

IEKĀRTAS SPECIFIKĀCIJA Nr.1

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customer

SIA "KDW Werke Baltics"

Vecozoli, Ropazu novads

LV-2133 ZAKUMUIZA

LATVIA LV

CODE

U.M.

QUANTITY

9080408

NR

1,00

WINLINE 1650

Serial:1000048862

Numerically controlled machining centres WINLINE

WINLINE is a modern and innovative machining centre dedicated to the production of wooden windows and doors components.

WINLINE is performing the entire working cycles including the load /unload and the positioning of the parts for each needed operation, under the direct control of the NC. This new level of integrated automation can afford the highest level of precision.

The machine is a real "one-man factory": controlled by a single operator, performs the complete process on each component without the need of second passes, from squared planed all round parts to finished parts ready for assembly and painting process.

It also gives the operator time to perform any further processing regarding the construction of a window: molding, sizing, assembly of the elements at the clamping machine, assembly of the hardware, assembly of the glass etc.

WINLINE can produce any kind of window component, with any type of jointing (negative profile and dowels, mechanical fixing, open tenons, closed tenons...). The machine can perform the highest achievable level of productivity in each single case.

Locking devices are engineered to ensure pieces stability and the highest level of precision, top constant quality surface in each operation and eliminates all kinds of marks and friction abrasions on finished parts, that in traditional systems may be caused by friction and sliding of the pieces on the handling device.

WINLINE operating groups are engineered for heavy duty operations with high reliability.

The machine can totally integrate with any cad/cam system allowing a direct transfer "from the project directly to the execution and production".

The base machine includes:

- ✓ Mobile gantry structure and double Y axis with independent carriages
- ✓ Pieces manipulator: loading, unloading and clamp exchange
- ✓ Automatic lubrication system
- ✓ Multizone system
- ✓ Automatic movement of panel supports
- ✓ Belt conveyor for chips and off-cuts removal

- ✓ Numerical control
- ✓ Personal computer desktop with 3D video card and LCD
- ✓ Electrical equipment conditioned air
- ✓ Documentation
- ✓ Maintenance equipment
- ✓ Remote keyboard
- ✓ Industry 4.0 - Integration with factory systems

Main specifications

The machining centres of WINLINE range have been especially designed for heavy-duty machining operations, in particular on high thickness elements.

As guarantee of the quality of its products and services, BIESSE has been certified ISO 9001 since 1995 and works in accordance with the UNI EN ISO 9001:2015 norms. Most of the technological components assembled on the machining centres is produced by companies of the Biesse Group or by world-wide known companies included in the Biesse "Register of Qualified Suppliers", which have strictly cooperated with Biesse through the years.

The running tests of each machining centre include the following stages:

- ✓ Intermediate control of operating units and pre-assembled components;
- ✓ Non-stop running test for the simulation of workings, for a minimum period of 10 hours;
- ✓ Control of X and Y axes precision and positioning repeatability by means of an interferometric laser (VDI/3441 norm);
- ✓ Gauging of the X and Y axes through a software function: the values detected during the laser tests are elaborated by the N.C. and transmitted to the axes drives in order to improve the positioning precision;
- ✓ Functional tests for routing and boring operations.

Structure

All the machine structural components have been designed with a CAD product for solid modelling which allows to determine the possible structural distortions caused by static and dynamic loads. The correct dimensions of the most critical components are elaborated by a software for finite elements structural calculation which, by simulating the work conditions, allows to determine the most stressed areas which need strengthening (Analysis FEM).

This definition of the machine structure grants maximum rigidity, high precision in time and refined finish to BIESSE machining centres, even during heavy-duty phases.

The machine frame is made of thick electrowelded steel sheets, properly strengthened in the most stressed areas.

The moveable uprights along X direction consist of 2 X synchronized carriages and a Y-beam of electrowelded steel structural work: thick steel sheets and strengthening transversal elements allow to reduce to the minimum the distortions produced by the use of the machining centre. The mobile uprights are stabilized before to be machined in order to release the tension accumulated during the welding phase.

The transversal carriage (Y axis) and the vertical carriage (Z axis) consist of a casting in aluminium light alloy, they are stabilized and then machined on the machine tool with a single positioning.

Movement of controlled axes

The mobile upright moves along the longitudinal axis (X axis) with two synchronized motors by pinion and rack, a solution which grants acceleration parameters and movement speeds greater than those obtained through a ball screw: working times are cut down, in particular for boring operations. BIESSE uses a tempered and ground racks with helical teeth and precision reducers with double pinion: the preloaded pinion eliminates backlashes and grants maximum positioning precision.

Both rack and pinions are in accuracy class nr. 6 (DIN 3962 norm).

The operating unit moves in the transversal direction (Y axis) by means of tempered and ground rack and pinion with helical teeth, for backlash compensation and positioning precision.

The operating unit moves in the vertical direction (Z axis), with a relatively limited travel, by means of ball screw and preloaded nut for backlash compensation and repeatability in positioning precision. The movement is

transmitted to the screw through a flexible joint.
The ball screws are in accuracy class ISO C7.

Motorization of controlled axes

BIESSE uses Brushless motors, controlled by digital drives.
DIGITAL interface between numerical control and axes drives.
The digital system Mechatrolink grants:

- ✓ Greater machining speed, since the tool route is partly controlled by the drive instead of the numerical control;
- ✓ High working precision, thanks to faster data processing;
- ✓ High reliability, thanks to a reduced wiring system which eliminates electrical interferences typical of analogic systems;
- ✓ Reduced machine stops and downtime, thanks to the error diagnostics with explanatory messages displayed directly on the N.C.

Guides of controlled axes

All axes move on tempered and rectified steel linear guides by preloaded recirculating balls bearings. Each balls bearing is equipped with 4 sliding gaskets of which 2 internal and 2 external, to protect the bearing from chips and dust intrusion.
The size and the great pitch between the guides grant high precision and perfect machining finishing performed by the operating units.

Pieces manipulator

This unit deals both with the loading/unloading of pieces, and with the handling of the panel on locking modules to perform the profile on both sides.
The positioning of the elements through a NC-controlled axis guarantees the maximum precision and the choice of the optimal locking surface in each occasion.
When moving the piece from one side of the clamp to the other, it is also possible to reposition it at a different Z, on a surface created with the profiling of the first side.
It is possible to go down to 60 mm below the base of the clamp.

Automatic lubrication system

For an easier maintenance, the machine is equipped with a centralized lubrication system with 3 greasing points (distributors). At each time interval set in the numerical control, a message automatically pops up on the screen, signalling the need for lubrication. The pump conveys automatically the lubricant to 3 distributors, which send the liquid to:

- ✓ Sliding blocks of the linear guides of the X, Y and Z axes
- ✓ Rack and pinions for X and Y axes transmission
- ✓ Ball screw for Z axis transmission

Multizone system and automatic movement of panel supports

Panel supports and sliding bases (in the case of EPS tables, optional) have independent locking and are moved automatically by the machine.
This level of technology allows the optimal clamping of any piece, according to its size and shape.

Belt conveyor for chips and off-cuts removal

Positioned in the center of the base it allows to remove chips and scraps from the machine.

Numerical control

PC-based control system BH660.
Thanks to the Biesse technology WRT (Windows Real Time), which increases the performances of Windows by making it work in real time, the machine is controlled directly by the PC, and any other hardware component becomes unnecessary.
Since the software that controls the machine runs directly on a personal computer and not on a dedicated hardware device, the system architecture is greatly simplified, grants greater performance and reliability.

Main system specifications:

- ✓ WRT machine control software;

- ✓ Customized operating system Windows for the real-time control of processes;
- ✓ Module for the real-time control of interpolated axes;
- ✓ Module for input/output signals control;
- ✓ Module for the real-time execution of the machine logic;
- ✓ Card for the Mechatrolink digital connection to the axes drives and for the connection to the input/output modules and to the other fieldbus devices;
- ✓ Keys dedicated to the activation of the machine functions.

Desktop personal PC

Main technical specifications:

- ✓ CPU Intel(R) Core I5 or superior
- ✓ 16 GB RAM memory
- ✓ 256 SSD GB hard disk or superior
- ✓ Dedicated graphic card

- ✓ **LCD display**
- ✓ Keyboard
- ✓ Mouse
- ✓ USB ports
- ✓ Ethernet card for network connection to an office PC

These technical specifications may be subject to updates in the interest of further development.

Since the personal computer controls the processes BIESSE does not allow the installation of additional non-authorized software, under penalty of losing the guarantee.

Industry 4.0 - Integration with factory systems

In trend with the evolution of industrial automation, the machine integrates some features able to improve the production quality of the plants.

In particular, it is possible to:

- ✓ Interconnect the machine to the IT systems of the factory, with remote loading of instructions and / or part programs by means of connection to the Ethernet network, with TCP-IP protocol, with IP address set by the user, for sending programs and job lists through appropriate interfacing libraries, supplied on customer request (PCQUO);
- ✓ Integrate the machine to the factory logistics system in an automated way. The machine publishes information about programs (unique ID, program status, distinguished name, time and start / end date, etc.), elementary machine states and tool changes. The information can be read by a MES thanks to the exchange protocol OPC-UA.

* The software development to acquire the data exposed by the Rover machine through the OPC UA Server, the relative aggregation and integration in the MES / management systems are charged to the customer

* For activation, please contact the authorized Biesse Service department

Teleservice

It allows an immediate and direct access to the machine numerical control via network. This way it is possible to check machine data, user programs, input/output signals and system variables, and to install software updates, therefore granting:

- ✓ Real-time answers
- ✓ Quick problem solving
- ✓ Strong reduction of machine downtime
- ✓ Real-time software updates

The Teleservice support is free of charge for the whole warranty period.

Electric system

The machine is equipped with some controlling devices (e.g. electrovalves, input/output modules, ...) which are assembled next to the items they control and are provided with the electronic circuits necessary for their interface with the field bus: this greatly simplifies the electric system, with obvious advantages as far as

diagnostics and maintenance.

Electric cabinet

The machine can be powered at 380/400/415 V - 50/60 Hz. The electric cabinet and the inner components comply with the CEI EN 60204-1 and CEI EN 60439-1 norms. The auxiliary transformer supplies the connection voltage for the personal computer, the air conditioner and the electrospindles cooling fans, avoiding the use of the middle neutral wire, not always available. The electronic equipment is powered by a stabilized 24 V DC power supplier.

Electric cabinet air conditioner

It allows:

the perfect working of all the electronic components included in the electric cabinet, even at very high temperatures, up to 40°C (104°F);
a dust-free environment, since there are no aeration fans.

Emergency recovery procedure

This function allows operators to restart an interrupted working due to a machine emergency stop. The program restarts exactly from where it was interrupted, by following a specific procedure. The working can be restarted when the emergency stop happened during:

- ✓ work cycle with the electrospindle;
- ✓ A boring cycle;
- ✓ A cutting cycle;
- ✓ An automatic tool change on a revolving or chain tool changer;
- ✓ Any movement controlled by ISO lines.

The introduction of this function avoids throwing away half-finished pieces, which sometimes are valuable materials (rare woods, etc.). It also allows operators to save time in case of long programs.

Technical data

- ✓ Dimensions of the pieces that can be loaded automatically:
 - length: 300 – 3.220 mm
 - thickness: 20 – 150 mm
 - width: 25 – 264 mm
 - ✓ Dimensions of the finished pieces that can be unloaded automatically:
 - length: 210* – 3.200 mm
 - thickness: 20 – 150 mm
 - width: 20 – 260 mm
- * referred to the base, which reclines on the unloading table, net of the shape left by the tool that works the panel top

Remote keyboard

Keyboard controlling the main functions available for work area set-up, operating unit tooling and tool changers tooling.

The remote keyboard has an ergonomic shape, an easy-to-read display and is equipped with a magnetic device for its positioning on the panel support handles or the control cabinet.

It includes an emergency push-button, 2 potentiometers and membrane keys to access the menus available on the display; 3 programmable keys allow the immediate access to the most used functions.

It allows the operator to:

- ✓ Reset the axes
- ✓ Move the axes in manual mode
- ✓ Adjust the axes speed by means of a potentiometer
- ✓ Control the vertical movement of the spindles of the boring unit for tooling purposes
- ✓ Control the vertical movement of the dust extraction hood during the work phases, for the visual control of all the operations being performed on the test panel
- ✓ Check the state of input and output signals
- ✓ Activate the belt for the removal of chips

- ✓ Perform tool change operations.

EC Safety devices

This solution complies with:

- ✓ Machine Directive 2006/42/EEC;
- ✓ Electromagnetic compatibility Directive 2014/30/UE;
- ✓ Low voltages Directive 2014/35/UE.

It includes:

- ✓ Cabin;
- ✓ Emergency button positioned on the NC;
- ✓ Emergency button positioned on the remote keyboard.

Some safety features depend on the options chosen in the composition of the machine.

The controls included in the remote-control panel allow operators to work with the machine in total safety (emergency stop, tool rotation/feed speed adjustment and lifting of the dust extraction hood, to see the tools working).

Documentation

- ✓ Installation instructions
- ✓ Wiring diagram
- ✓ USB memory stick containing:
 - Parts software: interactive spare parts catalog.
 - Instructions for using the machine and accessories
 - Pneumatic diagram.
- ✓ Machine installation form
- ✓ Declaration of conformity with 2006/42/EEC regulations

Maintenance equipment

- ✓ Device for locking and unlocking tools from tool-holders;
- ✓ Set of wrenches;
- ✓ Grease for the lubrication of ball bushings;
- ✓ Grease for the lubrication of boring head and aggregates.

Numerically controlled machining centre WINLINE 1650

- Only Finger tables

Working field in X of Finger tables

Configuration 1: 4.822 mm

Configuration 3: 4.722 mm

Configuration 4/5 *: 4.660 mm

- Finger tables + EPS tables

Working field in X of Finger tables

Configuration 1: 3.570 mm

Configuration 3: 3.250 mm

Configuration 4/5 *: 3.408 mm

EPS Working field

X= 3.094 mm *; Y=1.500 mm

For any technical details see the related layout; the values may vary depending on the configuration and the equipment selected.

* The working field in X is completely covered only by the electrospindle in Slot 1

7200320

NR

1,00

2 levels loading/unloading transfer for pieces up to 3.200 mm

Includes:

- ✓ one transfer for loading, for max. 13 pieces 80 mm width
- ✓ one transfer for unloading, for max. 13 pieces 80 mm width

* Maximum weight on the loading table: 240 Kg

PL1901919

NR

1,00

8 Finger panel supports with single clamp.

The code includes:

- ✓ 8 steel panel supports. The supports slide on hardened and ground linear guides by means of ball runners. The locking takes place on both the front and the back linear guide, by means of 4 pneumatic cylinders. The panel supports do not have sheaths inside the basement, leaving the scraps free to fall towards the conveyor belt.
- ✓ Each panel support is equipped with 1 finger clamp, specifically designed for locking linear pieces of windows and doors. It allows the locking of pieces with a thickness between 20 and 150 mm without operator intervention.
- ✓ For the correct locking of the piece it is required that there are always 2 clamps on the piece.

PL1901908

NR

1,00

Configuration 4 - double 4-axes

7212233

NR

1,00

30 kW (40,2 HP) Peak Power electrospindle, HSK F63 adaptor, with liquid cooling, equipped with 360° rotation interpolating unit (Torque C-Axis) and prearrangement for chip deflector.

High torque electrospindle, specific for hard machinings with low rotation speed.

Main specifications:

- ✓ 25 kW (33,5 Hp) from 10.000 to 14.000 rpm in S1 duty
- ✓ 30 kW (40,2 Hp) from 10.000 to 14.000 rpm in S6 duty
- ✓ Ceramic bearings
- ✓ Rh and Lh rotation
- ✓ Rotation speed from 1.000 to 18.000 rpm programmable by NC

360° rotation interpolating unit - Torque C-Axis

The unit with Direct Drive Technology (MK259) is installed on the electrospindle and is equipped with:

- ✓ 1 conical slot for aggregate reference and use
- ✓ 3 compressed air ducts for aggregate or specific used blower (authorized by Biesse) supplying

Allows continuous aggregates rotation on the X-Y plane and is capable to interpolate simultaneously with the main axes with a maximum rotation speed in interpolation of 60 rpm.

* Any use of aggregates not supplied with Biesse pricelist and without evaluation of usability required to Biesse, will compromise the recognition of the guarantee of electrospindles and devices connected

7212159

NR

1,00

Additional Z carriage for front operating units, controlled by an independent Z axis.

This carriage can fit the multifunctional units in addition to the electrospindle equipped on the base machine.

7212192

NR

1,00

Multifunction Unit FlexyWood PLUS.

This device includes:

2 exits tilting motor with A-axis:

- Maximum power: 5kW (6.8HP) at 12,000 rpm in S1 duty
- Maximum power: 6kW (8.2HP) at 12,000 rpm in S6 duty
- liquid cooling
- A-Torque system
- Maximum rotation speed: 18.000 rpm

Outlets technical specifications :

- Outlet 1: ERC32 collet coupling (supplied with a 15-16 mm collet) - RH rotation
- Max tool length
- Total length: 150 mm
- Out of the collet: 120 mm
- Max diameter: 20 mm
- Outlet 2: ERC25 collet coupling (supplied with a 15-16 mm collet) - LH rotation
- Max tool length
- Total length: 150 mm
- Out of the collet: 120 mm
- Max diameter: 16 mm

* Seeger ring mandatory

Aggregate with 3 vertical independent spindles for boring operations

- Max. tool rotation speed: 6.000 rpm
- Tool connection: shaft diam. 10 mm and locking by means of dowel
- Tool rotation direction: Lh - Rh - Lh
- Max. bit length:
- Total length: 82 mm
- out of the collet: 65 mm

7212233

NR

1,00

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- ☒ 30 kW (40,2 Hp) from 10.000 to 14.000 rpm in S6 duty
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7210083

NR

2,00

Iron gripper for the storage of a chip deflector on a standard electrospindle or 5-axes unit.

It can also store tool-holders, but not aggregates.

PL1901933

NR

1,00

Tool changer with 44 places at 180 mm centerdistance.

Installed on the X carriage it allows to have up to 44 tools (divided in 2 overlapping chains with 22 positions each) always available where required on the machine and to perform tool change operations in a very short time.

Main specifications:

- ✓ tool grippers centerdistance: 180 mm;
- ✓ tools which can be stored: 44;
- ✓ aggregates: see tool-changer layout;
- ✓ max. tool diameter: see tool-changer layout;
- ✓ max. tool length: see tool-changer layout;
- ✓ max. weight of tool or aggregate + tool: 10 kg;
- ✓ max. total weight: 140 kg.

* When combined with the Flexstore toolchanger, only the upper chain remains active

7250254

NR

1,00

HSK F63 Aggregate with 4 outlets, 2 of which for horizontal drilling and 2 for routing, located on each side of the aggregate.

Outlets technical specifications:

- ✓ 1 and 3 opposed sides outlets for routing: ERC 32 collet coupling (supplied with a 16-15mm collet; max tool shank diameter: 20mm) - one RH, one LH rotation
- ✓ 2 and 4 opposed sides outlets for drilling: ERC 25 collet coupling (supplied with a 10-9mm collet; max tool shank diameter: 16mm) - RH rotation
- ✓ Maximum tools rotation speed: 15.000 rpm

The working conditions of the aggregate must be verified on the machine's user manual.
Verify compatibility with the automatic toolchangers on the specific layout.

* Requires the strengthened gripper

7250295

NR

1,00

HSK F63 Aggregate for blade with maximum diameter 270 mm and flange of 60 mm

Outlet technical specifications:

- ☒ Tool maximum rotation speed: 8.000 rpm
- ☒ Tool coupling through flange
- ☒ Tool rotation direction: RH
- ☒ Diameter of the flange for blade coupling: 60 mm
- ☒ Maximum cutting depth with 270 mm sawblade: 100 mm
- ☒ Lockable blade body thickness: from 2.2mm to 6.3 mm

The working conditions of the aggregate must be verified on the machine's user manual.

The choice of the proper blade must be made depending on the material and the machining to be performed. Verify compatibility with the automatic toolchangers on the specific layout.

* Sawblade not included

* Requires the strengthened gripper

7001163

NR

1,00

270 mm sawblade.

The configurator requires the choice of the correct sawblade, once the aggregate has been chosen.

PL1903285

NR

2,00

RH Chip deflector with forced flow for 4 or 5-axes electrospindle.

For tools with clockwise rotation (Rh).

Inside the deflector, a forced flow of compressed air directs the chip directly towards the suction hood, increasing its effectiveness.

Max. tool diameter: 180 mm.

It requires:

- ☒ bSolid or BiesseWorks Advanced or a software capable of controlling the deflector path
- ☒ Prearrangement for chip deflectors with forced flow on operating unit
- ☒ Iron gripper for the storage of the deflector in the tool changers

* It requires at least one shield for Rh deflector

* It requires the C-axis on a 4-axes machine

* It requires the flange for the assembly of aggregates on a 5-axes unit

* It requires the prearrangement for chip deflectors with forced flow on an operating unit

7250292

NR

4,00

Shield L = 244 mm for Rh deflector with forced flow.

Shield length from the collet edge: 244 mm.

For standard electrospindle and for 5 axes unit.

It requires the Rh deflector.

7510179

NR

1,00

Uninterruptible Power Supply unit (UPS) for the machine PC.

In case of a power outage the unit allows to operate the PC for 7 to 10 minutes based on working conditions in order to save data.

7510161

NR

1,00

Reading of the thickness of the infeed panel to the loading transfer.

7510163

NR

1,00

bTouch - Touch screen monitor

bTouch, in synergy with the interface bSuite 3.0 (or later), optimized for touch use, guarantees to fully exploit the functions of BIESSE software.

This solution provides a simple and intuitive use of the software installed in the machine. The touch screen replaces the functions of the mouse and keyboard, guaranteeing direct interactivity between user and device.

In particular, it is possible to:

- ✓ Create any CAD program (also parametric) including geometry and machining;
- ✓ Zoom, move and rotate objects (piece, CNC, tools, etc.) present in the CAD/CAM area;
- ✓ Equip the magazines simply by dragging the tools in the slot assigned;
- ✓ Prepare the machine for the correct positioning of the workpiece (machine set-up) by shifting panel supports and sliding bases to the desired position;
- ✓ Send a work list, change the parameters and send it to the NC for further processing;
- ✓ Manage all the commands in soft-console.

Technical specifications of the touch screen:

- ✓ Display: 21.5" 16: 9;
- ✓ Maximum resolution: 1920 x 1080 (Full HD) to 60 Hz;

* Requires bSuite 3.0 or later

7510182

NR

1,00

Additional cost for replacement of the standard Personal Computer with a high performing one.

Main technical specifications:

- ✓ CPU Intel(R) Core I7 or equivalent
- ✓ 32 GB RAM memory
- ✓ 500 SSD GB hard disk or superior
- ✓ 500 SSD GB RAID1 hard disk or superior
- ✓ 21.5" LCD
- ✓ Dedicated graphics card
- ✓ Keyboard
- ✓ Mouse

- ✓ USB ports
- ✓ Ethernet card for network connection to an office PC

These technical specifications may be subject to updates.

Since the personal computer controls the machine processes BIESSE does not allow the installation of additional non-authorized software, under penalty of losing warranty.

7530392

NR

1,00

BSolid

3D CAD-CAM program to design, simulate and manage the machining processes of the Biesse machining centers and boring machines. The use of additional optional modules allows to expand and specialize the performance of the bSolid base module whether it is installed in the machine or in the office.

The software package running in Windows environment allows designing the final product, defining its machining, defining working table set-up, simulating the part machining on the 3D machine model and generating the machine needed programs.

CAD/CAM environment with the following functionalities:

CAD design and project:

- ✓ Commands for defining and editing parametric objects such as geometries, surfaces and texts.
- ✓ Commands for generating and modifying vertical, inclined and curved custom parametric faces.
- ✓ Non- parametric commands dedicated to the modification of geometries, surfaces and texts, such as: displacement, wheel, scale, symmetrical copy, trim, automatic fillet, union, etc.
- ✓ Manual dimensioning tools.
- ✓ Environment for inserting and modifying variables, using geometries, surfaces and all processes.
- ✓ Design visualization tools such as: zoom, view rotation, orthogonal view on customized faces.
- ✓ DXF (Technologic DXF), CIX, BPP, PNT, DAT, ICP file import. Importing files of large dimensions or containing many elements (e.g. points, lines, etc.) is not guaranteed.

CAD/CAM design and project:

- ✓ Fast and immediate 3D simulation of workpiece processing with visualization of material removal; useful for quickly and visually checking whether the programmed working sequence actually corresponds to the desired one until observing the machining results on the finished piece.
- ✓ Commands for routing, boring and cuts design on horizontal, vertical, inclined and curved faces with the capability to work on these faces in a 2D simplified way (therefore the 4 axis machining).
- ✓ Commands for 2D simple pockets design on standard faces and custom faces; the function automatically considers the characteristics of the geometry and the tool, with the possibility of choosing different types of path (eg: concentric, single direction, etc.).
- ✓ Independent management of multiple machines.
- ✓ Management of 5 axis machining only in positioning.
- ✓ Environment for creating and modifying of macros (also parametric).
- ✓ Custom tool design (routers, drill-bits, saw blades and their 3D shape). Graphic environment for simplified creation of 3D custom tools. The tool thus created, together with the 3D graphic environment with chip removal, allows to obtain immediate views of the finished piece. It allows to import drawings in dxf format provided by external suppliers or created with other CAD systems. It also allows to assign control points for simplified programming.
- ✓ Management of aggregates supplied on the price list.
- ✓ Creation of simplified personalized aggregates. The use of this category of objects does not provide for collision control.
- ✓ Management of the deflectors supplied on the price list.
- ✓ Possibility to search and clone tools, aggregates and deflectors.
- ✓ Definition of machining sequences.
- ✓ 3D graphic environment to simplify the tooling of tools, aggregates and deflectors on the various magazines on the machine, with the possibility of perceiving even the overall dimensions.

3D Graphic simulation

- ✓ 3D graphic environment to help you manage the working surface, with the possibility of adding and removing the various types of vacuum modules available for machine configuration; it is also possible to graphically configure the panel supports and sliding bases present. Possibility of using the semi-automatic positioning command, which allows you to provide, when feasible, a proposal to configure the entire working surface, which can then be refined manually.
- ✓ Possibility to simulate the movements generated by the numerical control without the need to start the machine, with the removal of the material removed from the tools, ensuring the collision check with the volume of the piece not machined, excluding programs that require the repositioning of the piece.
- ✓ Ability to graphically verify or from the worklist the main causes of collision between the elements of the machine as represented in the graphic simulation environment. The graphic representation includes tools, electrospindles, aggregates, panel supports, sliding bases, locking systems provided in the price list and the volume of the workpiece as shown. Excluded are controls of machine components handled manually if not equipped with automatic control systems or customized that are not represented consistently in the 3D graphic environment. The supporting structures, the external protections and the mechanical organs equipped with copying systems are not included from the machine control. Collision checking is more accurate if performed at 1x simulation speed or from the worklist by activating the appropriate function. It is advisable to check the technical documentation on the best modes to obtain more accurate simulations of the machine, equipment and tools. The simulation and automatic collision detection systems do not exclude the need to perform simulation in the machine.
- ✓ Easy programming for Multi-Piece machining. By activating this mode, in the graphic environment it is possible to display and modify the position of several pieces at the same time in the same working area. The pieces can easily be referred to the various origins or rotated according to the processing needs.
- ✓ bSolid allows to manage multiple Biesse machines with a single platform. A single software version installed in a computer allows to generate programs for different compatible Biesse machines with a simple selection of the same in the programming environment; for these uses the machines that must be managed by a single software version must have also installed a homogeneous version. The Biesse Service can be consulted to verify the possibility of making different Biesse machines homogeneous; this service could involve costs.

Calculation of processing time

- ✓ Graphic simulation allows a calculation of the program execution time on the machine. The calculation is representative of reality because the movements of the machine are simulated using Numeric Control of the same. Keeping the production machines in line with the data present with the systems present in the office, it is possible to obtain data necessary for calculating estimates, as well as analyzing the actual feasibility with the tools and the technical characteristics of the machine itself. The calculation of the cycle times cannot consider the manual interventions of the operator.

Work list

- ✓ Environment in which to collect and manage the list of programs to be executed with the possibility of importing it from external files in csv format, calculating the processing times of the entire program list, activating the preventive collision check and having the view of the workpiece for a fast recognition of the program. It allows to modify the data of the parametric programs in the same environment. Multiple lists can be created.

Use with machine optional items

- ✓ Barcode reader. The presence of a barcode reading tool, through the bSolid program, allows an easy use of the working process. bSolid allows to start programs directly by reading the data of individual programs or upload them to the work list.
- ✓ External loading and unloading systems. bSolid provides for the presence of automatic loading and unloading systems and their use through specific macros. The specific services are requested to be checked with the Biesse qualified staff.

* The use of the bSolid application can require optional modules to complete the specific performance of some Biesse working centers technologies; contact the qualified Biesse staff to get the correct information.

* Recommended minimum requirements of the PC for installation in office:

- ✓ Processor: PC Intel Core I5 or I7
- ✓ RAM: At least 8 GB RAM
- ✓ Windows 10 64-bit Operating System
- ✓ nVidia Graphic Card compatible with OpenGL 4.4 with at least 2 GB RAM
- ✓ Resolution 1440x900 with 16M colors
- ✓ SSD Hard Disk
- ✓ At least 20 GB of free space on the Hard Disk

* bSolid is available in the following languages: Bulgarian, Czech, Traditional Chinese, Croatian, Danish, Hebrew (supplied manuals in English), Estonian, Finnish, French, Japanese, English, Italian, Norwegian, Dutch, Polish, Portuguese, Romanian, Russian, Slovenian, Spanish, Swedish, German, Turkish, Hungarian

7530213

NR

1,00

Additional license for bSolid

It allows the installation and the use of bSolid on 1 additional PC station.

- * It includes 1 USB key for software activation
- * It requires the bSolid software

7000518

NR

1,00

Machine acceptance test for door and window frame machining operations, carried out at the BIESSE manufacturing plant in Pesaro.

Biesse will carry out some tests according to the demands of the customer. The tests required are carried out on the customer's machine, prior to delivery, to verify operation.

The test involves the creation of 1 (one) door / window project, with a maximum of 12 elements in all in door and frame, defined in the Acceptance Test Data Acquisition Form:

The machining operations to be carried out, the materials to be used and the methods used to run the programs must be set out in detail in the Acceptance Test Data Acquisition Form. Some of these machining operations may only be possible if the relevant optional equipment is present in the order for the machine itself.

BIESSE will only accept performance of the test subject to receipt of the Acceptance Test Data Acquisition Form, at the time the purchase order for the machine is placed; programming of the machine production data and execution of the Test shall only take place if the Form is present.

The information, programs, data and drawings of the tools and materials and descriptions of any equipment necessary to carry out the machine acceptance test must be received by BIESSE not later than 3 months before the planned date of the test, which will be notified to the customer with the Order Confirmation; failure to comply with this requirement will mean that the machine production date and Test date are rescheduled.

The materials, tools and any equipment necessary to carry out the machine acceptance test must be received by BIESSE not later than 1 month before the planned date of preparation of the test, which will be notified to the customer with the Order Confirmation; failure to comply with this requirement will result in rescheduling of the type of Test with demonstrations normally carried out in the Tech Center at Biesse Pesaro, if necessary using Biesse materials and tools in place of the ones not received from the customer.

The test will be performed in the presence of the customer, or its deputy.

The positive result of the test will represent the permission to the shipment of the machine, which is ratified by the signature of the Machine Acceptance Report (M-SQ/AQ-114).

Biesse will be in charge of all which concerns the preparation and performance of the acceptance test, including:

- ✓ Configuration of the tools in the machine
- ✓ Dimensional controls on the customer's tools, machine tooling, identification of the correct technological parameters
- ✓ Creation and fine tuning of the programs
- ✓ Checking proper operation of all the special devices that may be envisaged in the order confirmation
- ✓ The presence of the Biesse technician to carry out the test.

The customer will be responsible for:

- ✓ Sending the tools
- ✓ Sending the technical drawings for said tools
- ✓ Management of third-party partners other than Biesse (e.g.: Software Houses, etc.)
- ✓ Sending the technical drawings for the customer's product, in PDF format with full and complete positions and description of the expected machining operations and a version of the latter in files in one of the following formats: DXF / DWG / IGES / STL / STEP / DWG solid / Parasolid (x_t) / ACIS (.sat)
- ✓ Delivery of the material required for the preparation and execution of the test, in the quantities specified in the Acceptance Test Data Acquisition Form
- ✓ Shipping expenses for the delivery to BIESSE of the required material, tools and all the equipment, according to the instructions specified within the Forms M-SQ/AQ-115 (Sending of material from Extra-EU countries) and M-SQ/AQ-116 (Sending of material from EU countries)
- ✓ Any customs charges relating to tools and materials sent to BIESSE
- ✓ Travel expenses to and from Pesaro

Any remaining materials sent by the Customer Company to carry out the machine acceptance test, will not be returned to the Customer Company.

The test requires the customer to be present at BIESSE for 2 (two) days or a number of days proportionate to the number of Tests purchased.

The cost is inclusive of lunch and lodging for 2 people for the duration of the test.

* Requires the purchase of data preparation for a project

7000521

NR

1,00

Machining test of 1 window/door.

The project can have a maximum of 12 elements, between sash and frame.

The information, materials, tools and any special equipment required for the machine acceptance test will have to reach BIESSE within and no later than the date fixed by BIESSE and communicated to the Product Area Manager and the people in charge of the test in the subsidiary / dealer (approximately, 20 working days before the date fixed for the acceptance test).

Biesse will be in charge of all which concerns the preparation and performance of the acceptance test, including:

- ✓ Configuration of the tools on the machine
- ✓ Verification of the dimensions of the customer's tools, machine tooling operations, search for the correct technological parameters
- ✓ Preparation of the machine programs
- ✓ Verification of the correct functioning of all the special devices included in the order confirmation, if present
- ✓ Presence of the Biesse technician for the performance of the test.

The customer will be in charge of:

- ✓ Sending the tools (at least 20 working days before the date of the acceptance test and according to the date agreed with Biesse)
- ✓ Sending the technical drawings of the tools
- ✓ Managing their own partners, which are third parties to Biesse (e.g.: Software Houses, etc.)
- ✓ Sending the technical drawings of the products, prints or files in DXF format
- ✓ Sending the material necessary for the preparation and performance of the test, in the quantities agreed with Biesse
- ✓ Shipping expenses for the delivery to BIESSE of the required material, tools and all the equipment
- ✓ Possible expenses due to the customs clearance of the tools and material sent to BIESSE
- ✓ Travel expenses

Net price.

* Requires one window/door preparation of data code

7010948

NR

1,00

WinLine installation in Europe.

Inclusive of 5 days for machine installation and 10 days for machine use and software training.

* Machine acceptance not included

ASC19454

NR

8,00

Additional cost for second line of finger modules.

Max width of the pieces 160 mm.

* Total quantity depending on the number of finger planes present in the machine

* Check the limits of the solution on the layout of the special code

* BSolid "PAU" function is not enabled with this type of worktable

7550042

NR

1,00

SOPHIA - IoT Connection

SOPHIA is the IIoT platform (Industrial Internet of Things) which aims to generate greater value for the customer through the connection of the machine and the collection and analysis of processing data. A project that fits fully into the digital transformation movement that is characterizing the fourth industrial revolution.

SOPHIA detects, verifies, points out and resolves problems encountered by the user during the use of the machine, as well as plans, on the basis of the data provided, maintenance operations/technical interventions and spare parts supply. Specifically, it includes:

- ✓ Permanent connection of the machine to service centers.
- ✓ Team dedicated to the diagnostic monitoring of the single machine.
- ✓ Mobile App with continuous monitoring of the status and performance of the machine.