**ANNEX 4** OF TENDER DOCUMENTATION

TECHNICAL SPECIFICATIONS

SUBJECT OF PROCUREMENT: Procurement of a CNC processing center (type 2) and an automated warehouse

The bidder is obliged to offer each item as required in the column "Required technical characteristics". The offered subject of procurement is adequate and acceptable only if it meets all the required conditions and properties. The column "Required technical characteristics" prescribes the minimum technical characteristics and anything that is superior to the minimum will be accepted. The bidder must fill in the column "Offered technical characteristics" defining the technical characteristics of the offered goods. Bids that lack the exact characteristics of the offered goods may be rejected.

**GROUP 1: CNC process center for the production of doors (1 set)**

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| --- | --- | --- |
| **Item no.** | **Required technical characteristics** | **Offered technical characteristics** |
| 1 | **CNC process center for the production of doors**CNC processing center (1 set) should consist of:1. Drilling unit (1 piece)
2. 5-axis milling unit (1 piece)
3. Tool container (1 piece) and additional tool container (1 piece)
4. Worktable (1 piece)
5. Mobile console with software support (1 piece)
6. Accessories – Set for window profiles (1 set) and Vacuum pump (1 piece)

The CNC process center should enable:* Movement along the X axis using gears and a toothed rack at a minimum speed of 38 m/min
* Movement along the Y axis using gears and a toothed rack at a minimum speed of 38 m/min
* Movement along the Z axis using a threaded spindle with a ball nut at a minimum speed of 25 m/min
* Central lubrication of sliding tracks on all sides
* Automatic tool measurement
* Processing of dimensional elements:

⁻ X axis: minimum 4100 mm⁻ Y axis: minimum 3000 mm⁻ Z axis: minimum 650 mm**Additional features of the center for production of doors**Type: gantry machineMachine construction: welded elementsBelt for transporting waste from the machineAll moving parts should be on linear guidesWork surface dimensions:* Length: maximum 3900 mm
* Width: maximum 1900 mm
* Height: maximum 700 mm
 |  |
| 1.1 | **Drilling unit**Number of heads: minimum 19Number of vertical drills: minimum 13Number of horizontal drills: minimum 6Slot saw with a minimum diameter of 125 mmMotor power: minimum: 1.5 kw |  |
| 1.2 | **5-axis milling unit**Motor power: minimum 15 kwType of cooling: water coolingThe option of automatic cleaning of the tool holderThe unit should enable the acceptance of the HSK F63 tool |  |
| 1.3 | **Tool container and additional tool container****Tool container**Container type: circular tool containerNumber of positions on the container: minimum 22 positionsThe container should enable the storage of:* Tools with a minimum diameter of 230 mm
* Saw with a minimum diameter of 300 mm
* Tools with an individual weight of at least 6 kg

**Additional tool container**Number of positions: minimum 16 positionsThe additional container should enable the storage of tools with a minimum diameter of 150 mm |  |
| 1.4 | **Worktable**Minimum of 6 movable beamsMinimum of 4 lifters for heavy piecesMinimum of two working positionsVacuum tank inside the beamMagnetic valves for positioning the shoes and opening the vacuumBeam positioning laser |  |
| 1.5 | **Mobile console with software support****Mobile console**The movable console should consist of:* Control units
* Keyboard and mouse
* A maximum of 8 pieces of vacuum shoes on the beam

Control unit – minimum requirements (acceptable will be exact required or higher values)* Operating system: Windows or equivalent
* Working memory: 4 GB
* Storage memory: 500 GB
* Screen: LCD, 21 inches
* Other: 2 x Network card, 1 x CD ROM, 1 x RS 232 port, 6 x USB 2.0, 2 x USB 3.0, teleservice

**Program support**Program support should enable:* simple and fast programming for operators without programming experience
* optimization of the milling process
* optimization of the drilling program
* display of critical processing locations

The program should be open to different graphics programs on the marketdetermining the positions of the vacuum shoes and containing a graphic tool base.The program should enable interpolation of three axes in the 3D version. |  |
| 1.6 | **Accompanying equipment – ​​Set for window profiles and Vacuum pump****Set for window profiles**Minimum 6 holders for narrow piecesMinimum 6 holders for curved elements**Vacuum pump**Capacity: minimum 2 x 100 m3/hType of performance: dry performance (without oil)  |  |
| **Name of the manufacturer:** |  |
|  **Model name:** |  |

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**GROUP 2: Automated warehouse (1 set)**

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| **Item no.** | **Required technical characteristics** | **Offered technical characteristics** |
| 1  | **Automated warehouse**Automated warehouse (1 set) should consist of:1. Synchronous machine with accompanying equipment (1 set)
2. Vacuum manipulator (1 piece)

The automated warehouse should enable:* configuration of the ramp (acceleration, braking and quick stop)
* configuration of the speed configuration of the two-stage control (slow and fast)
* freewheel activation after standstill and the possibility of delay until the freewheel configuration is completed
* configuration of freewheel range
* speed control activation via the CANopen protocol
* configuration of the speed factor
* configuration of displacement and analog input signal of speed and torque
* activation of torque control via the CANopen protocol
* configuration of the torque factor
 |  |
| 1.1 | **Synchronous machine with accompanying equipment**Synchronous machine with accompanying equipment includes:* Direct drive with integrated servo controller
* Power supply unit with a minimum of 48 V and 24 V output and an input range of 100 to 240 V.
* Accompanying connector kit and configuration cable

Machine capacity: minimum 1,000 kgElectric motor voltage: minimum 48 VElectric motor power: minimum 270 WNominal speed of the electric motor: minimum 200 U/minNominal torque of the electric motor: minimum 10 NmThe machine should perform work tasks in the whole range of 0 °C to 40 °C external temperatures  |  |
| 1.2 | **Vacuum manipulator**The vacuum manipulator should be located on the main load-bearing steel structure with multi-position suspension dimensions:* width: maximum 1,000 mm
* depth: maximum 500 mm
* height: maximum 1,000 mm

The vacuum manipulator should enable:* cargo handling via four static vacuum pads with a minimum diameter of 365 mm
* 360° rotation of the handle, with the possibility of stopping every 45°
* handling material with minimum dimensions of 800 x 1.000 mm (width x length)
* handling of material with maximum dimensions: 2.500 x 2.500 mm (width x length)

Vacuum pump* Vacuum pump flow rate: minimum 8 m3/h
* Vacuum pump pressure: minimum -0.8 bar
* Vacuum pump voltage: minimum 400 V, 50 Hz
* Vacuum pump power: minimum 0.35 kW

Security features* vacuum tank
* control valve
* analog pressure gauge
* visual verification of the achieved vacuum by through an analog pressure gauge
* double control for load transfer
* safety sound insulation
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