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| Project | xx |
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BILL OF QUANTITIES – LASER PROTECTION DOORS

| POS. | DESCRIPTION | QUANTITY | UNIT | UNIT PRICE | TOTAL PRICE |
|------|-------------|----------|------|------------|-------------|
|------|-------------|----------|------|------------|-------------|

01.01 LASER PROTECTION DOORS

01.01.0010 HIGH-SPEED SPIRAL DOOR

Reference product: **EFAFLEX type “EFA-SST®-L LAS”**

Dimensions of manufacture: **0.000 x 0.000 mm**

Manufacture, delivery, and installation of:

A **High-Speed Spiral Door type “EFA-SST®-LAS”** in **laser-proof design**, equipped with an electromechanical high-performance door drive, intended as a **room-enclosing protective device against laser radiation**.

The door system essentially consists of:

- Self-supporting steel side frames
- All steel components galvanized as standard
- Spiral-guided door blade system

Force transmission is implemented on both sides:

For this purpose, a **synchronised drive shaft** is installed. For precise, smooth, and low-noise guidance of the hinge-belt system, **precision roller assemblies with ball bearings** must be used.

An adequately dimensioned **tension spring mechanism**, installed inside the side frames, ensures the **counterbalancing of the door blade** in accordance with **DIN EN 12604**, allowing **manual opening** of the door (e.g. during power failure).

The **door blade** consists of **double-walled aluminium laths**, fixed within hinge belts and guided vertically (upwards/downwards).

The overlapping lath joints prevent direct penetration of laser radiation.

The aluminium laths are finished in **anodized surface E6/EV1**.

The **SPIRAL HOUSING** is engineered so that the laths of the door blade run **completely contact-free**, ensuring **wear-free and low-noise operation**.

The **DOOR DRIVE** is a geared brake motor designed as a **high-frequency drive unit**.

Door positions are continuously monitored via **wear-free inductive proximity sensors**, with end positions determined electronically.

The **MICROPROCESSOR CONTROL UNIT**, including the frequency inverter, is mounted in a **separate control cabinet, protection class IP 65**.

Connection to 230 V, 50 Hz by customer.

The delivery includes the **EFA Safety Light Grille (EFA-TLG®)**, TÜV-certified and active precisely within the closing plane:

This integrated safety system, fully protected inside the side frames, generates an exceptionally dense infrared light grid up to a height of **2.5 m**.

Obstacles are detected without contact, immediately stopping the automatic closing movement.

During design, production, and installation of the door, the following standards and regulations are observed, in particular:

DIN EN 13241-1, DIN EN 60825-4, VDE 0837 Part 4

OPENING SPEED: approx. 1.0 m/s

MAX. DOOR BLADE SPEED: up to approx. 1.5 m/s (depending on door size)

CLOSING SPEED: approx. 0.5 m/s

Power connection on site: **230 V / 50–60 Hz**, fuse protection **16 A**
Including functional testing and commissioning for clear opening:

Width = mm × Height = mm

Offered product:

EFAFLEX type **“EFA-SST®-L LAS”**

(Bidder specification)

| | | | | | |
|-------------------|---|---------------------|---------------|-------|-------|
| | | 1,000 | pieces | ..... | ..... |
| 01.01.0010 | Spiral cover – lower and front section Sheet steel, galvanized, powder-coated or stainless steel (V2A) (Required when installed on the cold side) | 1,000 | pieces | ..... | ..... |
| 01.01.0020 | Upper spiral cover as dust protection Sheet steel, galvanized, powder-coated or stainless steel (V2A) (Not available when installed on the cold side) | 1,000 | pieces | ..... | ..... |
| 01.01.0030 | Powder coating Powder coating of all visible steel components according to RAL (except pearl and luminous colours) | 1,000 | pieces | ..... | ..... |
| 01.01.0040 | Stainless steel design All visible sheet metal components in stainless steel (V2A), including stainless-steel bearings for deflection and guide rollers. (Small parts inside the frame are not stainless steel) | 1,000 | pieces | ..... | ..... |
| 01.01.0050 | Push-button controls Various versions: • Surface-mounted push button (OPEN) • DT2, OPEN/CLOSE, surface-mounted • DT-EX, OPEN/STOP/CLOSE, surface-mounted | 1,000 | pieces | ..... | ..... |
| 01.01.0060 | Pull switch | 1,000 | pieces | ..... | ..... |
| 01.01.0070 | Safety limit switch (Cat. IV) Type Euchner CES-AZ-AES-01B Signal: “Door closed” | 1,000 | pieces | ..... | ..... |
| 01.01.0080 | Impact protection bollards: Type FLEXCORE 6, consisting of: Robust steel core, rotatable HDPE outer shell, and shock-absorbing elastic ring Height: 1,370 mm Diameter: 182 mm | 1,000 | pieces | ..... | ..... |
| 01.01 | LASER PROTECTION DOORS | Total: | | | |