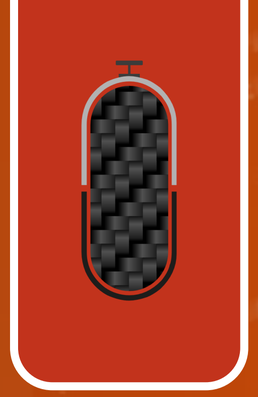


CARBON CYLINDER

Lightness & Innovation

CARBON CYLINDER

Lightness & Innovation

Lightness & Innovation

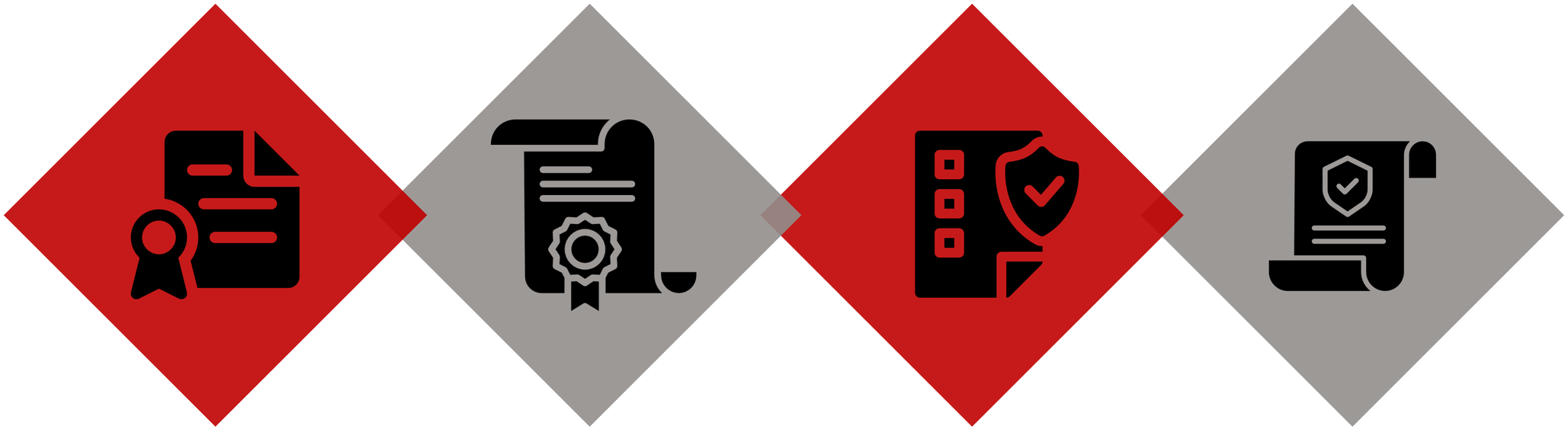
Carbon Cylinder is an innovative start up founded in 2020 thanks to its management several years' experience on cylinder design and it is going to manufacture Type 4 cylinders, which are featured by an external composite layer and an internal liner in plastic, that provide them with lightness, ductility and unprecedented performances.

The products that are going to be manufactured will be able to endure oxidant and non-oxidant gases, in compliance with the international regulations.

Thanks to the patents developed by Carbon Cylinder, the products and the sizes that will be designed and marketed will provide an unseen feature: a shape different from the cylindrical, proper of the current cylinders.

OUR PATENTS

To better protect the innovations that will define and differentiate Carbon Cylinder products, three patents and a community design model have been filed. A fourth patent is currently under study.



Patent “n. 1” will make possible to streamline and, at the same time, optimise the production process by reducing cycle times by about 15-25%

Patent “n. 2” eliminates the problem encountered in the coupling between the plastic material of the liner and the surface of the metal nozzle

Patent “n. 3” will make possible to give the accessories the right direction on each type of cylinder, ensuring the desired orientation

In addition to creating the classic cylindrical cylinder, Carbon Cylinder will expand its offer with cylinders of square and rectangular sections, patent “n. 4”, which will allow to provide greater capacity with the same size

CHALLENGES

Today, the market requires ever lighter and more performing materials, capable of improving the physical limit and the quality of the products currently available, without neglecting a fundamental aspect such as the safety of the end user.

Operators who use cylinders in the breathing air sector (among others: firefighters, divers, search & rescue) increasingly require products with cutting-edge and improving characteristics, such as lightness, capacity and the possibility of being decontaminated

In the field of medical equipment, the quality of cylinders currently offered by the market is not satisfactory or sufficiently innovative to satisfy the requests and needs of the market itself, especially during historical periods such as that of the global pandemic we are experiencing

The industrial sector requires to operate with ever purer gases, but the existing cylinders do not meet the real needs of the market, as they oxidize easily, contaminating the gases they contain and compromising their correct performance

In order to reduce CO2 emissions, the automotive sector is increasingly moving towards the use of hydrogen as new energy source, but the physical limits of cylinders (weight and pressure) affect their development and use on a large scale

Thanks to the production of its Type 4 cylinders, the innovation that Carbon Cylinder will be able to introduce will result in the satisfaction and overcoming of the needs and shortcomings previously described.

Thanks to the technological improvements introduced by Carbon Cylinder, its cylinders are going to be the lightest on the market, resistant to the decontamination process and will have an increased volumetric capacity. Furthermore, thanks to the mechanical characteristics of Type 4 cylinders, the service life will be far greater than that of cylinders commonly used in the sector

One of the musts that the medical sector requires is lightness, in order to ensure easier transport of medical gases within hospitals. Furthermore, the advantage given by the lower weight of the cylinders will have an incalculable benefit for all people with breathing difficulties, in their movements

Thanks to their plastic liner and the consequent inherent chemical properties, Type 4 cylinders will not be subject to oxidizing phenomena and will therefore be able to guarantee the maximum purity of the gases, even in the long term

The automotive and logistics sector will certainly benefit from the employmentof Type 4 cylinders: the ideal product for hydrogen storage given its lightness and the ability to reach high pressures

Further pluses:

Less pollution

Thanks to their lightness, it will be easier, simpler, faster and less polluting to transport Type 4 cylinders, compared to the other type of cylinders with same volume. Moreover, the materials of which the cylinders are made, make them totally recyclable

NON-LIMITED LIFE

Type 4 cylinders are, at the moment, the only type that is able to obtain the «Non-Limited Life» certification, which attests the non-limitation of the working life of the cylinder

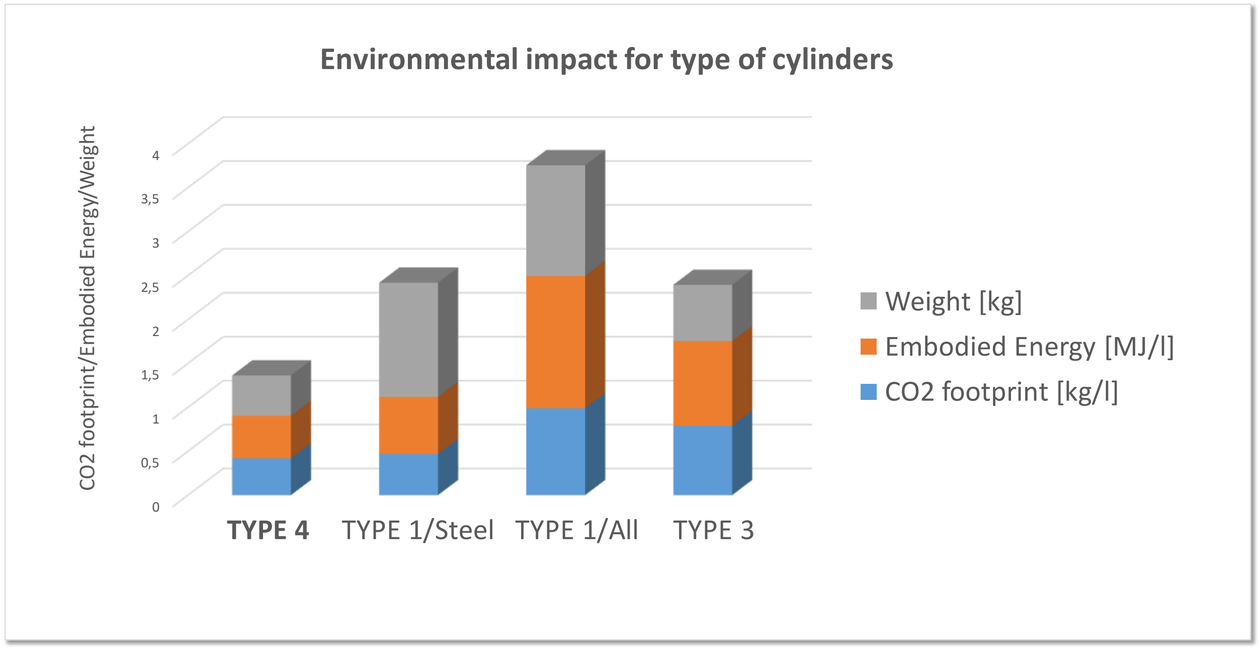
More content

With equal dimensions of a traditional cylinder, Type 4 cylinders can be filled at 300 bar instead of the usual 200 bar of a previous cylinder type. Therefore, they provide a bigger quantity of internal gas

A final consideration that emerged from a university study, highly relevant for this particular historical time, concerns the environmental impact that Type 4 cylinders have, when compared with the previous types of cylinders.

In fact, the production, logistics and subsequent disposal phases of a Type 4 cylinder affect the environment about three times less than any other type of cylinder on the market (in terms of: energy consumption, water consumption, CO2 production, etc.).

Consequently, it can be said that Type 4 cylinders, and in particular those produced by Carbon Cylinder, will be ECO-FRIENDLY.



On a global perspective, the markets connected to the different sectors have already accepted the use of Type 4 cylinders and for this reason it will be easier to overcome the possible reluctance of the markets themselves due, until a few years ago, to a lack of knowledge of the product and a reluctance to change, rather than a general distrust of the untested.

BREATHING AIR
(small and medium sizes)

- Firefighting
- Search & Rescue
- Escape sets
- SCUBA
- Military Special Forces

MEDICAL AIR
(small and medium sizes)

- Pure Oxygen
- Enriched breathing air mixes

TECHNICAL GASES
(small, medium and big sizes)

- Industry: Nitrogen, Argon, Helium, Hydrogen, Compressed air, etc
- Compressed air riles (hunt and recreational)
- Drones (IHydrogen)
- Catering (CO_2)

AUTOMITIVE
(medium and big sizes)

- CNG
- Hydrogen

The main markets that use breathing air are:

- Fire Brigades, Search & Rescue (evacuation or rescue operations in environments with low oxygen quantities) all over the world: although these sectors tend to be not so open towards innovation, Type 4 cylinders have been on the market for almost a decade now and, especially in recent years, the skepticism of operators has been won thanks to their superior performance. Participation in national and international trade fairs will be the main advertising channel. The most important trade fairs for the European market are: INTERSCHUTZ (exhibition of products for firefighters, rescue, civil protection, safety and security in Germany, held every 5 years), A + A (trade fair dedicated to safety at work, held every two years).
- SCUBA (diving): although Type 4 cylinders tend to be positive (and therefore impractical for recreational divers), they are viewed with enormous interest by highly technical divers who, for example, use them intensively for work (diving instructors, specialized divers, uses in the industrial field for underwater welding, etc.). The marketing of this type of cylinders will take place through targeted advertising in social channels (Facebook, Instagram, Pinterest, etc.) in order to make ourselves known directly by end consumers.
- Military special forces: Type 4 cylinders are non-magnetic and very light. These two characteristics make them very attractive for all those special corps of the various Armies or Navies who need products with specific and peculiar characteristics.

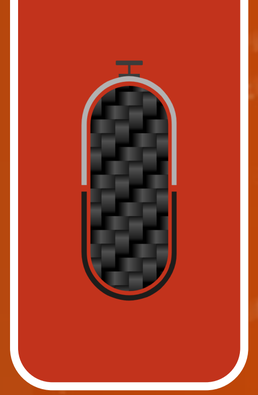
As of today, the alternatives to Carbon Cylinder products are represented by cylinders of different types, in particular Type. This type of cylinder is made of a metal liner protected by an external structure in composite material which makes it obviously heavier than a Type 4 (plastic liner).

Although over the years, cylinder manufacturers have focused on the use of aluminum as a material for the liner since, compared to other metals such as steel, it guarantees less oxidation, in terms of mechanical characteristics it is in any case unsatisfactory, with respect to the market demands.

It is also important to remember that the production time of Type 3 cylinders is much higher than the one of Type 4, due to the greater number of processes and intermediate steps of the production cycle.

A study conducted at Padova University also pointed out a very important aspect, in relation to the era we are living in, which concerns the phases of: production, logistics and subsequent disposal of a Type 4 cylinder. It was concluded that the impact on the environment (in terms of energy consumption, water consumption, CO2 production, etc.) is around three times less than any other type of cylinder on the market. Using a very popular term, it can be said that Type 4 cylinders, and in particular those manufactured by Carbon Cylinder, will be ECO-FRIENDLY.

The existing competitors of the market in which Carbon Cylinder will operate can be counted on one hand, being just two/three companies all over the world. Thanks to the skills and experience acquired over the years by the management of Carbon Cylinder, the Company will be able to take full advantage of new materials and new technologies, placing its products on the market at more competitive prices than those applied by the competitors, guaranteeing, at the same time, even higher margins.



CARBON CYLINDER

via E. Montale 4/5 – 30030
Cazzago di Pianiga (VE) – ITALIA
info@carboncylinder.com
www.carboncylinder.com
+39 342 6448 909

THINK BEFORE YOU PRINT