IberSafe – Sanitary and Access Control Booth

INTRODUCTION

By introducing **IberSafe**, IBERGLOBAL contributes with an effective tool to general access control with an integrated sanitary solution to prevent and control the spread of viruses namely what caused the current pandemic, SARS-CoV-2.

The viruses resistence, its dissemination and the most probable evolutions of SARS are unfortunately a strong indicator that it will be long before we irradicate it. Therefore, there is a present and future need to find useful solutions to guarantee people's safety along with the economic sustainability of organizations and institutions.

IberSafe is a sanitary booth, consisting of an automated person's access control and disinfection. It was designed and developed based on our large and consolidated experience in the design and equipment's construction, the partnership with a technological company and our national and international market implementation.

PURPOSES

An automated sanitary booth that only allows people's access if they present a regular body temperature and they are using a mask. Afterwards it will proceed to person's and objects disinfection through a ultrasonic atomizer.

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MAIN FUNCTIONS

IberSafe has the following functions:

- People's identification through facial recognition or identification card;
- The temperature measurement is made without any physical contact, guaranteeing the people's safety and substantially reducing the risk of contagion;
- Access to the facilities is only allowed if two requirements are met: the person is properly identified by the control module and if the body temperature is normal.
- The sanitary system, through an ultrasonic atomizer, allows people and objects disinfection.

HOW DOES IT WORK

IberSafe allows:

- The possibility of identifying, through an interface with an access management system, organization employees or suppliers and visitors with access to the facilities, through facial recognition and / or identification card;
- The temperature measurement without physical contact;
- Check if people use protective masks;
- Hand disinfection, through an automatic disinfectant gel dispenser;
- Automatic door opening for access to the disinfection booth, provided that:
    - the person has been successfully identified;
    - the temperature is normal;
    - the protective mask is being used.
- After the person has entered, the door is closed and the disinfection system is automatically activated for a 10 seconds period;
- Ensures an output control by connecting an external ID card reader to the equipment.

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WHAT IS IT FOR

The **IberSafe** aims to provide all spaces and work, social or leisure facilities viruses prevention and control, namely:

Buildings/Facilities:

- Offices
- Factories
- Schools
- Universities and Hospitals
- Health Care Centres
- Rest homes
- Canteens
- Restaurants / Bars / Cafes/ Discos
- Shopping centres
- Theatres / Cinemas / Arenas / Stadiums
- Museums
- Airports
- Metro stations
- Railway stations
- Maritime ports
- Cruises

Outdoors restricted areas:

- Sports venues
- Beaches private leisure areas
- Concerts, Festivals
- Zoos
- …

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BENEFITS

IberSafe competitive advantages are:

- It is designed and built in Portugal, by a certified company;
- A construction with a high mechanical resistance;
- Guarantee of data security and privacy, without communication with a server owned by third parties and complying with the GDPR;
- Its modular design allows it to couple several units in places where there are periods of a large simultaneous influx of people;
- **IberSafe** interface software with access management systems currently available in organizations will allow integrating in the current entry control systems a sanitary solution.

CONSTRUCTION

1- General Dimensions: 1100 x 1400 x 2200 mm (Width x Depth x Height)

2- Materials: IberSafe disinfection booth will be built mainly using stainless steel, aluminium, tempered glass. All metallomechanical work will be carried out using the latest precision mechanics equipment, namely Laser Cutting, CNC Punching, Bending, MIG / MAG and TIG Welding, Electroplating and Automated Electrostatic Painting Line.

3 – General Construction: The mechanical design presented by the Disinfection Booth consists of a pedestal, four pillars, two side panels, two doors and a cover, all interconnected by a non-definitive mechanical fastening thus allowing its modular or integrates, as well as respond to the strong demands of hygiene with eventual use of intensive and frequent use of aggressive chemical cleaning products.

3.1- Pedestal: The pedestal will be built in stainless steel, and must support the weight of a user, allow the placement of four pillars and the respective fixation by stainless steel screws. The pedestal will also allow the introduction of four retractable casters for levelling, immobilizing and moving the cab, as well as all types of support for fixing and routing electrical cables. It will also allow the ultrasonic atomizer to be supported and immobilized.

3.2 – Pillars: Four pillars built in sheet steel of stainless steel and finished with electrostatic painting (Lacquer) are used to support the two side panels fixation and to support the roof. All four pillars are manufactured in tubular form by two or more elements so that their mechanical resistance is guaranteed and the good visual aspect of the booth is ensured. The left front pillar will be larger in order to accommodate the Access Control Module and the Automatic Gel Disinfectant Dispenser, as well as all types of support for routing, and fixation of electrical cables. Maintenance access to some of the equipment mounted on the left front pillar will be from inside the booth.

3.3 – Lateral Panels: The two side panels are different, the one on the right being constructed in tempered glass 8mm with polished / rounded edges and fixing frame in aluminium and subject to electrostatic painting. The left panel, made of aluminium and also painted, will be partially constituted with double wall and will also serve to fix the ultrasonic atomizer.

3.4 – Door: The front door for access to the Disinfection Booth will have automatic activation, and for the user safety, a radar is also incorporated. Built in 8mm tempered glass with polished / rounded edges and stainless-steel fixing hardware. The rear door is manually opened, built in tempered glass of 8 mm with polished / rounded edges and fixing hardware in stainless steel.

3.5 – Roof: Made of aluminium with electrostatic painting finish. Will be inserted at the base of the roof, a led light fixture.

3.6 – Floor: it will consist of anodized and moveable anti-slip aluminium plate to access the four retractable wheels (levelling, immobilization and displacement of the cabin).

4. – IberSafe sanitary control booth will integrate the following equipment:

- Access control module;
- Automatic gel disinfectant dispenser for hands disinfection;
- Automatic disinfection atomizer;
- Steering wheels for moving the booth.

5. – Optional Upgrades:

- Metal Detection;
- Identification cards reader

ACCESS CONTROL MODULE

The access control module consists of the following components:

DISPLAY

A display where relevant information is presented and used to communicate with the user and guide him during the use of the equipment, with the following characteristics:

- 7.0 ” (189.68 x 106.7 mm) IPS TFT;
- HDMI interface;
- Resolution 1024 x 600 pixels;
- Sunlight Readable;
- Full Viewing Angles;
- On-board LED Driver with PWM;
- High Brightness White LED Backlight (900 cd/m2);
- Wide Temperature (-20 to +70 Cº);
- RoHS.

CAMERA

A camera with depth sensor, for capturing images that feeds the algorithms of facial identification and mask detection, with the following characteristics:

- Image Sensor Technology: Global Shutter, 3µm × 3µm pixel size;
- Maximum Range: Approx. 10 meters;
- Depth Technology: Active IR Stereo;
- Minimum Depth Distance (Min-Z): 0.105 m;
- Depth Field of View (FOV): 86° × 57° (±3°);
- Depth Output Resolution: Up to 1280 × 720;
- Depth Frame Rate: Up to 90 fps;
- RGB Sensor Resolution: 1920 × 1080;
- RGB Frame Rate: 30 fps;
- RGB Sensor FOV (H × V × D): 69.4° × 42.5° × 77° (± 3°);
- Camera Module: Intel RealSense Module D430 + RGB Camera;

- Vision Processor Board: Intel RealSense Vision Processor D4;
- Dimensions: 90 x 25 × 25 mm (Length × Depth × Height).

TEMPERATURE SENSOR

A temperature sensor, with a reading on the pulse, to determine if the user's temperature is within the parameters considered normal or if it indicates the presence of an infection, with the following characteristics:

- Factory calibrated;
- External ambient and object temperature calculation;
- Medical measurement resolution 0.01°C;
- I2C compatible digital interface;
- Field of View of 50°;
- Default refresh rate 0.5s, configurable between 16ms and 2s;
- Integrated optical filter that cuts off the visible and near infra-red radiant flux to provide ambient light immunity;
- Optical filter wavelength pass band : 2 till 14µm.

COMPUTATIONAL UNIT

The computational unit is responsible for controlling the components described above and is where the software and algorithms are executed. It is also this unit that acts on the cabin door and the ultrasonic atomizer, through dry contacts, consisting of:

- **CPU -** ARM® Cortex®-A57MPCore(Quad-Core) Processor with NEON Technology | L1 Cache: 48KB L1 instruction cache (I-cache) per core; 32KB L1 data cache (D-cache) per core | L2 Unified Cache: 2MB | Maximum Operating Frequency: 1.43GHz.
- **Maxwell GPU -** 128-core GPU | End-to-end lossless compression | Tile Caching | OpenGL® 4.6 | OpenGL ES 3.2 | VulkanTM 1.1 | CUDA® | OpenGL ES Shader Performance (up to): 512 GFLOPS (FP16) | Maximum Operating Frequency: 921MHz.
- **Memory -** Dual Channel | System MMU | Memory Type: 4ch x 16-bit LPDDR4 | Maximum Memory Bus Frequency: 1600MHz | Peak Bandwidth: 25.6 GB/s | Memory Capacity: 4GB.

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- **Audio -** Industry standard High Definition Audio (HDA) controller provides a multichannel audio path to the HDMI interface.
- **Storage -** eMMC 5.1 Flash Storage | Bus Width: 8-bit | Maximum Bus Frequency: 200MHz (HS400) | Storage Capacity: 16GB.
- **Networking -** 10/100/1000 BASE-T Ethernet | Media Access Controller (MAC).
- **Imaging -** Dedicated RAW to YUV processing engines process up to 1400Mpix/s (up to 24MP sensor) | MIPI CSI 2.0 up to 1.5Gbps (per lane) | Support for x4 and x2 configurations (up to four active streams).
- **Display Controller -** Two independent display controllers support DSI, HDMI, DP, eDP: MIPI-DSI (1.5Gbps/lane): Single x2 lane | Maximum Resolution: 1920x960 at 60Hz (up to 24bpp) HDMI 2.0a/b (up to 6Gbps) | DP 1.2a (HBR2 5.4 Gbps) | eDP 1.4 (HBR2 5.4Gbps) | Maximum Resolution (DP/eDP/HDMI): 3840 x 2160 at 60Hz (up to 24bpp).
- **Peripheral Interfaces -** xHCI host controller with integrated PHY: 1 x USB 3.0, 3 x USB 2.0 | USB 3.0 device controller with integrated PHY | EHCI controller with embedded hub for USB 2.0 | 4-lane PCIe: one x1/2/4 controller | single SD/MMC controller (supporting SDIO 4.0, SD HOST 4.0) | 3 x UART | 2 x SPI | 4 x I2C | 2 x I2S: support I2S, RJM, LJM, PCM, TDM (multi-slot mode) | GPIOs.
- **Mechanical -** Module Size: 69.6 mm x 45 mm | PCB: 8L HDI | Connector: 260 pin SO-DIMM | ARM® Cortex®-A57MPCore(Quad-Core)ProcessorwithNEON Technology | L1 Cache: 48KB L1 instruction cache (I-cache) per core; 32KB L1 data cache (D-cache) per core | L2 Unified Cache: 2MB | Maximum Operating Frequency: 1.43GHz.
- **Operating Requirements -** Temperature Range (Tj): -25 – 97C* | Module Power: 5 – 10W | Power Input: 5.0V.

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PICTURES GALLERY

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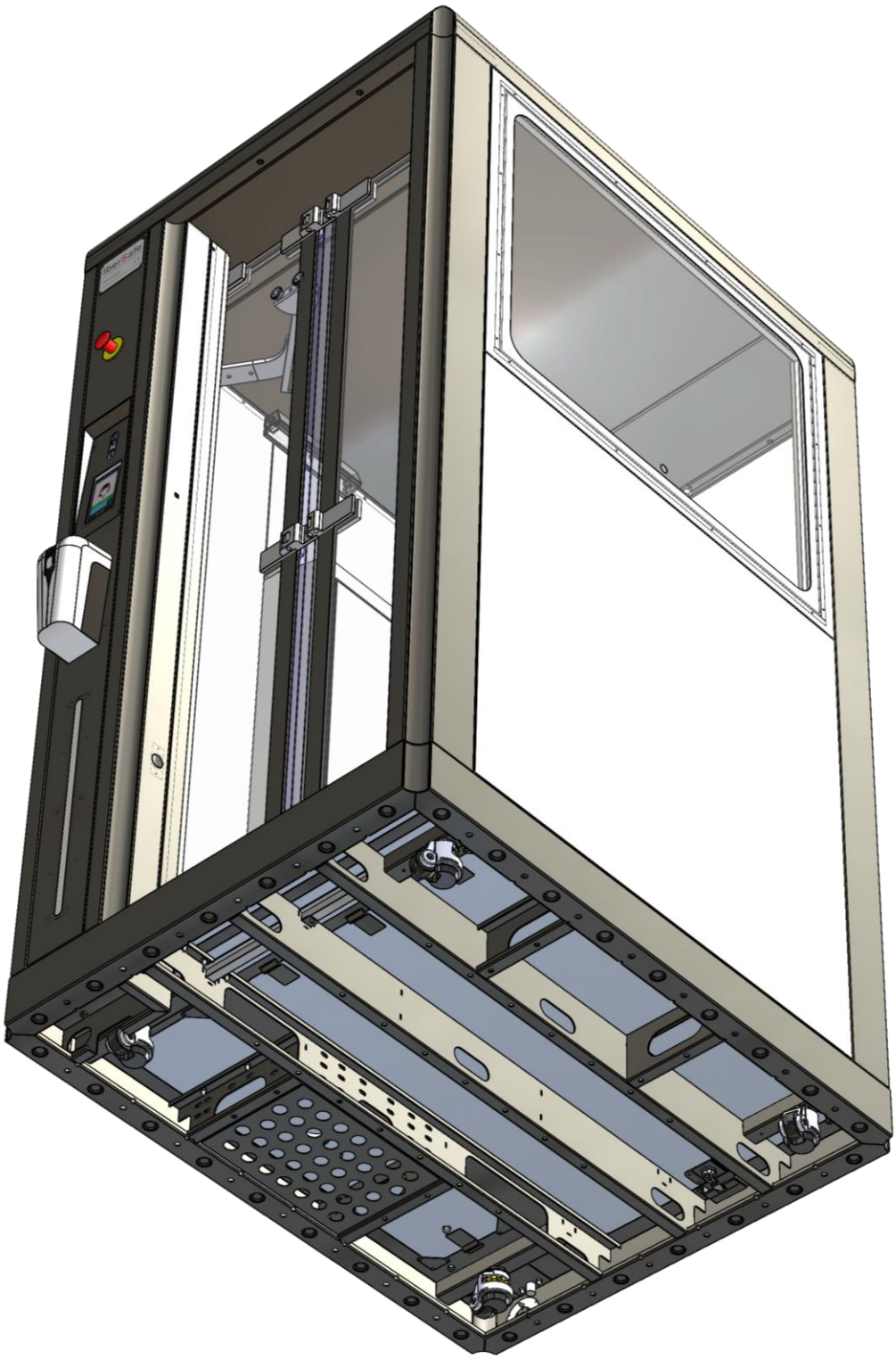

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