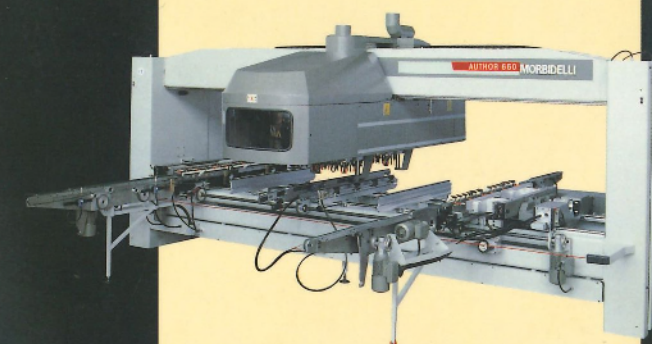


*Author*  
**660**



High output flexible work centre

**MORBIDELLI**

Boring machines and CNC work centers  
for the furniture industry

SCM GROUP AUTEC DIVISION spa - MORBIDELLI  
Strada Montefeltro, 81/3 - 61100 Pesaro - Italia  
Tel. 0721/4451 - Fax 0721/445264  
E-mail: [morbidelli@woodwork.it](mailto:morbidelli@woodwork.it)

**MORBIDELLI**

Author 660

Speed and flexibility:  
a winning combination

Author 660

Use of powerful vertical  
independent spindles and  
on all four panel sides

Ability to bore vertically  
at the same time

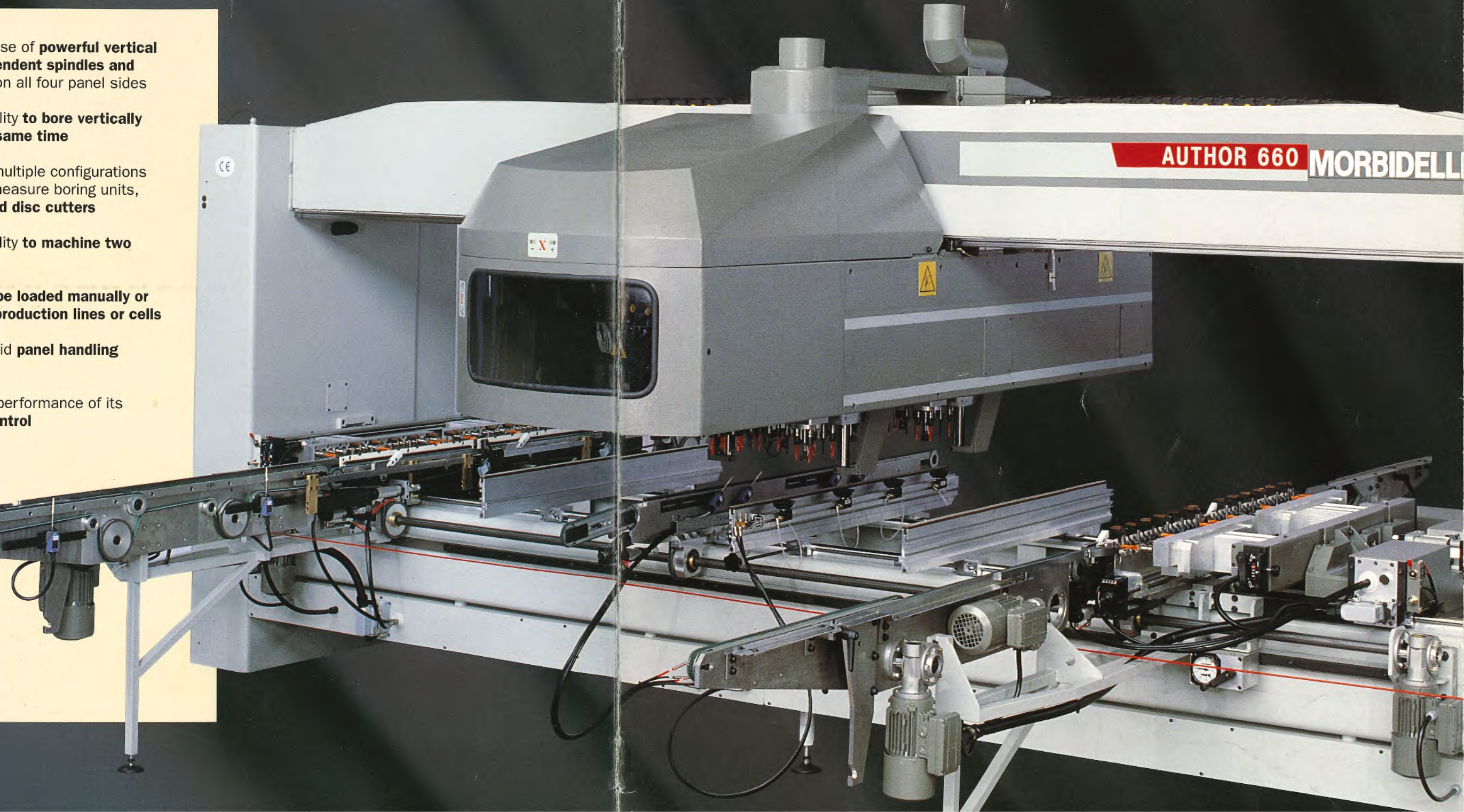
Multiple configurations  
measure boring units,  
and disc cutters

Ability to machine two

Can be loaded manually or  
in production lines or cells

Efficient panel handling

High performance of its  
control



flexibility:  
combination

Author 660



Machine frame

## RIGID CONSTRUCTION AND PRECISION

The supporting structure and the mobile head are built in **highly rigid** steel.

Even under the most severe working conditions, **Author 660** guarantees **maximum finish and precision** in all its phases, due to the use of brushless motors and a moving system on the three axes running on high precision recirculating ball screw.

# THE VALUE OF FLEXIBILITY

## and high output capacity

The succession of events and changes is today frenetic and unforeseeable; production demands and requirements evolve extremely rapidly and it is essential to be able to adapt to them.

In order to cope with such situations it is necessary to create a very flexible industrial structure but without sacrificing production capacity.

**Author 660** is the only working centre in its category that manages to maintain **high daily productivity** even when the variability coefficients (mix, volume and dimension) are considerable.

All this naturally guarantees a **return on the investment in a shorter time** compared to performance offered by traditional boring machines.

With **Author 660** it is possible to save up to **30%** of the time needed to carry out certain production batches and to increase the line's .

The example shows the advantages that **Author 660** guarantees compared to a line with two traditional automatic boring machines, given the same productivity demands (based on 2,000 panels).

For given the machine setting up times, the table shows, depending on the boring steps, the minimum number of tools (and consequently the average quantity of panels per batch) above which it is more advantageous to use an **Author 660**.

This study allows us to appreciate the advantages an **Author 660** can bring to those who today are willing to invest in flexibility but, above all, it shows that **this investment is the only one able to help us capitalise on the market at the lowest possible cost and with the highest efficiency in the short term.**

### Comparison between Author 660 and a line with two automatic boring machines.

| HYPOTHESIS                                      | Line with 2 automatic boring machines | AUTHOR 660  |
|---|---------------------------------------|-------------|
| Tooling up time (min.)                          | <b>45</b>                             | <b>4</b>    |
| Productive capacity required (number of panels) | <b>2000</b>                           | <b>2000</b> |

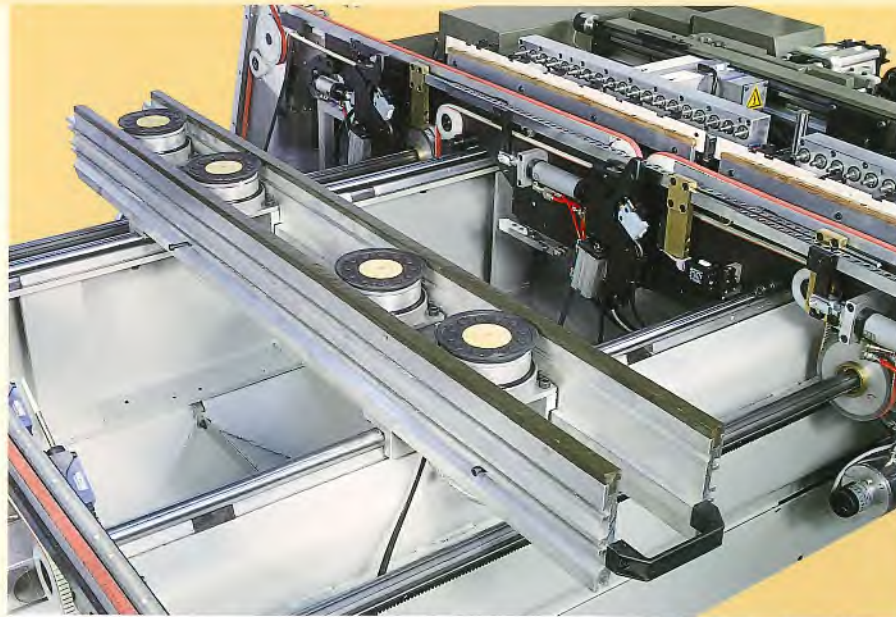
| Number of tooling ups | Max. number of panels per batch | Boring passages (A660) | Pieces per minute (A660) | Pieces per minute (Aut. line) | Total time (A660) | Total time (Aut. line) | Saved time with A 660 |
|-----------------------|---------------------------------|------------------------|--------------------------|-------------------------------|-------------------|------------------------|-----------------------|
| 1                     | 2.000                           | 1                      | 26,0                     | 18,0                          | 81                | 156                    | <b>48%</b>            |
| 1                     | 2.000                           | 2                      | 15,0                     | 18,0                          | 137               | 156                    | <b>13%</b>            |
| 2                     | 1.000                           | 3                      | 11,4                     | 18,0                          | 183               | 201                    | <b>9%</b>             |
| 3                     | 667                             | 4                      | 9,2                      | 18,0                          | 229               | 246                    | <b>7%</b>             |
| 4                     | 500                             | 5                      | 7,7                      | 18,0                          | 276               | 291                    | <b>6%</b>             |
| 5                     | 400                             | 6                      | 6,6                      | 18,0                          | 323               | 336                    | <b>4%</b>             |
| 6                     | 333                             | 7                      | 5,8                      | 18,0                          | 369               | 381                    | <b>4%</b>             |
| 7                     | 286                             | 8                      | 5,2                      | 18,0                          | 413               | 426                    | <b>4%</b>             |

# Only **3 MINUTES** needed to set up the work table!



*It takes just 3 minutes to pass from one batch to another and to prepare the work table positioning the front fences, the panel support bars and the centre transfer.*

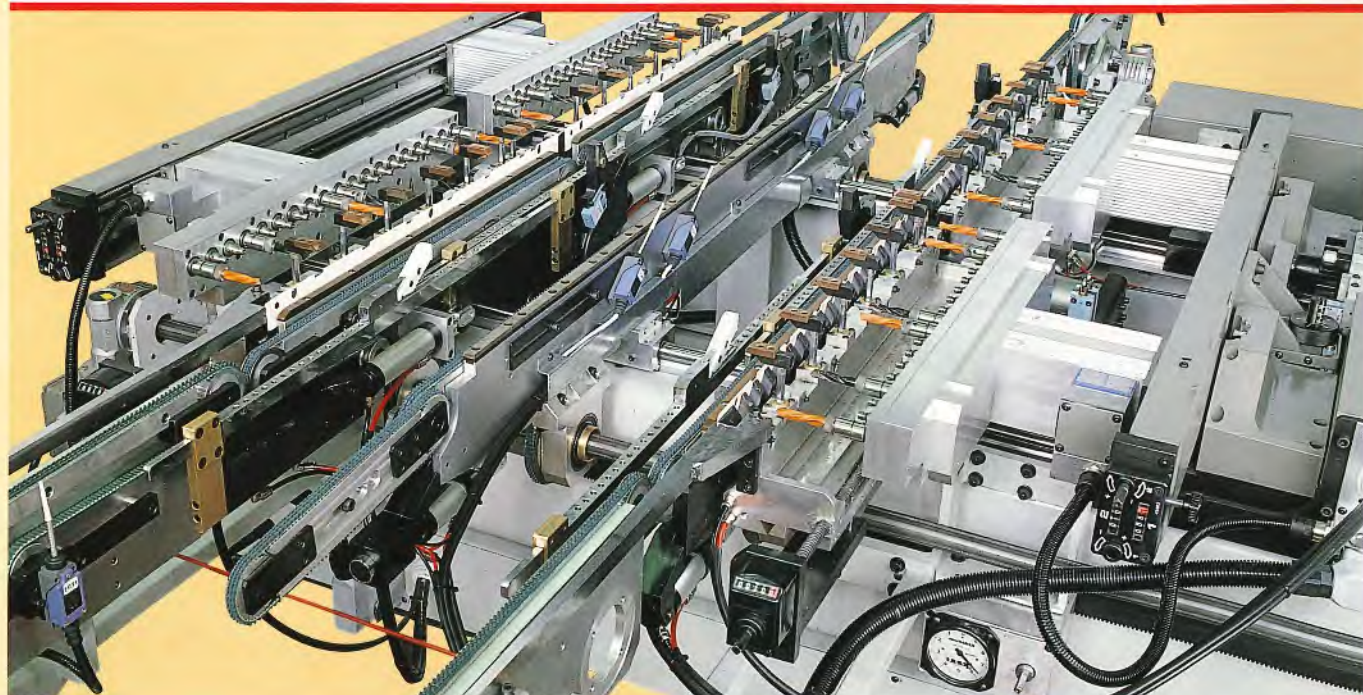
*The machining area, arranged for maximum practicality, quick setting up, ease and safety of use, comprises of:*



Close up of the suction bar for clamping long workpieces

- panel support bars of which 3 pull out fitted with a quick clamping system;
- automatic panel transfer controlled by inverter (optional) for adjusting the panel advance speed while the machine is running depending on the type of panels processed;
- fixed end stops fitted on prismatic guides for maximum rigidity and reliability even under the most severe working conditions;
- front fences adjustable manually by means of a simple and practical quick clamping device;
- lateral fences;
- pressers on the fixed head and 14 on the mobile head;
- pull out support bar with suction cups for clamping long panels (optional).

General view of the work table



# Just **1 MINUTE** to tool up the machining units!



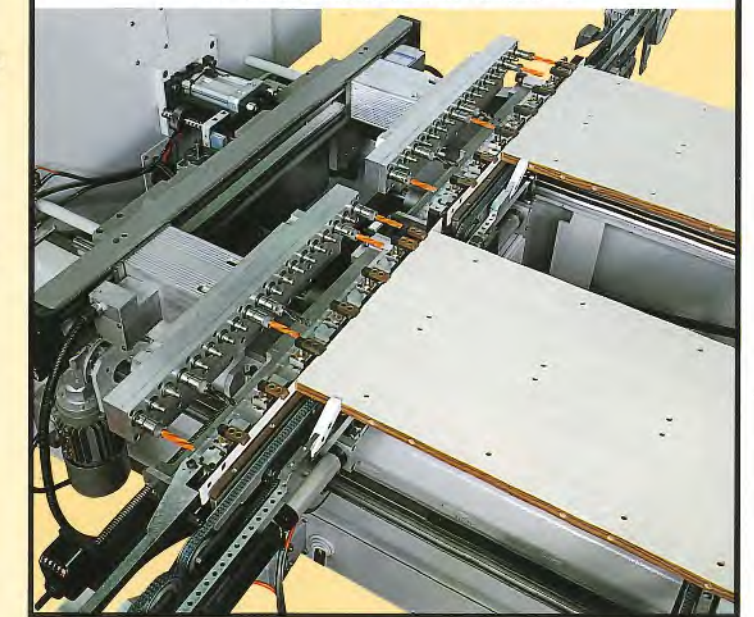
*Adjustments regarding boring height for panel thickness, movement of the horizontal units along the Y and Z axes, opening/closing the right head and selection of the vertical bits are done by numerical control.*

*It therefore takes just 1 minute to replace bits located in the 4 horizontal boring units and to adjust the machining depth by means of a simple control which is ergonomically situated.*

*The high production output of Author 660 is guaranteed by the possibility of machining two panels at once by means of:*

- **two powerful boring units**, each comprising of **29 independent spindles** (expandable to 37 - optional) for vertical boring;
- **two heads with double exit** (optional) for front and rear horizontal boring;
- **four units for horizontal right and left boring** (optional), each with 19 spindles, in which all the adjustments can be made from the numerical control or from controls located in ergonomic positions.

Horizontal boring heads with 19 spindles



*The two operating units can accommodate (up to a maximum of two units each) saw blades with automatic 0/90° rotation, to execute channels and cuts of all kinds, and 9 hp vertical routing units for milling on the upper panel surface.*

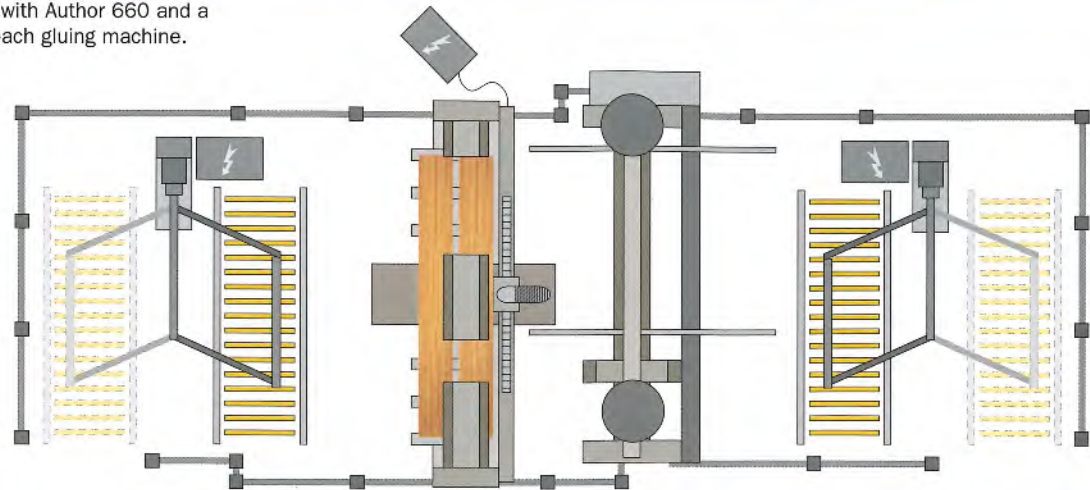
Vertical boring units with independent spindles



# ADVANCED SYSTEMS AND SERVICES

for the modern factory

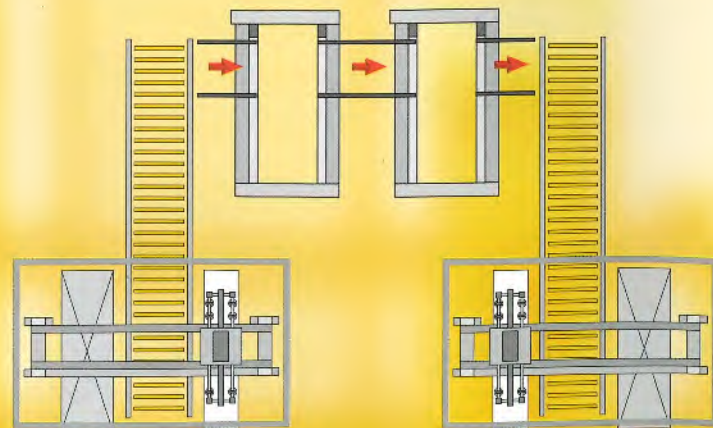
Work cell with Author 660 and a boring-broach gluing machine.



Today's customer wants the product the moment he orders it and this is true no matter how complex the work may be. Very often complex process require solutions involving co-ordination of more than one productive unit; **Author 660** welcomes this challenge and guarantees the **highest possible integration**. **Author 660** can in fact be used both in combination with an **automatic loading/unloading system** to create a flexible boring cell working with bar code and by putting **Author 660** next to traditional boring/doweling machines to complete the boring process on all six panel sides and to solve the need for dowel insertion.



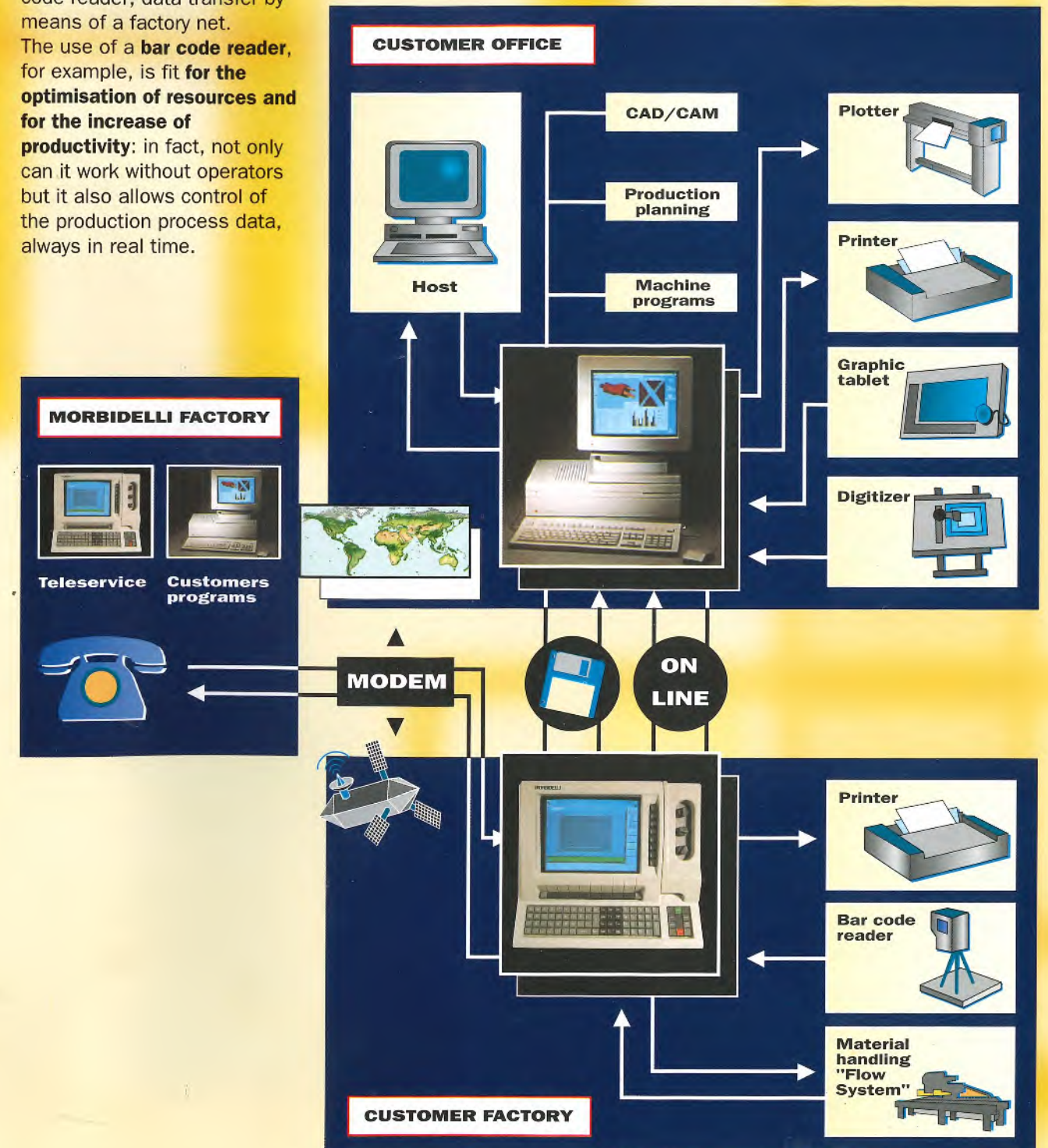
Author 660 fitted with an automatic loading/unloading system.



Two Author 660 machines in line

The **use of electronic and informative systems** allows to transform the integration of more machines in **production and management advantages**. A 660 gives the customer the possibility of keeping all the potentialities of technology: production controlled directly from the office, use of a bar code reader, data transfer by means of a factory net. The use of a **bar code reader**, for example, is fit for the **optimisation of resources and for the increase of productivity**: in fact, not only can it work without operators but it also allows control of the production process data, always in real time.

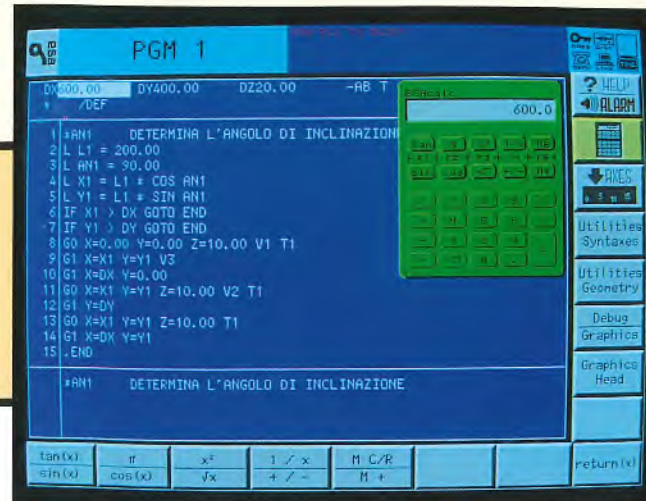
*A 660 is the right solution for those looking towards the future who do not wish to limit their development*



# PRACTICAL AND RAPID programming

The numerical control with its innovative conception is capable of carrying out all adjustments to the machining units.

There is no need to learn technical language, **all that needs to be entered is the geometrical data of the workpiece.**



These are the main features of the Morbidelli CNC:

- **bit multiprocessor** allowing high execution speed and calculating capacity
- high resolution colour monitor (VGA)
- **alphanumeric keyboard** with 18 function keys
- **MS-DOS compatible** floppy drive
- **512Kb RAM** user memory (expandable up to 1Mb)
- **on-line calculator**
- **syntactic and graphic help** pages to aid the operator in every phase
- **parametric programming** with 37 available variables
- **boring cycle optimiser**
- automatic **tool wear correction**
- **program and program list execution** from the keyboard **according to production batches**
- **bar code control**



## Morbidelli CAD-CAM

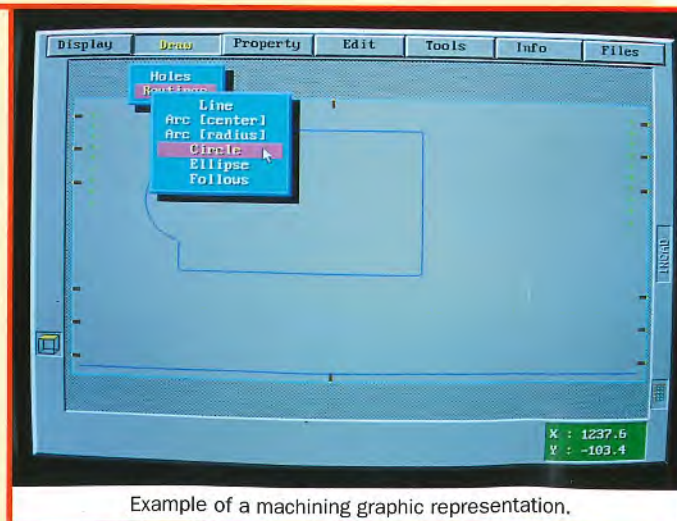
The Morbidelli CAD system was designed specifically for use in the furniture making sector and allows the work to be interactively guided and controlled.

The translation of drawings into programs is quick and carried out automatically. In addition, the Morbidelli Cam system makes sure that the requests are capable of being executed by the machine, suggesting remedies and providing graphic simulation of the machining operation.

All files produced with Morbidelli Cad are totally AUTOCAD compatible, so that they can be employed directly for other uses.

Drawings available in .DWG or .DXF files or in ASCII format, can be imported directly.

Thanks to the **simple programming**, high calculating power and the execution speed guaranteed by the processor, **machine down times are considerably reduced.**



# MORBIDELLI QUALITY: a winning choice confirmed by ISO 9001 certification



Morbidelli has always considered quality as the main priority in its choices

through the years: in fact, only higher quality products can completely satisfy the customer.

The adjustment, up to 1995, to the ISO 9001 normative (that decrees the necessary factory criteria to certify quality as regards projecting, development,

fabrication, selling, installation and assistance activities) has formalised what Morbidelli always did.

Each function is fitted by a control system, able to measure the performances and the results thanks to an effective co-operation among every single man.

## THE LATEST SAFETY systems



Machine equipped with safety devices conforming to EC 89/392 standards.



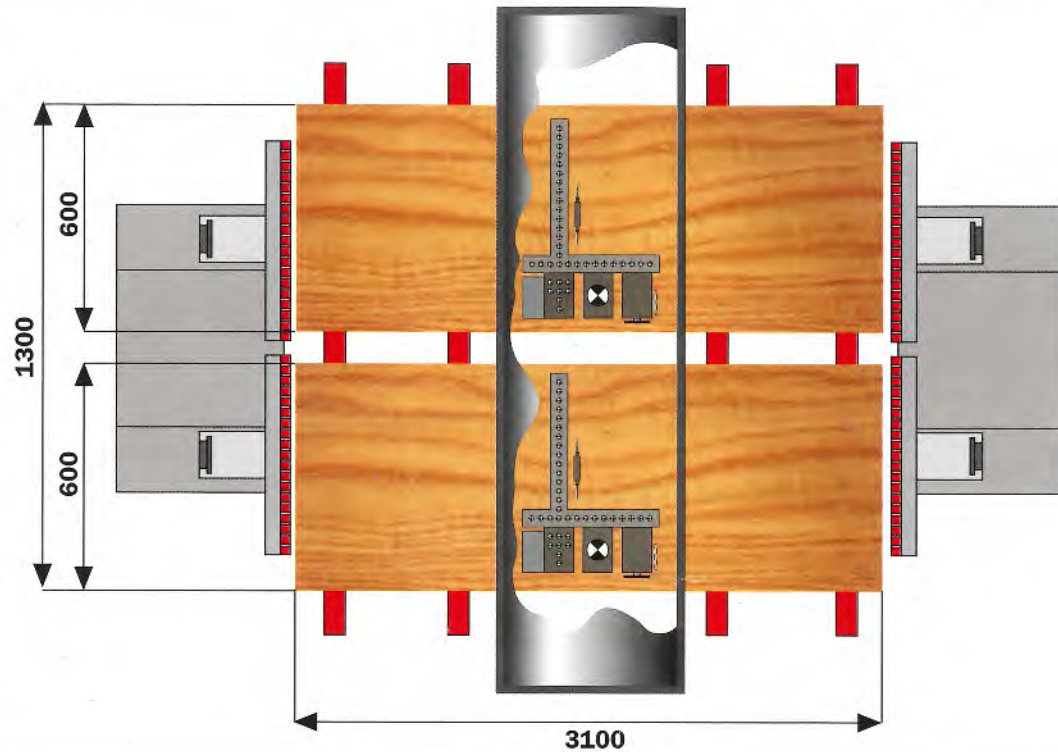
The machine is **protected on all 4 sides** to prevent access to it during machining and to safeguard the operator.

A **photoelectric safety system** at the front of the machine stops the machine immediately if the operator enters the machining area.

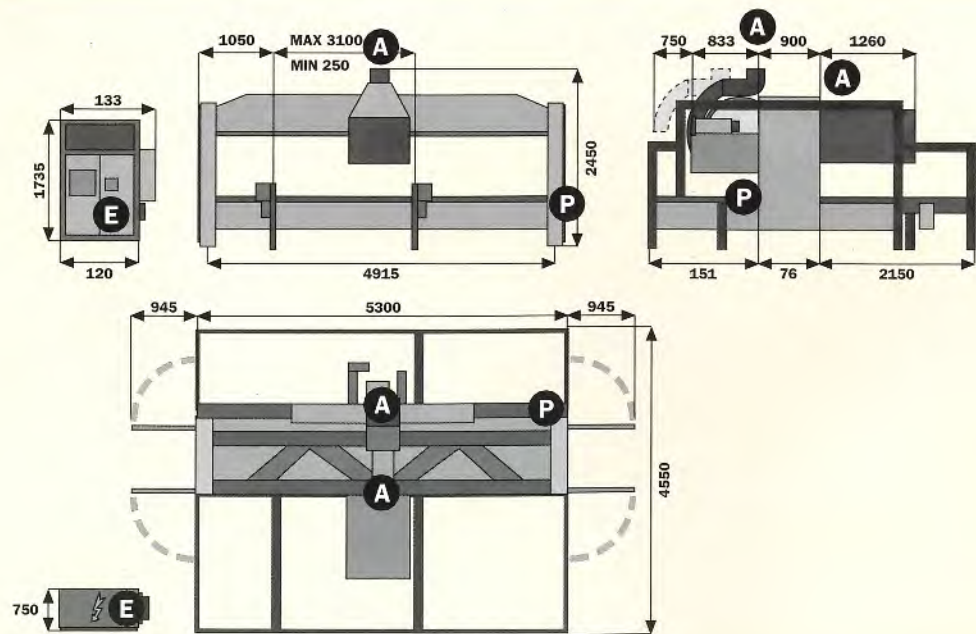
## Technical specifications

|                                    |              |                                     |          |
|------------------------------------|--------------|-------------------------------------|----------|
| Work area (mm)                     | 3100 x 1300  | MK2 Milling unit motor (hp)         | 9        |
| Boring length (mm)                 | 250/3100     | Disc cutting unit motor (hp)        | 2        |
| Boring width (mm) - (double panel) | 150/1300     | Installed power (KVA)               | 23,5     |
| Boring width (mm) - (single panel) | 150/600      | Three-phase power supply (V - Hz)   | 380 - 50 |
| Panel passage (mm)                 | 12/35*       | Compressed air consumption (NI/min) | 600      |
| Vectorial speed (m/min)            | 75           | Suction tube diameter (mm)          | 2 x 140  |
| Axis core x,y,z (mm)               | 3630/672/115 | Suction air consumption (m3/h)      | 2800     |
| Vertical boring motor (hp)         | 4            | Overall weight (kg)                 | 5900     |
| Horizontal boring motor (hp)       | 1,5          |                                     |          |

\* the maximum thickness which can be machined depends on the type of units fitted to the operating group and the on the length of the tools used.



## Overall dimensions



## MORBIDELLI:

a guarantee of quality, reliability and professionalism since 1959.

Morbidelli has always been synonymous with constant commitment to supply **unique products** of their kind throughout the world. Those who choose Morbidelli do so for the **reliability** and **safety** aspects of its machines, for the **quality of the materials** used, for the **technology** which is always the latest available, for the well structured network of **after-sales service centres** and for the **professional** approach of its employees.

Morbidelli means **success is guaranteed.**



Quality control area



Detailed view of an assembly line