

Nuclear & Shielding Bunker Doors

All made in Italy (Design, Development, Manufacturing and Certification)



Bunker Doors

Sòphia High Tech has deep know-how in the design and manufacturing of **Shielding and Bunker Doors**.

The Company supplies **bunker doors** filled with concrete and other shielding materials as paraffin, lead, polyethylene and cadmium. **Bunker doors** could be motorized and not motorized, it depends by the applications.



Anti-missile & Anti-burglary Doors



Anti-missile & Anti-burglary Doors - INSTALLATION

Motorized **Bunker doors** are composed of:

a Shielding Door made of a steel structure filled with shielding materials;

a Rail on which the Wheels slide during the opening and closing phases of the Door;

an Electromechanical Motion System;

an Electrical Panel with all devices required to perform each operation of the Door in a safety way.

The door can be custom made to move parallel or perpendicular through the wall. Moreover, **Sòphia** also designed special solutions with a rotary system, which allow the door rotating around an external axis. The Shape of the Door is designed ad hoc to maximize the shielding performances.

Our technical experts are able to design the most suitable and cost-effective solution, according to the Client's needs in terms of shielding and dimensions.



Different types of Bunker Doors

In order to ensure maximum safety to the operators, the design and manufacturing of the **bunker doors** is performed, in compliance with the following legislative/regulatory framework:



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Directive 2006/42/CE of the European Parliament (Machinery directive).

EN 13155: Cranes. Safety. Non-fixed load lifting attachments;

Directive 73/23/CEE Low Voltage;

Directive Electromagnetic Compatibility 89/392/CEE;

UNI EN 12445:2002; UNI EN 12453:2002.

Bunker doors are supplied with all the documentation and qualification required by these directives.

Sòphia customizes door solution, according to customer requirements.

Following a Solution customized for ELI-NP (Extreme Light Infrastructure - Nuclear Physics) Research Centre, in Măgurele (Bucharest - Romania).

The Door structure is made with by high resistance bars supported by a Bottom Sheet Metal. On the top there are several bars to contour the upper perimeter.

The Rail System is designed to support the weight of the door during its operation and avoid any deformation. The core of support systems is welded with the armor of the floor and completely cast with concrete in the building structure, in order to ensure the maximum performances.

The Handling System is made of a Kinematic Mechanism moved by an Electric Engine that enables movement of four Wheels that rotate on two fixed Rails.

The Electrical Engine is connected to a Mechanical Gearbox and the entire kinematic mechanism is connected to the Door. The Carter made in metal sheet covers the whole kinematic in order to preserve it during its lifetime.



Kinematics of Bunker Doors

The four Wheels have two different geometry:

Grooved Wheel

Smooth Wheel

The Grooved Wheel, has a circumferential groove which ensures precision handling and stability during



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opening/closing.

The Wheels, placed in the front side of the Door, are directly connected to the base sheet of the Door, to which is transmitted the movement by the rear driven Wheels.

On the top side of the Engine Carter there is a Safety Manual Hand-Wheel that is connected directly to the engine. The Hand Wheel allows the operator to open/close the Door in Emergency case or Black Out.

The Shaft of the mechanical Gearbox is connected to a Driving Sprocket, by a Conducted Sprocket and a metallic chain. The shaft has the possibility to rotate around its own axis of rotation thanks to two Bearings which are located in appropriate Housings.

The pneumatic system consists of a Compressor and a Gasket around the Door's profile. This system ensures the airtight inside the Bunker.

Mechanical System Features		
•	Relative humidity (non-condensing)	Max 85%
•	Max Dimensions	3.0 mt x 2.8 mt x 2.5 mt
•	Empty Mass	43500 [Kg]
Electrical System Features		
•	Power Supply Voltage	400 [V]
•	Power Supply Frequency	50 [Hz]
•	Power of Electrical Engine	1.1 [KW]
Pneumatic System Features		
•	Max Pressure	10 [bar]
•	Tank Capacity	5 [L]
•	Air Flow	180 [L/min]