

PRESENTATION OF FIDO

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*“MIROLA’s patented **mair**™ technology is fundamentally transforming mobile distribution of oxygen in the field as we speak”*



Perfection in delivery

MIROLA develops cutting-edge solutions for improved breathing assistance. Our aim is to simplify the products that deliver efficient and advanced care.

FIDO

Field Oxygen System

Ranging from emergency and rescue services to military units and diving communities, FIDO's innovative rebreathing system utilizing MIROLA's patented **mair** technology, achieves unparalleled levels of efficiency, reliability and user-friendliness for a broad spectrum of end-users.





The efficient principle of FIDO

MIROLA's patented **mair** technology enables the clever FIDO rebreathing system to be particularly compact, light and efficient.

For a start, its completely mechanical rebreathing design makes FIDO inherently reliable. It also vastly reduces the amount of O₂ required, allowing for a significantly smaller and lighter O₂ bottle to be used.

By using this technique, the only O₂ added is the amount spent by the treated person's metabolism, resulting in FIDO delivering a considerably extended action-time in relation to the amount of O₂ consumed.



Rebreathing made easier

In contrast to the typical circular rebreathing principle used by most rebreathing systems, FIDO uses a linear rebreathing principle. This makes the FIDO device easy to breathe through, further facilitating the breathing process.

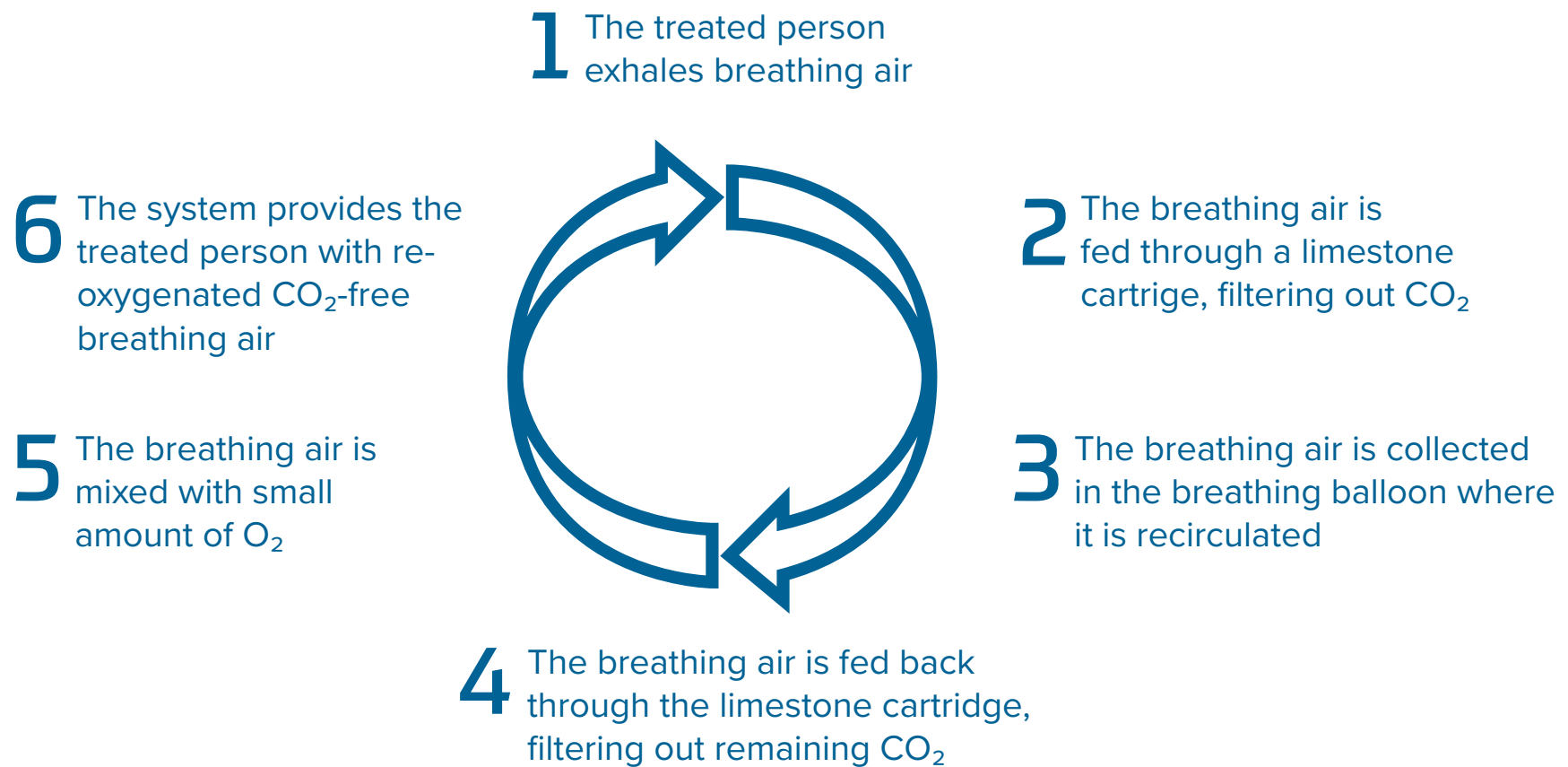
Efficient CO₂ filterering

As the limestone cartridge filters out CO₂ in the breathing air twice every breathing cycle, it allows for the cartridge to be made even lighter and more compact. Also, a shorter filter is easier for the treated person to breathe through.

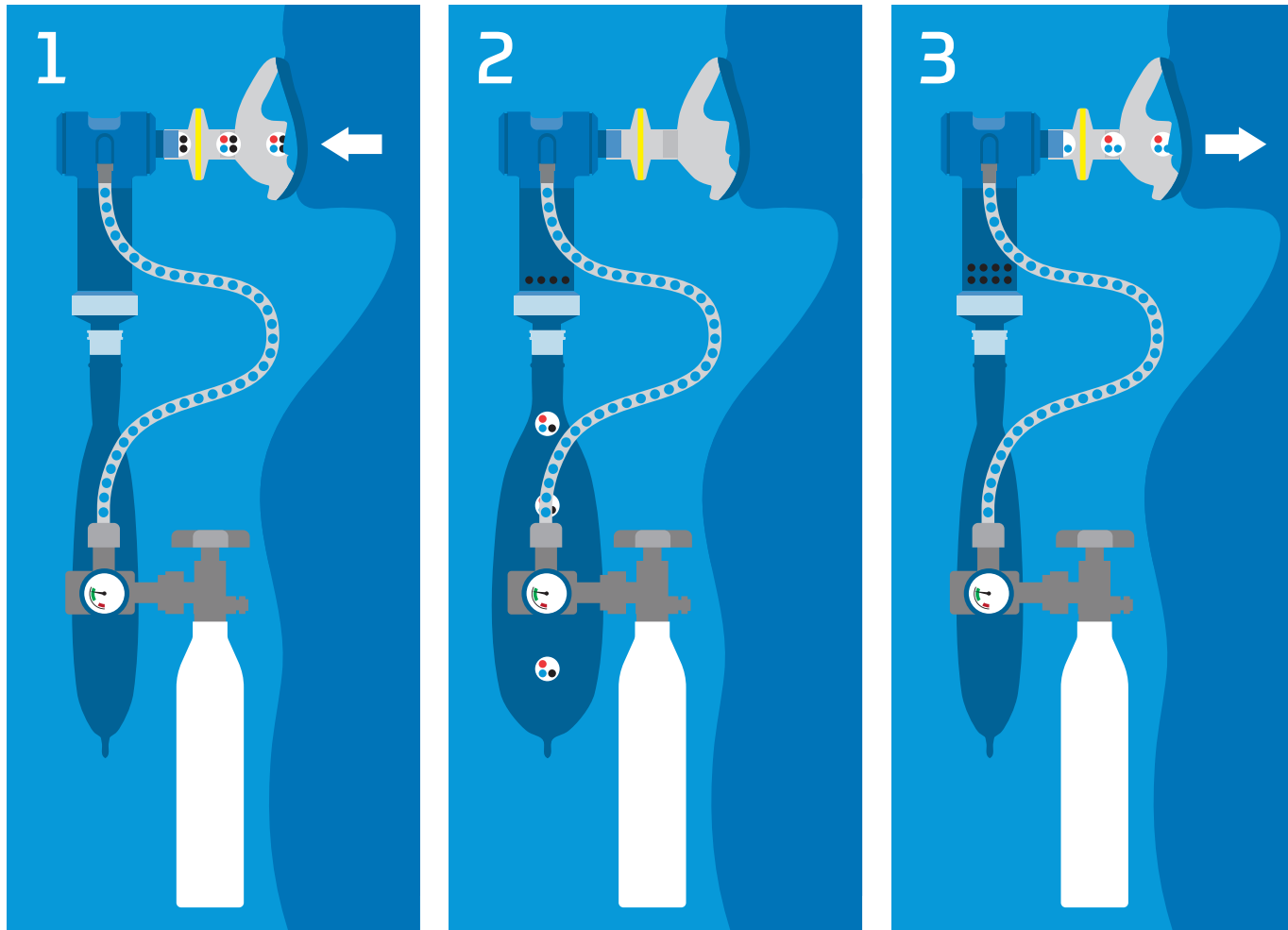
Dual purpose balloon

The breathing balloon has several functions. Apart from collecting and recirculating the exhaled air, a 'moving' breathing balloon is also a clear visual sign that the treated person is breathing.

mair™ - the cycle of rebreathing



mair™ applied to FIDO



- O₂ Oxygen
- CO₂ Carbon dioxide
- N₂ Dinitrogen

1. Upon exhaling, most of the CO₂ in the breathing air is filtered out as it passes through the limestone cartridge.

2. The breathing balloon collects and recirculates the exhaled breathing air. Upon inhaling, the breathing air is once again fed through the limestone cartridge, filtering out any remaining CO₂.

3. After passing through the limestone cartridge, the breathing air is then mixed with O₂, providing the treated person with re-oxygenated, CO₂-free air.

The Basics of the FIDO system

Using MIROLA's patented **mair** technology, the basic principle behind the FIDO rebreathing system is remarkably simple.

FIDO consists of the following main components: a valve unit (the FIDO house), an oxygen tube and a limestone cartridge for filtering out CO₂. Additional accessories, like the bio filter, the oxygen bottle and the breathing balloon, complete the FIDO rebreathing system.

Key to FIDO's superior functionality is the patented oxygen/air mix valve (the FIDO house) that incorporates the emergency intake port (EIP).

The EIP is a safety function that is activated should the oxygen supply start to malfunction. In the event of FIDO not being pressurised, a safety valve opens to allow the treated person to keep breathing the surrounding air, thus avoiding CO₂ poisoning as well as suffocation by hypoxia.

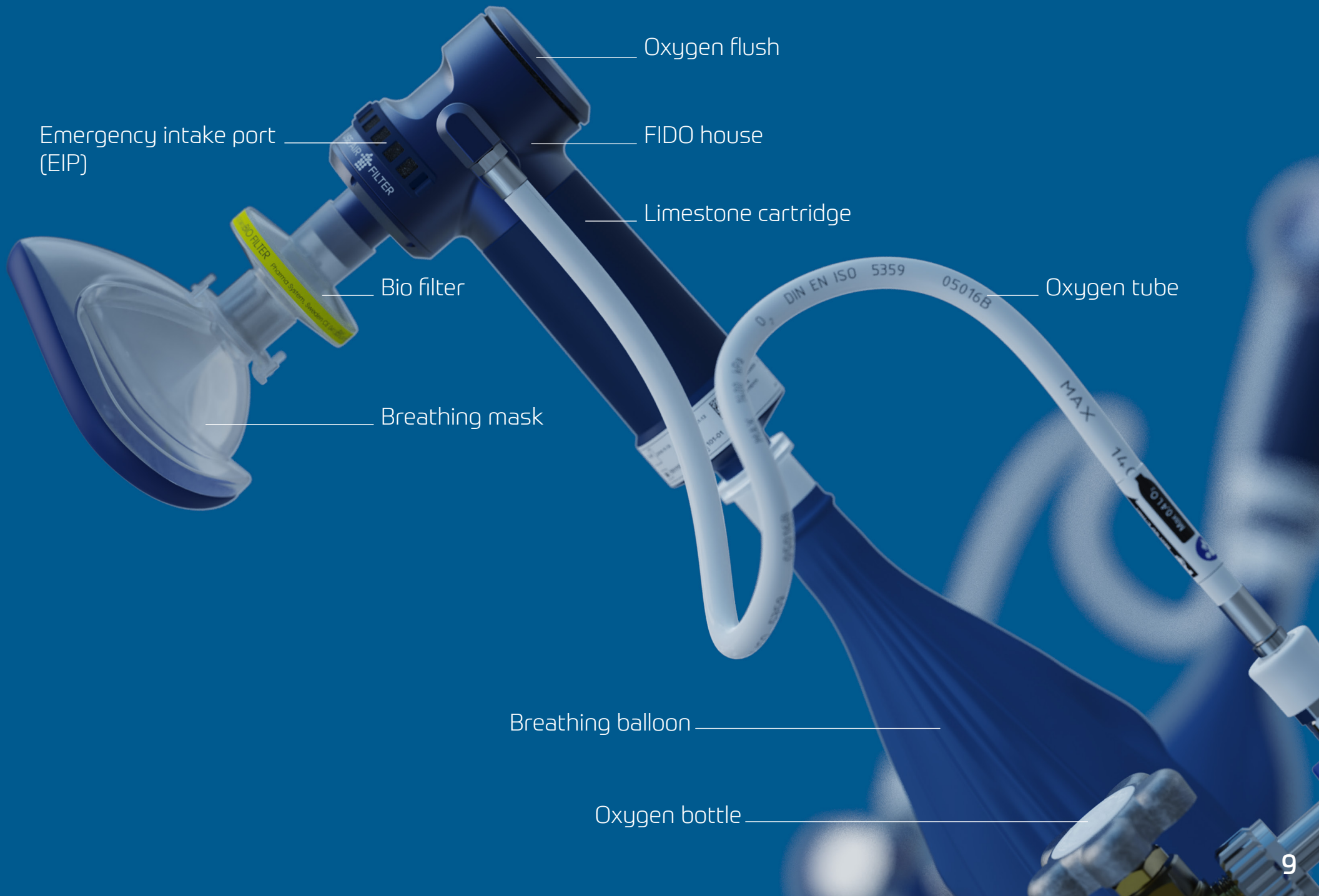
Upon inhaling, oxygen from the O₂ bottle is mixed in the FIDO house with the exhaled and then recirculated air from the treated person to achieve an adequate level of O₂ in the breathing air.

The oxygen/air mix valve adjusts the amount of oxygen dispersed in accordance to the volume of breathing air consumed.

Furthermore, the FIDO system is equipped with an 'oxygen flush' button for occasions when the oxygen level needs to be raised for medical reasons.

FIDO is an entirely mechanical design, containing neither electronics, nor software or batteries, making it inherently robust and reliable in all types of environments and situations.





Oxygen flush

Emergency intake port (EIP)

FIDO house

Limestone cartridge

Bio filter

Oxygen tube

Breathing mask

Breathing balloon

Oxygen bottle

Fido benefits ^{1/2}

- FIDO is light and compact, making it particularly easy to transport to and around the scene of an incident or accident.
- Designed as a closed-circuit rebreathing system, FIDO uses O₂ very efficiently. By reusing the treated person's own breathing air, only a small amount of O₂ is needed to achieve an O₂ concentration sufficient for medical treatment. The only O₂ added in the FIDO rebreathing process is the amount used by the treated person's own metabolism.
- FIDO has a long action-time in relation to the amount of O₂ consumed: 0.4 litres of pressurized O₂ (200 bar) delivers approx. one hour of treatment.
- The efficient use of O₂ in the rebreathing process means that the FIDO system only requires a small O₂ bottle.
- Due to the limited amount of O₂ required, the treated person and the staff administering the oxygen are exposed to significantly lower quantities of O₂. Being O₂-efficient also makes FIDO a perfect fit in environments with limited access to O₂.



Fido benefits ^{2/2}

- FIDO offers a high degree of reliability due to its completely mechanical design. This makes the system suitable for use in various environments with limited access to electricity.
- The FIDO system is equipped with a built-in on-demand function (Flush button) should higher oxygen concentration levels be deemed necessary for medical reasons.
- FIDO heats up the inhalation air, creating humidity and warm air, thus helping to keep the treated person in a normothermic state.
- FIDO reuses the moist breathing air, helping the treated person to keep the mucus in the airways hydrated.
- The movement of the breathing balloon is a visual sign that the treated person is breathing. This visual confirmation of functionality can help the emergency staff to improve treatment.





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