing
- Boring + gluing + dowel insertion
- Gluing +dowel insertion
- Parametric programming
- Graphical aids
- Conditional programming with built in simulation checking
- Pre-programmed executive lists which can be edited run-time and structured into articles
- Internal self-diagnosis, historical report of alarms

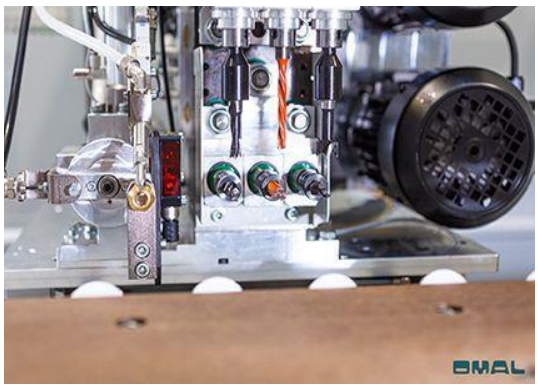
Industry 4.0

Display showing motor hours and timers for each tool.
The thresholds for predictive maintenance can be set on the machine;
(e.g. replace belt or bearings when a certain number of motor hours are reached).
The system shows POPUP in the machine when the timers are reached or it can send a warning e-mail for maintenance.

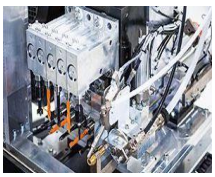
OPC UA data exchange protocol



Screenshot office interface for industry 4.0

Code	Description	Image
AS-CUBE	Horizontal Bore and Dowel Machine	
VR-1300	Standard dimensions of pieces: -max width of pieces 1300 mm or 650x2 -height of pieces 10-40 mm X Axis: working area 1300 mm installed torque 2,4Nm head travel speed 60 m/min Z Axis: working area 60 mm installed torque 1 Nm head travel speed 15 m/min Y Axis: working area 50 mm installed torque 1 Nm head travel speed 15 m/min	
VR-3HZ3VR DRILL	Horizontal Drilling Unit: -N° of independent drilling units 3 -drills rotation speed 6000 rpm -max depth of the holes 40 mm -max diameter of the drills 25 mm Vertical Drilling unit from top: -N° of independent drilling unit 3 -drills rotation speed 4500 rpm -max depth of the holes 30 mm -max drilling distance from edge 50 mm -max diameter of the drills 35 mm	
VR-SPINA8	Dowel Insertion Unit: -N° of dowel insertion units 1 -dowel dimension (other dimensions upon request) ø 8x30/40 std -max dowel projection 14mm -fiber optic sensor to check for dowel presence	

VR-BIDONI	Gluing Plant: - glue tank capacity 8 Lt - max glue density 900 cps - programmable electronic control of glue quantity - glue gun with inductive sensor to verify glue is shot - injector with double, reinforced seals to insure no leakage by needle	
VR-VOLT 400	General Information: -Voltage 400V 3Ph+N 50Hz -Control voltage 24 V -Air pressure	
VR-Pallet 1300/1550	Packing on pallet for Insert 1300/1550	

Code	Description	Image
VR_KIT-SP	Setting of machine and kit for the use of two different dowel diameters	
VR-2500	Standard dimensions of pieces: -max width of pieces 2500 mm or 1220x2 -height of pieces 10-40 mmX Axis: working area 2500 mm installed torque 2,4Nm head travel speed 90 m/min Z Axis: working area 60 mm installed torque 1 Nm head travel speed 15 m/min Y Axis: working area 50 mm installed torque 1 Nm head travel speed 15 m/min	
VR-5HZ5VR DRILL	Horizontal Drilling Unit: -N° of independent drilling units 5 -drills rotation speed 6000 rpm -max depth of the holes 40 mm -max diameter of the drills 25 mm Vertical Drilling unit from top: -N° of independent drilling unit 5 -drills rotation speed 4500 rpm -max depth of the holes 30 mm -max drilling distance from edge 50 mm -max diameter of the drills 35 mm	
VR-BARCODE	Bar code and Qrcode reader gun wireless	
VR-MEMBRANA	Gluing plant with membrane pump. Pump equipped with stainless steel membrane, pressure regulator able to maintain a constant glue pressure also when the pump inverts the pumping cycle to check its correct operation + scale to control the presence of glue in the system to check its correct operation	
VR-TRASF	Transformer for different voltage 400V 50/60 Hz	