



Inhalation systems for aerosol therapy

The confidence in respiratory care



Introduction to topical inhalation therapy

Compressor aerosol units and nebulizers for topical treatment

Devoted

to customers' satisfaction, our full engagement is to improve the quality of patients' life affected by respiratory pathologies concentrating our research on efficient and non-invasive technologies to offer both doctors and patients reliable and effective devices, easy to use and respecting the environment.

Believing

in the benefits of aerosol therapy as topical treatment, our company is the first one to develop two separate nebulizers for the targeted treatment of the upper and lower airways.

We create

nebulizers aiming to guarantee all the patients, both children and adults, the following advantages from topical inhalation therapy, considered the most effective method for respiratory diseases:

Topical treatment using a specific nebulizer allows drug deposition directly in the target organ.

The local administration of reduced doses of drug avoids the problem of systemic side effects and makes the treatment more effective.

Topical treatment is normally well tolerated and more than one drug can be atomized simultaneously if prescribed.

We have a rich bibliography of clinical studies that demonstrate the therapeutic efficacy of our devices both for the treatment of the low pathways that for the upper respiratory tract. The medical literature presented also demonstrates the research and continuous listening of doctors and patients to find the optimal solutions proposed below. Such studies are available and can be requested through our Informant of reference

Key-words in aerosoltherapy

Here you are some frequent definitions in aerosol therapy:

Aerosol

Suspension of liquid particles in a gas.

Nebulizer

A device that converts a liquid into an aerosol.

Aerosol device

A device comprised of an electromechanical part and a nebulizer that converts a liquid into an aerosol and makes it available for inhalation.

Airways

The body's natural ducts through which air is conveyed to the pulmonary alveoli.

Atomization

The reduction of a substance into particles around thousandths of a millimetre in diameter, expressed in microns (μm).

Atomization efficacy

The ability of the aerosol device to convert a given volume of liquid into micronized particles.

Dynamic pressure

The output pressure generated by the nebulizer, generally expressed in bars. This parameter is influenced by the power source and dimensional factors.

Dynamic flow or dynamic capacity

The rate of air flow generated by the nebulizer, in litres per minute (l/min). This parameter is influenced by the power source.

Output or rate of flow

The quantity of aerosol delivered by the system in a unit of time.

Maximun filling volume

The maximum volume of liquid that the base of the nebulizer can hold, expressed in millilitres (ml) or cubic centimetres (cc).

Residue

The amount of un-atomized drug remaining in the nebulizer at the end of treatment.

Mean Mass Aerodynamic Diameter (MMAD)

This parameter indicates the ability of the nebulizer to produce small size particles, which are necessary for the treatment to be effective. The diameter of 50% by volume of the particles atomized by the nebulizer is lower than the MMAD, the remaining 50% is higher than the MMAD.

Every product, entirely manufactured in Italy, is studied to offer a specific solution to get the best therapy's effectiveness



Rinowash

Micronizing nasal wash for aerosol therapy

Connected to a compressor aerosol unit, it is ideal for treating rhinitis, rhino-sinusitis, nasal polyposis, adenoiditis and tubo-tympanitis using drugs or spa water, saline and physiological solutions. It enhances deposition in the **upper airways** as it produces **particles with a MMAD >10µm**.



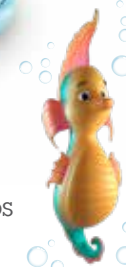
- Convenient and compatible with all compressor aerosol units
- Atomizes 15 ml in less than 2 minutes
- Usable as from a very early age, with no contra-indications
- A special patented valve system controls the output pressure in the nasal cavities to prevent the risk of barotraumas

Enhance the compliance of the younger ones with

RinoAPP

Now available on smartphones, the application will entertain children during the treatment with amusing contents. Following Dr. Rino's advices, therapy will be easier and more fun!

Download the app on Android and Ios for free and get to know **Dr.Rino**.



Rinowash allows a safe, rapid and successful topical treatment with reduced side effects

Rinowash Solution

Hypertonic saline solution, ideal for flushing out the nasal cavities.

Thanks to its **osmotic action**, when used with the device, it allows **great improvement** in nasal patency and oedema reduction.



RinowashEgo

Portable micronizing nasal wash
for aerosol therapy

RinowashEgo is the new device for nasal care that finally allows the continuity of the therapy everywhere you are, thanks to the **internal pneumatic micro compressor** and the **lithium battery**.

RinowashEgo allows to maintain the same clinical benefits as the Rinowash jet version, with the advantage of a **prompt treatment** as it can be carried anywhere.



RinowashEgo is **easy to use, silent, ergonomic and travel-friendly** thanks to the carrying bag included. The chambers are completely washable and sterilizable, once the base is removed.

Please see instructions manual for any additional information

Battery features:

- Micro USB power supply
- One recharge allows 45 minutes of which means up to 20 therapies
- Stable, performant and eco-friendly battery
- 3 led lights indicate battery level

RinowashEgo offers the best efficacy with any drug and solution, as recommended by your doctor, with nebulized particles in the well known **optimal size for a correct deposition** in the whole upper airways and rhinopharynx.



RinowashEgo
takes care
of your
breathing
everywhere
you go



Volumetric masks and nebulizers

Nebula Spacer

The Nebula Spacer kit is studied for **broncho-pulmonary apparatus** taking care of bacterial or viral infections, asthma, bronchitis, pneumonia, cystic fibrosis.

Connected to a compressor aerosol unit, Nebula Spacer guarantees **an efficient therapy in a shorter time.**



With volumetric mouth mask for adults and children.

- Universal and functioning with all compressor aerosol units
- Ideal for cooperating patients
- Guarantees bronchial deposition of the atomized drug as it produces particles of the right size (<math><5 \mu\text{m}</math>)
- The ergonomic shape increases the patients' comfort during therapy

Perfecta

With volumetric oro-nasal mask especially shaped for babies and young children.

Perfecta, provided with nebulizer and volumetric mask, delivers the drug straight into the lower airways.

It produces very small particles ideal for treating **pathologies affecting the lower respiratory tract**: bacterial or viral infections, asthma, bronchitis, pneumonia, cystic fibrosis.

The special shape of the mask and the soft material make it suitable for very **young children** who are not cooperative, **covering both mouth and nose.**



- Universal and functioning with all compressor aerosol units
- Producing particles sized <math><5 \mu\text{m}</math>, it is suitable for the lower airways
- Easily tolerated by users of any age and it enhances therapy effectiveness

Please see instructions manual for any additional information

Alvea

Specific kit for the treatment of lower airways diseases.

Alvea can be used by adults and children thanks to 3 different interfaces:

- **mouth mask:** for cooperating patients
- **pediatric mask:** for children up to 6 years
- **mouthpiece**

- with inhalation and expiration valves (breath enhanced)
- completely sterilizable
- low drug dispersal
 - MMAD: $3.54 \mu\text{m}$



Alvea is available as separate device (to be connected to compressor aerosol units) and also supplied with our aerosol unit Nebula H.

Rinowash, Perfecta, Nebula Spacer and Alvea

are the result of our constant research in providing an effective and safe method of performing inhalation therapy.

Supplied with our aerosol units Nebula, Nebula H, Mobyneb, Soffio Plus, they are also available as **separate devices** to be connected to compressor aerosol units.

Information about these units is in the pages here-on.

Perfecta and Nebula Spacer are well accepted by patients of any age and improve their compliance



Nebula

All-in-one compressor aerosol unit for the whole family

Nebula is the result of **30 years in scientific and technological research** in order to guarantee professional products with a **specific therapeutical action**.

Each component part is made of shock-resistant material and is designed to make it easy to use, **reliable and safe**, and to **ensure an excellent performance** at all times.

Nebula aerosol therapy unit comes with

two special nebulizers that convey the drug straight to the parts to be treated: **Rinowash**, designed specifically for the upper airways, and **Nebula Spacer** for the bronchopulmonary apparatus.

Nebula is equipped with:

- Nebula Spacer
- Rinowash
- paediatric mask
- spare air filters and air tubing

Rinowash

Specific device for the upper airways. It atomizes particles of an ideal size for treating the nasal cavities.



Nebula Spacer

Kit comprised of nebulizer and volumetric mouth mask. Increases efficacy of treatment. Improves bronchial deposition of the nebulized drug.



Please see instructions manual for any additional information

- Effective: complete treatment of upper and lower airways
- High performance ensuring safe therapy
- Increase of the peripheral deposition
- Minimal drug dispersal
- Reduced therapy time
- Longer durability and higher robustness



RinoAPP

Rinoapp works also with the Rinowash provided in Nebula
[Read more about the Rinowash page](#)

TECHNICAL SPECIFICATIONS	
Rinowash	
MMAD	49 µm (*)
Nebula Spacer	
MMAD	3.98 µm (**)
Minimum output rate	0.3 ml/min
Unit	
Operation	Continuous
Maximum air pressure	2.7 bar
Dimensions of the basic unit	230x180x185H mm
Maximum air flow	12 l/min
Noise level at 1 m	57 dBA (to UNI EN 13544-1)
Weight of the basic unit	3 kg

(*) The values shown refer to the use of physiological solution (0,9% NaCl) and may vary with the drug used. The values given do not apply to drugs in suspension or high-viscosity drugs. The manufacturer of the drug can provide the necessary details. Measured with Malvern Spraytec.
 (**) Measured using a solution of NaF at 2.5% with NGI Cascade Impactor.

Nebula is a professional unit improving the whole family life quality



Nebula H

All-in-one compressor aerosol unit for intensive use

Nebula H is the optimal solution for intensive use, intended for chronic patients who have to undergo **frequent therapy cycles**.

Nebula H guarantees a complete therapy of both **upper and lower respiratory tract** thanks to the two nebulizers:

- **Rinowash** is intended for the treatment of the nasal cavities
- **Alvea** is a **breath enhanced** nebulizer for the treatment of the bronchopulmonary apparatus

Nebula H is complete with all the accessories for the therapy of adults and children.



Rinowash

is conceived specifically for nasal treatment, to hydrate cavities, to fluidify and remove secretions and to deliver solutions and drugs in the target district.



Alvea

Nebulizer with breath enhanced technology.



Please see instructions manual for any additional information



RinoAPP

Rinoapp works also with the Rinowash provided in Nebula H
[Read more about the Rinowash page](#)



Respiratory valves

which make it breath enhanced

Alvea is available as separate device (to be connected to compressor aerosol units) and also supplied with our aerosol unit Nebula H.

TECHNICAL SPECIFICATIONS	
Rinowash	
MMAD	49 µm (*)
Alvea	
MMAD	3.54 µm (**)
Minimum output rate	0.3 ml/min
Unit	
Operation	Continuous
Maximum air pressure	3.2 bar
Dimensions of the basic unit	230x180x185H mm
Maximum air flow	12 l/min
Noise level at 1 m	57 dBA (to UNI EN 13544-1)
Weight of the basic unit	3 kg

(*) The values shown refer to the use of physiological solution (0,9% NaCl) and may vary with the drug used. The values given do not apply to drugs in suspension or high-viscosity drugs. The manufacturer of the drug can provide the necessary details. Measured with Malvern Spraytec. (**) Measured using a solution of NaF at 2.5% with NGI Cascade Impactor.

Nebula H is the solution for intensive care and frequent treatments at home and in the hospital



MobyNeb

Mobyneb features **Perfecta** nebulizer with volumetric oro-nasal mask for children but suitable also to adults, as well as **Rinowash**, both successfully used **to treat localized diseases of the lower and upper airways.**

Dual-function compressor aerosol unit specific for children

Mobyneb is comprised of:

- Power unit
- Rinowash
- Kit Perfecta with volumetric mask
- Mouthpiece
- Air tubing and spare air filters.

Rinowash

allows physiological and/or medical treatment of the nasal cavities. A jet of atomized solution helps to enhance hydration and fluidification of the mucus and catarrh, hence their removal. Very useful for babies not yet able to blow their nose.



Perfecta

is especially designed for treating the lower airways of young children. Allows high deposition of the atomized drug.



Please see instructions manual for any additional information

- Smooth design that makes it children-friendly
- Safe and effective treatment of the lower airways
- Increased drug deposition where it is needed with reduced side effects
- Minimal drug dispersal
- Reduced therapy time
- Longer durability and higher robustness



RinoAPP

Rinoapp works also with the Rinowash provided in MobyNeb
[Read more about the Rinowash page](#)

TECHNICAL SPECIFICATIONS	
Rinowash	
MMAD	49 µm (*)
Kit Perfecta	
MMAD	3.98 µm (**)
Minimum output rate	0.3 ml/min
Unit	
Operation	Continuous
Maximum air pressure	2.7 bar
Maximum air flow	12 l/min
Noise level at 1 m	56 dBA (to UNI EN 13544-1)
Dimensions of the basic unit	320x210x197H mm
Weight of the basic unit	2.9 kg

(*)The values shown refer to the use of physiological solution (0,9% NaCl) and may vary with the drug used. The values given do not apply to drugs in suspension or high-viscosity drugs. The manufacturer of the drug can provide the necessary details. Measured with Malvern Spraytec. (**)Measured using a solution of NaF at 2.5% with NGI Cascade Impactor.

Mobyneb is conceived for very young children (0-3 years). The top quality materials and the specific design make it safe and effective



Soffio Plus

Compressor aerosol unit for children and adults



It is extremely **compact** and very **practical**. **Light and small in size**, its design has been studied to obtain essential shape and durable casing, **easy to handle and to clean**. A very practical shoulder bag facilitates any transport needs. Soffio Plus comes with the **Perfecta kit**, specific for children and suitable also for adults. It is used for the treatment of **lower airways diseases**.

Perfecta nebulizer and volumetric mask for children and adults. Specific for treating diseases of the lower airways. Allows high deposition of the atomized drug.



- Effective treatment of lower airways
- Increased peripheral deposition with limited side effects
- Reduction of drug dispersal to a minimum
- Compact, light design granting ease of handling and cleaning
 - Shoulder bag included

TECHNICAL SPECIFICATIONS

Kit Perfecta	
MMAD	3.98 µm (*)
Minimum output rate	0.3 ml/min
Unit	
Operation	Continuous
Maximum air pressure	2.5 bar
Maximum air flow	12 l/min
Noise level at 1 m	59.3 dBA (to UNI EN 13544-1)
Dimensions of the basic unit	190x130x120H mm
Weight of the basic unit	1.5 kg

(*)Measured using a solution of NaF at 2.5% with NGI Cascade Impactor.

Soffio Plus means full comfort in any conditions: it is the ready to use solution helping patients to get their aerosol treatment everywhere



Soffio Cube

Pneumatic aerosol unit

Soffio Cube is a **lightweight** and **compact** device for aerosol therapy, for the lower respiratory tract.



- New compact design
- Easy and efficient therapy
- Convenient to use and to handle
- Ideal for the whole family



Nebulizer

efficient therapy of the lower respiratory tract.



The accessory kit includes:

- Nebulizer
- Nosepiece and mouthpiece
- Adult and child mask
- Air tube and air filters
- Carrying bag



TECHNICAL SPECIFICATIONS

Nebulizer	
MMAD	2.94 μm (*)
Minimum output rate	0.35 ml/min
Unit	
Operation	Continuous
Maximum air pressure	1.85 bar
Maximum air flow	10 l/min
Noise level at 1 m	58 dBA (to UNI EN 13544-1)
Dimensions of the basic unit	135x140x155H mm
Weight of the basic unit	1.1 kg

(*) Measured using a solution of NaF at 2.5% with NGI Cascade Impactor

Soffio Cube is the compact and lightweight solution for aerosol therapy, for children and adults. It is intuitive to use thanks to the modern and essential design



L'espace

Valved holding chamber for Metered Dose Inhalers

Worldwide guidelines recommend the use of the **Spacer chamber with patented valved system for the proper treatment of asthma.**

L'espace makes it easier and allows a

better coordination between MDI (Metered Dose Inhalers) output and inhalation.

L'espace helps the adequate drug deposition in the lower airways preventing oral deposition and reducing side effects.



Conic shape
Flow dynamics delivers a higher fraction of the drug by increasing the deposition in the lower respiratory tract.

Ideal volumes
L'espace reduces the drug particles reaggregation that occurs in the spacers with smaller volumes.

Bottom lid with adaptive air inlets
Facilitated inspiratory effort and better flow dynamics.

Comfortable anatomical silicone masks
Guarantees high levels of comfort and compliance. Optimal seal to prevent in and out air leaks.

Patented valves system
Efficient feedback of the correct use, simple to synchronise MDI output with breathing acts, easy to count breath.

- Very low triboelectric charging
- Universal MDI (Metered Dose Inhalers) insert
- All models are autoclavable at 121 °C
- Single packed in protective tissue bag for storage and transport
- Longer durability and robustness



■ MOUTHPIECE



■ ADULT MASK (non cooperating)



■ CHILD MASK (2-6 years)



■ INFANT MASK (0-2 years)

L'espace ensures great functionality with reduced risk of errors during treatment, helping patient compliance

Please see instructions manual for any additional information

VALVED HOLDING CHAMBERS

SPATIAL^{UP}

New valved holding chamber
for Metered Dose Inhalers

Spatial UP is a **spacer chamber for MDI spray** with specific valved system recommended by international guidelines to improve asthma therapy.



Please see instructions manual for any additional information

4 different versions according to the patient age:

Infant mask
(0-2 years)

Child mask
(2-6 years)

Adult mask
(> 6 years)

Mouth-piece
(> 6 years)

Something unique!

For a better therapy compliance, download the **Spatial UP application** (for smartphone and tablet) intended to entertain children during their asthma therapy and to improve their acceptance of the spacer.

Follow UP the monkey along its adventures throughout the space!

1. download the free app
2. place the child in position for therapy
3. connect the MDI spray to the spacer
4. open the app to activate the animation and start your therapy!



Spatial UP is the innovative spacer chamber able to improve the little patients compliance



Vitapep

Positive expiratory pressure training system

Vitapep is a medical device created to **prevent and cure potential secretorial issues** in patients with acute and chronic respiratory pathologies.

Thanks to the **forced exhalation exercise**, any secretion is pushed in the trachea, where it can be then easily expelled by coughing.

- Vitapep comes with a standard mask - adult or child size
- Disposable masks can be requested separately



The pressure gauge and the tube are available for professional setting by the doctor according to patient needs.



Please see instructions manual for any additional information

Summary for aerosol therapy: solutions at a glance.

Topical therapy: specific solutions for treating different respiratory pathologies

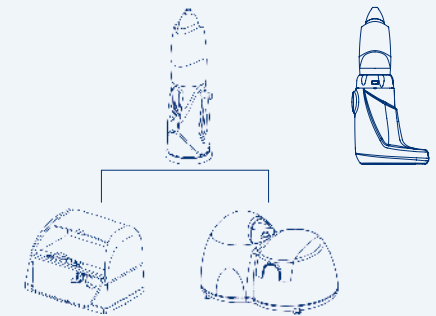
Rinowash

- MMAD >10µm
- removes secretions, mucus and catarrh
- reactivates mucociliary movement in the nasal cavities
- effective with drugs and natural solutions

For the treatment of:

- rhinitis
- rhino-sinusitis
- rhino-pharyngitis
- nasal polyposis
- adenoiditis
- tubotympanitis
- etc

UPPER AIRWAYS



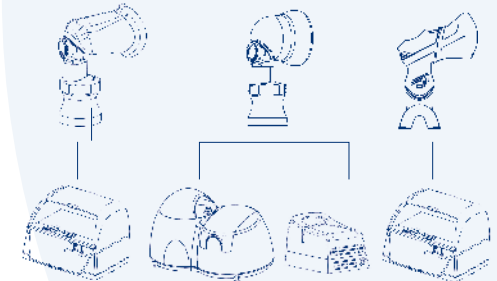
Perfecta, Nebula Spacer and Alvea

- MMAD <5µm
- increase peripheral deposition of the drug
- enhance patient compliance, increasing the treatment's effectiveness

For the treatment of:

- bacterial and viral respiratory infections
- asthma
- bronchitis
- pneumonia
- cystic fibrosis
- etc

LOWER AIRWAYS



L'espace and Spatial UP

- Increase drug deposition and the available inspiratory fraction of the nebulized drug

For the treatment of:

- asthma
- COPD

LOWER AIRWAYS



Bibliography

non-exhaustive

Upper Airways

- M. Anselmi, A. Ferrara, D. Passali (ORL Clinic, Siena): Micronized Nasal Wash, a modern approach to the treatment of some types of rhinitis. Workshop on Inhalation Therapy VI National Congress on Paediatric Immunology and Allergy – 26/29 October 1994, Brescia.
- D. Passali, L. Bellussi, A. Ferrara Gorga : (ORL Clinic, Siena) The treatment of rhinopathies with atomized nasal douche. Rivista Italiana di Otorinolaringologia Audiologia e Foniatria no. 4 October/December 1995
- A. Varricchio, D. Tricarico, E. Ascione, A.M. Varricchio, G. Barba, M.F. Tripodi, G. Motta: Aerosol therapy vs systemic therapy in upper respiratory tract infections in pediatric age. L'Otorinolaringologia Pediatrica; Vol X, N3-4/1999, 1120-3455
- F. Di Bernardino, F. Scaglione – Department of Pharmacology, Milan University : Nasal Wash Allergia online www.allergiaonline.com
- Diot P. et al.: Proposed guidelines for aerosol therapy by means of nebulizers. Eur Respir Rev 2000; 10:72, 206-209.
- Pisano G. et al: Management of nasal polyposis: Efficacy of intranasal corticosteroid with hypertonic solution. Book of Abstracts of "XVIII of European Rhinologic Society"; Vol 1, 2000, 414-415;
- A. Varricchio, D. Tricarico, A.M. Varricchio, M. Ruosi, G. Motta: Effectiveness of Aerosol Therapy with nasal wash in the treatment of recurrent subacute rhinopharyngitis complicated by acute catarrhal otitis media 2003
- A. Varricchio, M. F. Tripodi, G. Sarnataro, R. Utili, E. Ascione, D. Tricarico: Is aerosol antibiotic delivery better than oral antibiotic treatment for recurrent rhinopharyngitis in paediatric patients? 8th International Congress of Paediatric Otorhinolaryngology 11-14 Sept. 2002
- A. Della Volpe, A.M. Varricchio, A. Varricchio A. De Lucia, N. Mansi: Clinical and bacteriological evaluation of inhaled tobramycin/oral placebo vs amoxicillin/cavulanate-inhaled placebo in bacterial nacerization of paediatric recurrent rhinopharyngitis. Espo 2004 European Society of Paediatric Otorhinolaryngology, 16-19 May 2004 Athens, Greece
- A. Varricchio, D. Tricarico, A. De Lucia, R. Utili, M. F. Tripodi, M. Miraglia Del Giudice, M. Capassi,

- G. Sabatino, M. Sgarella, G.L. Marseglia, G. Ciprandi: Inhaled Tobramycin in children with acute bacterial rhinopharyngitis International Journal of Immunopathology and Pharmacology, Vol. 19, no. 1, 131-139, 2006.
- G. Ciprandi, A. Varricchio, M. Capasso, A.M. Varricchio, A. De Lucia, E. Ascione, F. Avvisati, C. Capristo, G.L. Marseglia and U. Barillari Adenoid hypertrophy: an alternative to surgery International Journal of Immunopathology and Pharmacology, Vol. 20, no. 2, 0-0, 2007
Poster presented at the ISAM (International Society for Aerosols in Medicine) Congress, Tours, France – 16-20 June 2007
- Varricchio, M. Capasso, M. di Giacchino, G. Ciprandi Inhaled Thiamphenicol and Acetylcysteine in children with acute bacterial rhinopharyngitis International Journal of Immunopathology and Pharmacology, Vol. 21, no. 3, 0-0, 2008

Lower Airways

- G. Galli, S. Gianni, A. Di Fazio, E. Brunetti, L. Di Bernardino Comparison of traditional treatment and brief inhalation therapy with salbutamol using a new volumetric mask Published in the "Allergy and Asthma Proceedings"- Poster presented at the EAACI (EUROPEAN ACADEMY OF ALLERGOLOGY AND CLINICAL IMMUNOLOGY) congress in Goteborg, Sweden, 9-13 June 2007
- H. Yuksel, L. Di Bernardino, D. Yuksel, O. Yilmaz, Z. Burak The new volumetric mask increases the effectiveness of inhalation therapy European Annals of Allergy and Clinical Immunology, Vol. 39, no. 2, 2007

L'espace

- Di Bernardino F, Cesarani A, Moles A, Brenna O, The emitted dose of drug from a valved holding chamber using five pressurized metered dose inhalers, International Journal of Drug Delivery, Vol.4 n.3 (2012)
- Di Bernardino F, Forti S, Piatti G, Fasano V. A comparative study of two different metered-dose inhaler-valved holding chambers in the administration of salbutamol, Chest 2010 Feb;137(2):502-3. doi: 10.1378/chest.09-1995.

The choice of Air Liquide Medical Systems means certainty of quality. All products are entirely "Made in Italy", manufactured with biocompatible materials according to UNI EN directive ISO 10993 and controlled and tested following the most severe trials. Air Liquide Medical Systems is certified:

ISO 13485:2016: Medical devices - Quality Management Systems Requirements for Regulatory Purposes
ISO 14001:2015 Environmental Management Systems
BS OHSAS 18001:2007 Occupational health and Safety Management Systems Requirements



Engaged for people
who strive for life.

Contatti

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