prefabbricati santerno

Azienda qualificata Enel

sano②

TECHNICAL DESCRIPTION

SELF-CLEANING TOILET

MOD. BIRO – UNISEX TOILET - S3 TECHNOLOGY

Sede legale e produzione:

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DESCRIPTION

Sano2 has designed, engineered and produced BIRO self-cleaning outdoor toilet.

"BIRO" model has a rectangular plan with a toilet room and a technical compartment. Technical area contains all the equipment, and it is accessible only from the outside through a vandal-proof door with double bit lock, which allows use even during maintenance operations.

Furthermore, thanks to the use of a computerized processor (PLC) that manages all the automations, the system is extremely simple to use and maintain, ensuring a high level of safety for users. All internal features have been designed and tested against any vandalism and have been perfected to ensure durability, efficiency and high performance throughout the life cycle of the toilet.

This self-cleaning toilet after each use guarantees the washing, disinfection and drying of the toilet as well as the high-pressure washing and disinfection of the floor.

o WASHING/DISINFECTION/DRYING SYSTEM OF THE WC BOWL:

- ✓ Wash of interior surfaces of wc-bowl, while in use, with micro-flush coating;
- ✓ Automatic flush of the bowl after use;
- ✓ Outside of wc-bowl by static vandal-proof device EASYTECH® for washing/drying the seating surface;
- ✓ Wash and disinfection of the walls around wc-bowl within an height of 0,80 cm;

o WASHING/DISINFECTION OF FLOOR SURFACE

- ✓ Cleaning and disinfection of floor with high pressure nozzles that spray water and disinfectant; the wastes are collected into a special hidden tank that is not visible to the users

o CUSTOMIZABLE ACCESS SYSTEM:

- ✓ Free entry or admission fee with coin machine/cashless payment device
- ✓ CE certified sliding door or swinging door on request
- ✓ Detection of user presence throught one radar sensors

o SAFETY FOR THE USER:

- ✓ All materials are fireproof class 0, there are no materials with different fire class

o SAFETY FOR THE ENVIROMENT:

- ✓ Anti-vandal drainage of rainwater, there are no "external" rain pipes
- ✓ The continuous surfaces in porcelain stoneware with paste color determine the high durability and consistency of the color itself. THERE ARE NO MATERIALS CONTAINING formaldehyde

STRUCTURE

Single block box-like structure fitted with vibrated reinforced concrete panels having a 7 cm deep and concrete cover flat slab having a minimum width of 5 cm and a reservoir to channel rain water. The slab is waterproof through a polymer-modified two-component thixotropic flexible waterproofing coating with CORE CURING TECHNOLOGY. Rain water flow with collection in a single point. Conductor pipe is connected to the unit discharge system. It's located inside the technical area;

Rain water flow and collection in a single collecting inlet well. The conductor pipe, connected to the unit discharge system, is located inside the technical room;

Skylight dome 50 x 50 cm, made of polycarbonate (PMMA), flameproof and shatterproof fitted with a baffle to allow the forced change air, ensures the day lighting inside the toilet. Its shape and sizes allow a correct natural lighting combination and attenuates the user's closeness sensation;

Exterior stainless-steel grids fitted with net insect proof protection.

PRECAST CONCRETE STRUCTURE

TOILET FEATURES

Entrance aluminium sliding door, colour grey RAL 9006. On request it is possible to have a stainless steel cladding AISI 304 or 316 L. On request it is possible to install an aluminium swinging door or stainless steel swinging door with “scotch brite” finishing.

Sliding door is made with an internal structure in polypropylene honeycomb sandwich with high resistance to deformation and free from any corrosion phenomenon

The movement of the door is equipped with an anti-crushing safety system during the movement of the door (impact force limitation). The mechanical movement mechanism (DITEC) is equipped with all the certifications in force in Europe for the Safety of Automated Pedestrian Doors (2014/30 / UE - EMCD - Electromagnetic Compatibility Directive • 2006/42 / EC - Machinery Directive • EU harmonized standards: EN 16005: 2012; DIN 18650-1: 2010; EN ISO 13849-1: 2015; EN 60335-1: 2012 / A11: 2014; EN 60335-2-103: 2015 (certified by TÜV SÜD); EN 61000-6 -3: 2007 + A1: 2011).

DITEC electrical movement is managed through a certified electronic system complete with buffer batteries that guarantee door operation even in the event of a power failure in the network. Handling is tested for 1,000,000 consecutive uses.

The electrical handling electronically managed by a system certified according to UNI EN standards offers the highest level of safety currently available for such equipment.

The opening of the door is activated, from inside the toilets, by contact less sensor (COVID 19 protection) with infrared technology: the switch is activated by placing the hand about 5 cm from its surface.

In order to ensure extreme ease of use of the toilet, the switch itself can still operate in the traditional way, with direct pressure on its surface.

In the event of an electrical blackout, the door still remains fully functional thanks to the presence of buffer batteries that ensure the lighting of the button and the movement of the toilet door to allow the user to exit before putting the toilet out of service.

Door opens automatically even in the event of an emergency (illness or other problems) by pressing the alarm button: in this case the acoustic and luminous emergency signals are simultaneously activated, the alarm status is signaled on the external display and a signal is sent. e-mail to the person in charge of security via the remote control system.

Swinging doors access to the technical compartment, made of aluminum or, optionally, with stainless steel AISI 304 or 316 L The door is equipped with vandal-proof hinges and safety lock with double-bitted key.

Door is accessible only to the maintenance technician and authorized person. Maintenance activities can also be done with the user inside the toilet, without interrupting the service.

External finish made with two coats of quartz paint, after passing an insulating primer layer.

In order to improve the visibility of the toilet for all users, even those with low vision or simply with visual difficulties due to old age, the signs and pictograms can be backlit with low-consumption LED lamps.

The pictograms are positioned in such a way as to be easily visible and are illuminated in GREEN if the toilet is free and in RED if the toilet is not accessible (occupied or during the washing process).

LASER CUT PICTOGRAM BACKLIGHTED WITH RED LED LIGHT

External entrance panel equipped with two led lights: green for toilet available, red for toilet not available.

Panel can be equipped with an electronic multi-coin coin mechanism and on request it is possible to install a contact-less credit card reader with a “Nayax” system for crediting the amount to a current account.

The plate is completely vandal-proof and anti-burglary, accessible only from inside the technical compartment. The coin is collected inside a stainless-steel box closed by an anti-burglary security system. The panel is equipped with a lock for "maintenance" key for manual opening of the toilet door.

ENTRY PANEL EQUIPPED WITH COIN MACHINE

INTERNAL FEATURES

All interiors have been designed to ensure maximum comfort of use and taking into account the automatic cleaning and disinfection needs of the toilet. The internal space of the user compartment is bright and welcoming, all accessories have been designed without sharp edges or joints where dirt can accumulate. The overall effect is of a space that communicates hygiene, cleanliness and safety

INTERIOR OF BIRO (UNISEX TOILET)

Internal walls of the user compartment are clad in large size 90 x 90 cm gres tiles, fire-resistant class 0. The cladding is seamless and has a uniform anti-graffiti surface, fire resistant, class 0 and extremely resistant. On request it is possible to have other types of coating

Groovebeton® floor is made of a single slab of concrete with a continuous finish in two-component resin with a special protective treatment, characterized by a non-slip, completely vandal-proof, anti-cut surface. The floor does not require periodic maintenance and is completely free of joints.

Alternatively, it is possible to install a **"Grovealu®" floor made of ribbed aluminum slats** with a special 70 micron anodizing treatment and with an increased thickness, characterized by a non-slip, completely anti-vandal, anti-cut surface, with an underlying reservoir for collecting the washing liquids.

Floor does not require any periodic maintenance and is joint-free.

Unlike solutions with rubber coating, which can be cut or damaged, or in tiles, which have joints in which dirt can accumulate, can break or stain, the striped aluminium floor is completely free from wear, mold, bacteria or accumulation of residues of various kinds.

Ceiling is painted with white anti-mold paint, after applying a suitable layer of fixative for concrete.

EQUIPMENT

Wall hung ceramic wc-bowl, glossy white and compliant with the en 997 standard. As required by current legislation, the toilet is installed with axis 40 cm from the side wall. On request it is possible to install a no-touch control for “extra-flush”.

WALL-HUNG WC BOWL

AUTOMATIC TOILET PAPER DISTRIBUTOR

BUILT-IN WASTE BIN

ALARM LED BUTTON

Built-in stainless-steel washbasin, made of AISI 304 steel (or optionally 316L).

Automatic no touch dispensers of water, soap and hot air for drying hands, with a red light pointer that easily indicates where to place your hands to activate the sensor. The supply of water, soap and hot air is fully programmable to avoid waste.

Automatic LED internal lighting, vandal-proof . The lighting turns on automatically when the door is opened and turns off when the user exits to avoid unnecessary waste of energy.

Shatterproof mirror in AISI 304 stainless steel, with type 7 glossy mirror finish, coat hangers

“No Touch” automatic toilet paper dispenser, installed close to the wc-bowl

Waste bin with door, in AISI 304 stainless-steel, fireproof, built into the sink wall, capacity 10 liters

LED emergency button, 36 x 36 mm. which unlocks the door (even in the absence of electricity) and activates the optical and acoustic emergency signals

PLANTS

o TOILET WASHING AND DRYING SYSTEM

The plant consists of:

- ✓ Stainless steel washing/drying device "EASYTECH®" for washing/sanitizing/drying of the seating surface.
- ✓ Automatic device for washing the floor, by means of nozzles that deliver atomized water at high pressure. The nozzles are of the flat jet axial delivery type, with a jet angle of 45 °.

The system is designed so that the power supply of the centrifugal pump is ensured by an anti-condensation polyethylene storage tank, installed in the technical compartment, with a capacity of 65 liters. The system is able to work without difficulty and maintaining maximum efficiency even with very low (or even temporarily zero) pressure of the power supply network; it therefore does not require autoclaves or external pressurization systems.

This solution guarantees multiple advantages including:

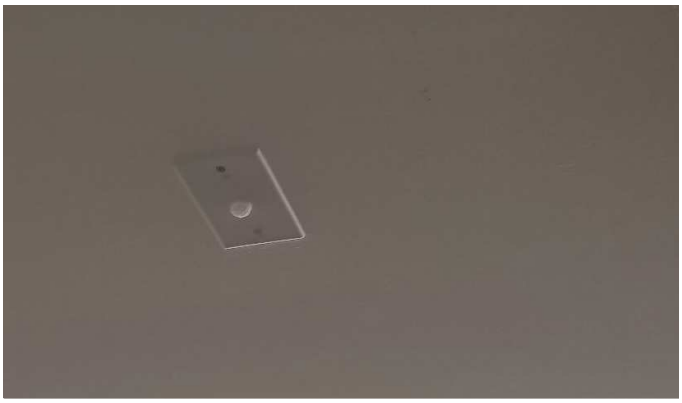
1) Physical disconnection between the public drinking water supply network and the toilet washing networks, eliminating any risk of contamination due to backflow of water;
2) The guarantee of the stability of the pump performance, regardless of the pressure and flow conditions present in the aqueduct network. Stability is an essential condition to ensure washing efficiency and cannot be obtained with a direct connection of the pump to the public network;
3) The possibility of ensuring both the regular operation of the bathroom and the effectiveness of the washing and disinfection cycle even with a very low and / or very variable flow rate or pressure on the power supply network;
4) The guarantee of correct pump operation in any condition of use, eliminating the risk of cavitation or "dry" operation, which lead to rapid deterioration of the pump itself.

o DETECTION OF USER PRESENCE:

The detection of the presence of a user inside the toilet is done by one infrared sensor, installed in to the ceiling. This sensor complied with the EN 16005 standard; presence detection is monitored in accordance with European legislation.

The detection system allows the processor that manages the toilet operation to know if the user compartment is occupied after the door has opened and closed. During the normal user cycle, the presence

detection allows the processor to activate the "busy" mode which is maintained until the exit (or alarm) button is pressed or when the useful time of 15 minutes has elapsed. After the exit (or alarm) button is



INFRARED SENSOR FOR USER PRESENCE DETECTION

pressed, the presence detection is used by the processor to check, once the door is closed, that there is no user in the toilet, before starting the cleaning cycle. If the alarm button is pressed, the presence detection keeps the toilet in an "alarm" state until the user leaves the toilet.

o WATER PLANT:

The water system of the S3 toilet is made with high-strength polypropylene pipes, with threaded joints, suitable for potable use. The material in question is totally free from corrosion problems, particularly present in marine environments. Being a plastic material, polypropylene offers a much higher thermal insulation than that characteristic of metal pipes; this property greatly limits - and often completely cancels - the phenomenon of condensation that occurs on the outside of the pipes crossed by cold water in environments with a temperature higher than that of the water (typically in technical rooms). This solution allows to have a humidity rate, in the technical room, lower than that obtainable with the passage of metal pipes, unless the latter are completely covered with insulating material. The lower humidity is to the advantage of the integrity and duration of the electrical and electronic equipment present in the same room.

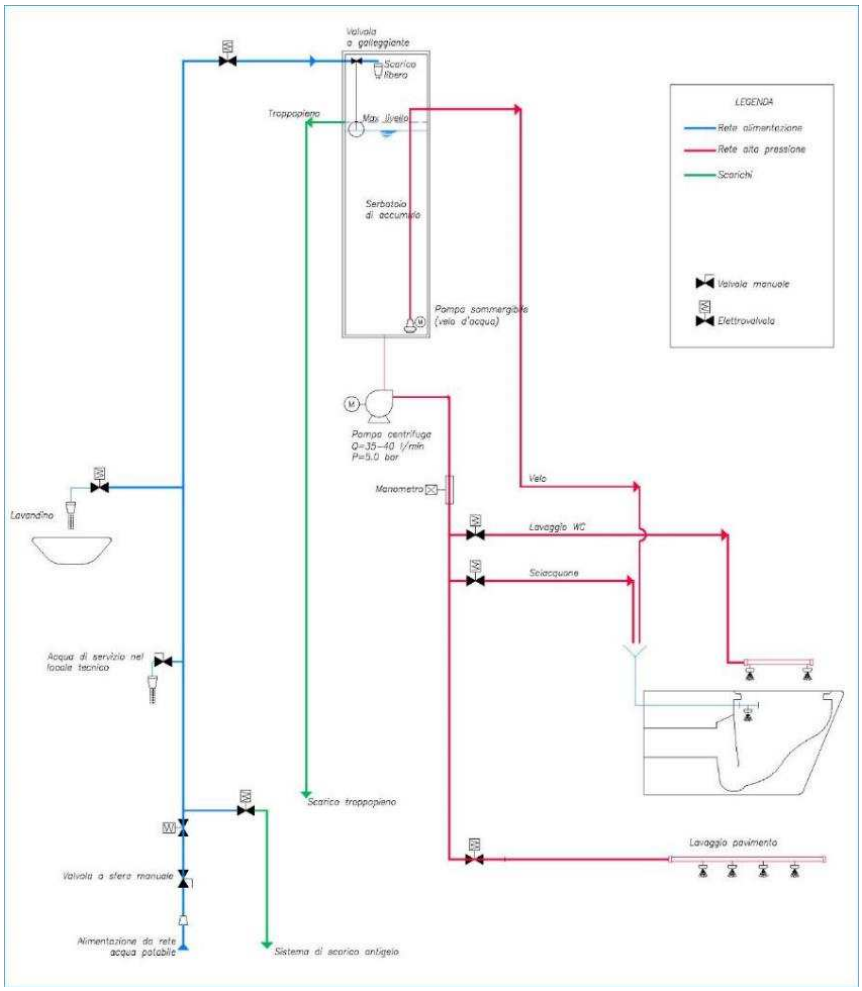
The system is also characterized by the presence of a large capacity storage tank to which the centrifugal pump is connected to pressurize the washing circuits. The tank in question - also in plastic material to eliminate corrosion and surface condensation problems and to contain the overall weight of the equipment - allows, as previously mentioned, to guarantee the constant performance of the pump, regardless of the conditions. pressure and flow rate present in the aqueduct network; this condition becomes essential to always ensure washing efficiency and cannot in any way be obtained with a direct connection of the pump to the public network.

The tank is equipped with a water level detector which, in the total absence of power, places the toilet out of service while still ensuring a complete washing cycle before inhibiting the access of subsequent users.

The high-pressure circuit is pressurized by a 0.75 kW stainless steel horizontal axis multi-impeller centrifugal pump that feeds the toilet and all high-pressure washes (toilet, toilet wall, sink and floor).

All the circuits are regulated by solenoid valves and valves with brass body, stainless steel pilot and NBR seals, of primary brand.

The disinfectant with which the washing water is added is contained in a plastic tank with a capacity of 5 litres, equipped with a level sensor capable of signalling the need to top up. Inside the tank there is a 24V immersion dosing pump which is activated by the PLC during the various washing phases. The system is able to accurately dose the quantity of disinfectant introduced.



WATER DIAGRAM OF THE TOILET

o POWER PLANT:

The electrical system that equips the toilet consists of the following main elements:

- ✓ Single-phase 230-240 V power supply with maximum absorbed power 3 kw
- ✓ General electrical protection panel, equipped with differential magnetothermic switch, life saving idn 0.03
- ✓ Electric control panel in fiberglass with IP 65 protection degree, with CE certification.
- ✓ Electronic unit equipped with SIEMENS PLC

o HEATING SYSTEM (ON REQUEST):

Heating of the technical compartment by means of infrared radiant panels, which allow direct heating without any convective loss of heat. The maximum efficiency coefficient: 100% of the electricity used is transformed into thermal power. Heating power: 300 Watts, Surface temperature: 70-90 ° C. There is also a heating cable embedded in the floor to prevent any frost phenomena near the door.

Unlike systems made with electric resistances and fan heaters, our system guarantees significant energy savings as well as an almost unlimited duration.

TECHNOLOGY

o CLEANING AND SANITIZATION

The toilet with S3 technology provides, after each use, washing with disinfection, drying the toilet bowl, and washing with disinfection of the floor.

- ✓ AUTOMATIC WASHING WITH DISINFECTION:
  - Inside the toilet bowl by applying a film of water during use;
  - Inside (expelled) at the end of use;
  - "EASYTECH®" for washing/sanitizing/drying the wc-bowl
  - Of the wall, up to 0.8 m. in height, around wc-bowl;
  - Of the floor with hidden and protected vandal-proof nozzles; any waste left on the floor is conveyed to a special hidden tank that is not visible and cannot be reached by users.

o SAFETY AND ERGONOMICS

Door movements CE certified and in accordance with Uni EN 16005 equipped with an anti-crushing safety device and LED barrier that guarantees total absence of impact. The buffer batteries guarantee operation even in the event of a power failure.

All surfaces have no sharp edges and are designed with extreme attention to ergonomic aspects.

Each time the room is washed, it is perfumed and disinfected in order to make it more welcoming for the next user.

The floor is completely vandal-proof, the walking surface is continuous and free of joints or discontinuities in order to avoid hindering people.

o COVID19 PROTECTION

To meet the needs of safe use - particularly important during the COVID19 pandemic - the toilet is equipped with specific sanitization and disinfection systems after each use as well as devices that allow the use of the toilet completely no-touch.

- At each washing cycle (after each use) a highly concentrated disinfectant, germicidal, professional virucide solution with a broad spectrum of action called GD90 Golmar (Medical Surgical Reg. Min. Sal. 7837) is mixed with the washing water. based on Benzalkonium Chloride and O-Phenylphenol, capable of eliminating Gram + and Gram-, Staphylococcus Aureus MRSA, Fungi, Molds, TBC, Viruses (including HIV, HBV and HCV etiological agents). The product is specifically designed to disinfect, cleanse and deodorize any washable surface. The disinfectant solution is used for all automatic internal washing (toilet, toilet wall, floor and sink).
- Ceramic wc-bowl is characterized by the absence of the rim, or rather the internal recess from which the water from the toilet flows. This solution, present on the newly designed bathroom fixtures, completely eliminates the hidden area under the seat where limescale, dirt and bacteria normally accumulate. The cleaning and disinfection of the toilet are consequently much better than traditional solutions.

COMPARISON BETWEEN A TOILET WITH RIM (SX) AND ONE WITHOUT RIM

- All the controls inside the toilet (water, soap and hot air dispensers, toilet paper dispenser and exit switch) are activated by means of no-touch sensors, with infrared sensors.

• Toilet is equipped with a forced ventilation system equipped with an in-line helicocentrifugal extractor, which expels the air directly to the outside and is able to ensure a complete change of air in about 2.5 minutes of operation. The toilet is programmed to activate the ventilation system when a user enters and to keep it active for a programmable time after leaving the bathroom. The duration set as standard is 10 minutes after the user's exit (however, this duration can be easily modified by the toilet manager according to particular needs) in order to guarantee at least 4 complete air changes after each use of the bathroom. The ventilation system is designed to let the air flow from the user compartment (into which fresh air enters through the dome on the roof) towards the technical compartment, in which the extractor is positioned, in a protected position. The passage of air between the two compartments takes place in an extremely simple way through the large openings at the base and at the top of the dividing wall.

o SAFETY AND CARE FOR THE ENVIRONMENT:

The rainwater collected by the toilet cover is conveyed through a rain pipe inside the technical compartment, separately from the other toilets drains. This solution, in addition to guaranteeing the protection of the rain pipe from vandalism and making the system easy to inspect for any maintenance, offers the possibility of maintaining - if required - the separation between the waste water (black) and washing water (grey) and meteoric waters (white); in fact, as is well known, the management of sewage networks increasingly requires separating the black water from the white water to avoid the dilution of the former, which leads to the oversizing of the public networks and the malfunctioning of the purification plants. If a double network for black water and white water is available at the installation site, the toilet could then be easily connected in a consistent way.

Similarly, it is possible to plan to connect only the black water and to convey outside, for dispersion on the ground, only the rainwater.

The toilet water supply system has been designed to ensure maximum safety and protection of the connected aqueduct network. An important problem of automatic washing systems, in fact, is that of being able to become potential vehicles for contamination of the network due to the rising of pollutants through the washing pipes (reflux). For this reason, administrations often require the installation of public network protection systems classified according to the degree of protection in accordance with the EN 1717 and EN12729 standards.

The toilet with S3 technology is equipped with a system with which any contact between the washing network and the drinking water supply network is physically prevented: this solution eliminates any risk of contamination due to backflow of the washing water. The water used for washing and flushing is in fact taken from an accumulation tank which is fed from above without any contact between the inlet network and the water contained in the tank. This system guarantees greater protection than that of the "class 5" separator units provided for by the aforementioned standard.

USER CYCLE

The S3 series automatic toilets are designed to ensure maximum ease of use by users.

If the toilet is in the "free" state, when the button is pressed (or the coin is inserted or the bank card is passed), the access door unlocks and opens automatically (if the sliding door is installed).

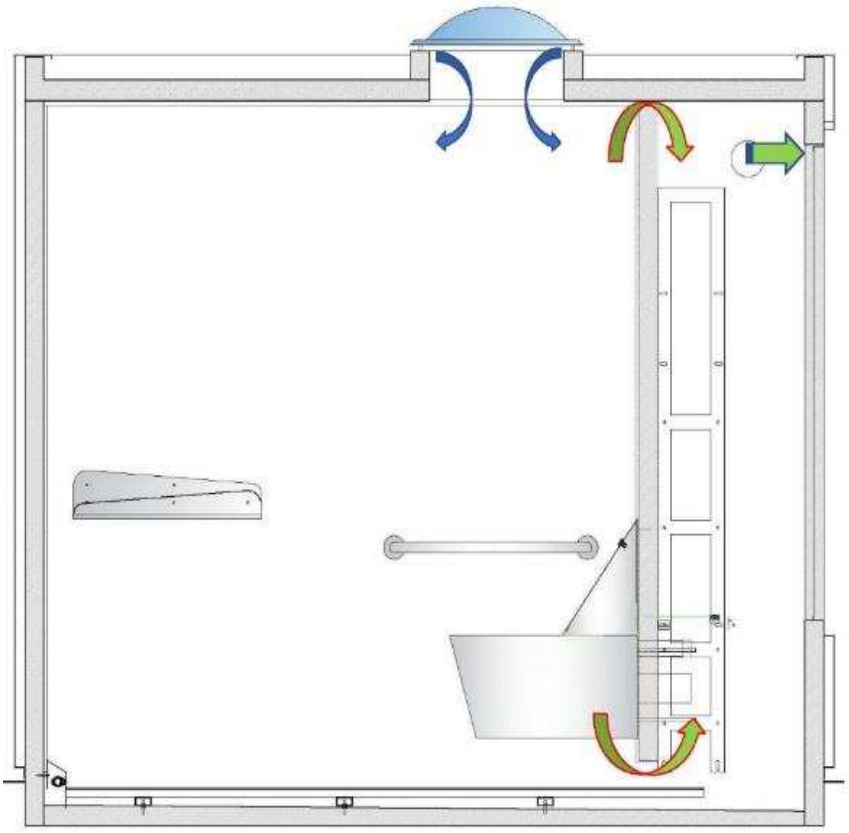
Simultaneously with the opening of the door, the internal lighting of the toilet is switched on.

At this point, the following cases may occur:

- the toilet does not detect any entrance; in this case, after 8-10 seconds, the door closes and the toilet returns to the "free" state
- the toilet detects the entry of a user; in this case the door closes automatically: when closing is complete, the toilet enters the "busy" state, the door locks preventing access to other users and all the toilet services are activated at the same time.

If the toilet is equipped with a sliding door, the opening and closing of the door is always automatic. The door opens automatically from the inside by pressing the illuminated button or by bringing the hand closer than 5 cm (COVID 19 protection). From the moment the door is closed, the user has a time of 15 minutes (programmable) for using the toilet.

In the "busy" state, the user can use the toilet, paper dispenser, wshbasin (water - soap - fan). If necessary, the user can also activate the toilet flush by bringing his hand close to the appropriate sensor. When the presence of a user is detected, the air extractor is activated and continues to work for about 10 minutes after the user leaves the bathroom. The extractor draws air from the technical compartment and conveys it outside the unit; the passage of air between the user room and the technical compartments occurs both from above, through a special slot, and from below, in the free space between the floor and the partition wall.



AIR CIRCULATION DIAGRAM

The operating time of the extractor is sufficient to ensure at least 4 complete changes of the air inside the unit after exit of the user.

In order to ensure maximum reliability of the machine and user safety, during the cycle of use, the presence of the user is detected by one infrared sensor installed in to the wall:

After 12 minutes of use (programmable), if the exit button is not pressed, a light and sound signal and a voice message warn that the time available is running out.

After 15 minutes (programmable) the door unlocks automatically inviting the user to exit. Also in this case, a voice message indicates that the time has run out and that the door opens, inviting the user to exit.

DATA SHEET

Model: **S3 BIRO**

Weight	5.500 kg(*)

(*) weight can change based on different external cladding

External dimensions (cm)	241x123x248
Drain connection:	
Sewage	110 mm
Drain grey water	50 mm
Drain white water (rain)	80 mm
Water connection	3/4”
Power connection	1F + N + T 230V 3 kW(*)

(*) the electrical power may vary according to the accessory systems installed (winter heating, summer air conditioning, etc.)

Water tank	65 litri
Disinfectant tank	5 litri
Soap tank	5 litri
Washing mains supply pump pressure	7 bar (700 KPa)
Washing cycle	35 sec
Water consumption /washing cycle	15.5 litri
Soap consumption for each use	5 ml
Disinfectant consumption for each use	20 ml
Power consumption	
Stand by (without heating)	20 W/h

Stand by (with heating)	620 W/h
For each use (3 minutes)	5 W/utilizzo
For each washing cycle	5 W/ciclo