A start-up, with 50 years of experience

About D-Air Lab

D-Air Lab designs, develops and produces devices to protect and keep people safe, drawing on the **know-how built up by Dainese over their 50 years of innovation in the world of sport**, with a special focus on the technology known as D-air®, the airbag designed to protect the human body, widely used in the motorcycle world, in MotoGP (where it has become compulsory) and Ski racing.

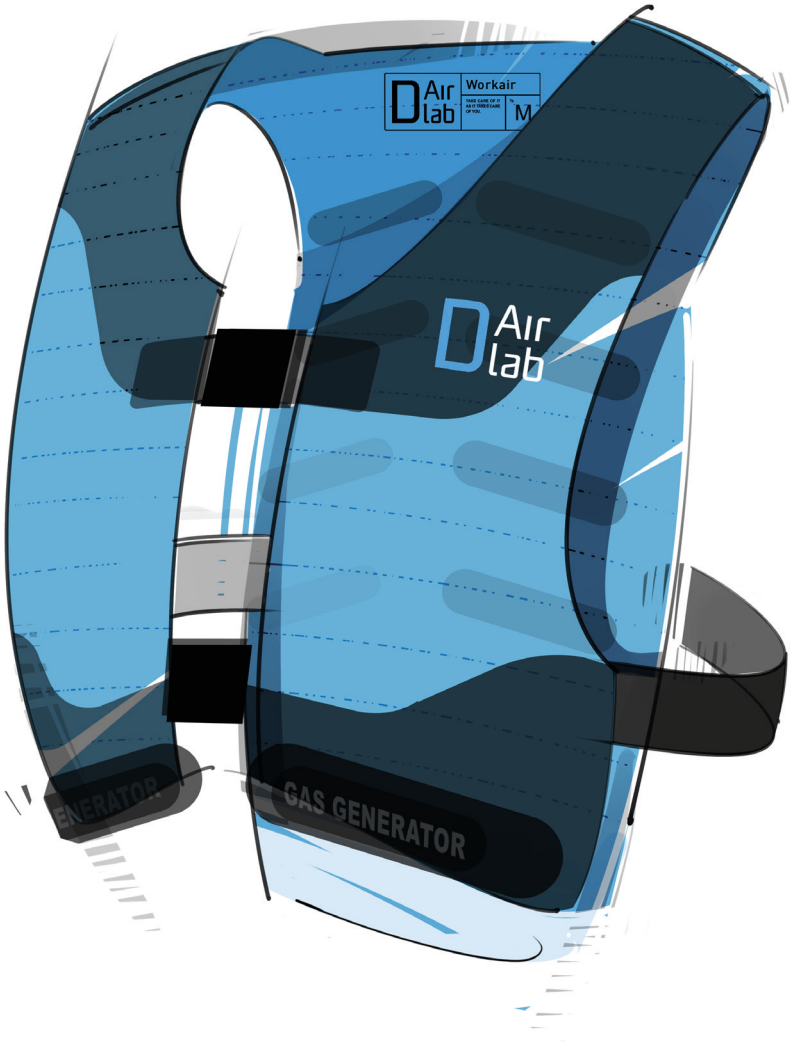
Our mission

Our mission is **to design and popularise safety in everyday life.**

We do it by developing the "intelligent clothing", a concept applied to all D-Air Lab projects that summarizes in itself all the skills required for such a mission: air control, algorithms, ergonomics, design (also understood as acceptability), and the manufacturing capacity (or intelligence of the hands).

WorkAir
intelligent protection

WorkAir is the first ever airbag for the protection of workers at height to be industrialized and certified as an Individual Protection Device.
WorkAir, totally designed and manufactured in Italy, applies the Intelligent Clothing technology to the world of work at heights, effectively responding to needs not covered by other PPE so far.


Air lab
Workair
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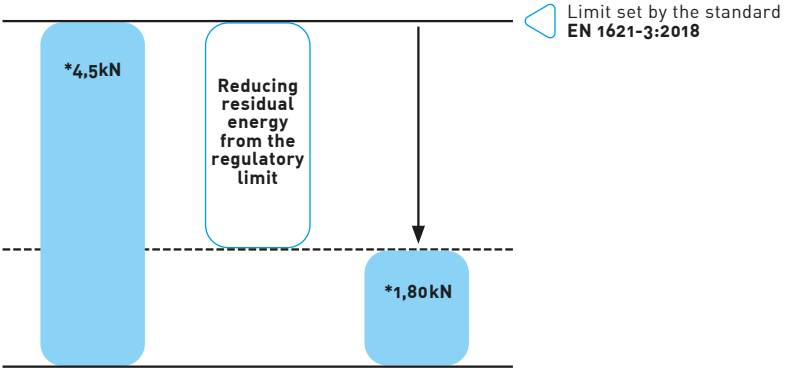
Air lab
GAS GENERATOR

What it protects

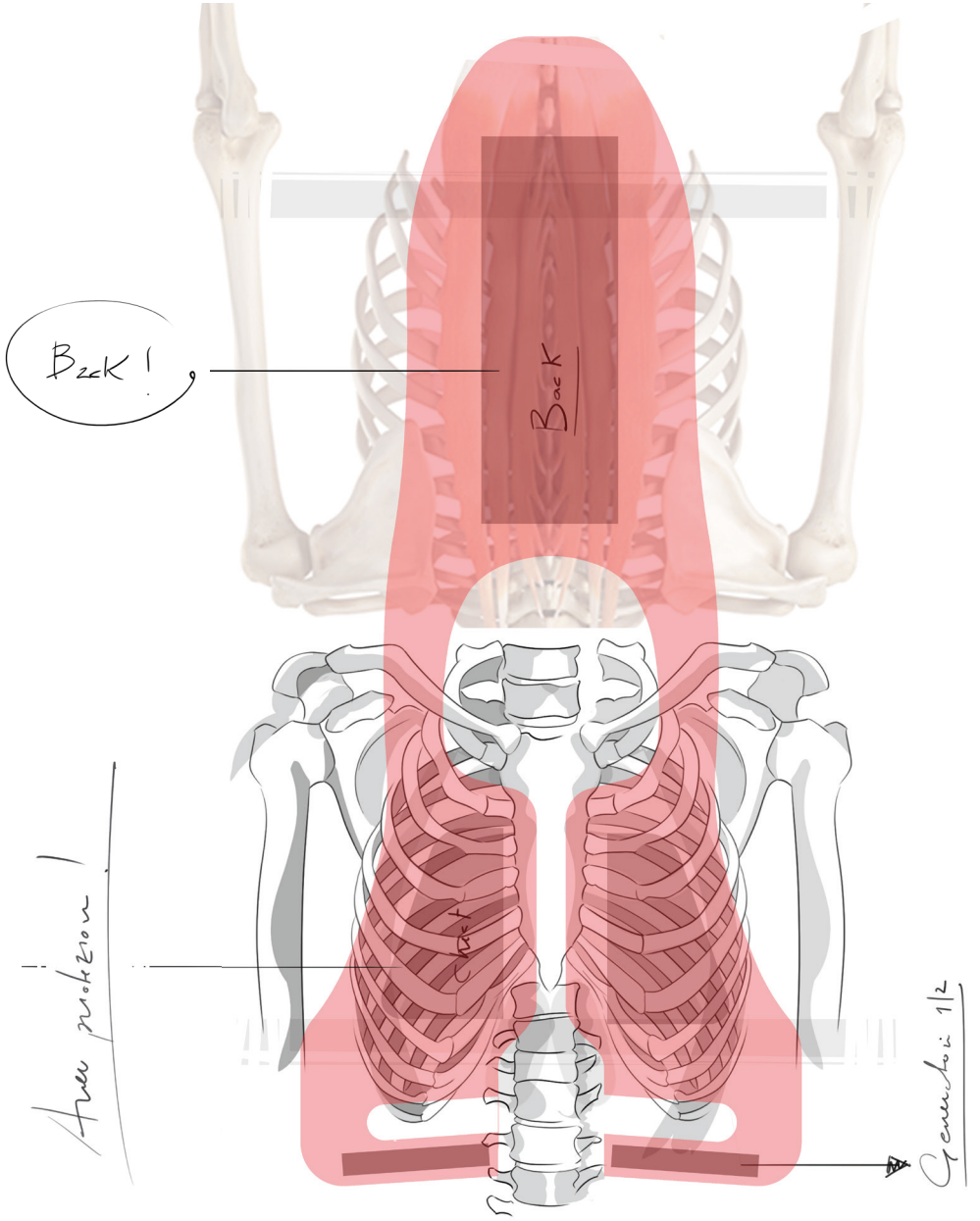


*Average protection value of the airbag. Chest and Back area

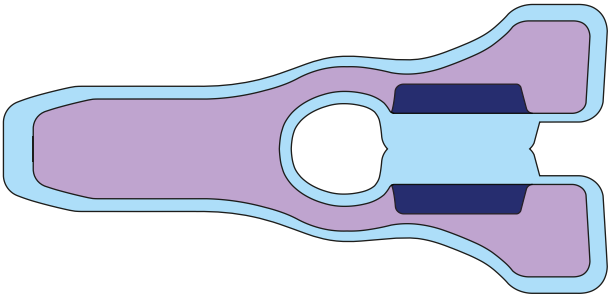
WorkAir protects the back and chest and its associated vital organs.

Tests conducted in accordance with the adopted certification guidelines show that WorkAir passes the impact tests with values of **residual force transmitted less than 60%** of the limit set by the standard to obtain certification.

WorkAir, starting from the moment of recognition of the accident, inflates the bag in just **40 milliseconds**.


Back!
Back
Arm rotation!
Genuchoid 1/2

The pneumatics



ACTIVATED AIRBAG
NORMAL USE
ANTERIOR FLAPS

The pneumatic part of WorkAir is designed and simulated with a dedicated software for FEM analysis, able to reproduce the inflation behavior and the absorption capacity. It allows to define the optimal characteristics of the airbag, such as shape, thickness, gas generator and so on. After that, the product follows a strict ergonomic study.

The careful design of the bag's structure and the in-depth research on external coating materials have allowed to obtain a bag with controlled elasticity. When activated it expands to cover an area of about **20% greater** than when it is deflated.

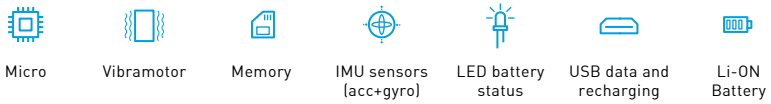
The characteristics and performances of the pneumatic part of WorkAir make it a real jewel of technology, unique in its kind, whose characteristics are covered by several patents.


Air
lab

The algorithm

WorkAir's brain is its sophisticated deployment algorithm, wich constantly analyses data coming from the inertial platform sensors built into the electronics (accelerometers and gyroscopes) to detect when the relevant crash conditions occur and send the deployment signal.
The deployment algorithm was designed by D-Air Lab engineers in collaboration with prestigious specialist firms, which also involved using professional stuntmen to simulate the dynamics of a fall and record the associated data.
The algorythm has already collected more than **2,500 hours of use on-field**, in which it has demonstrated reliable behaviour.

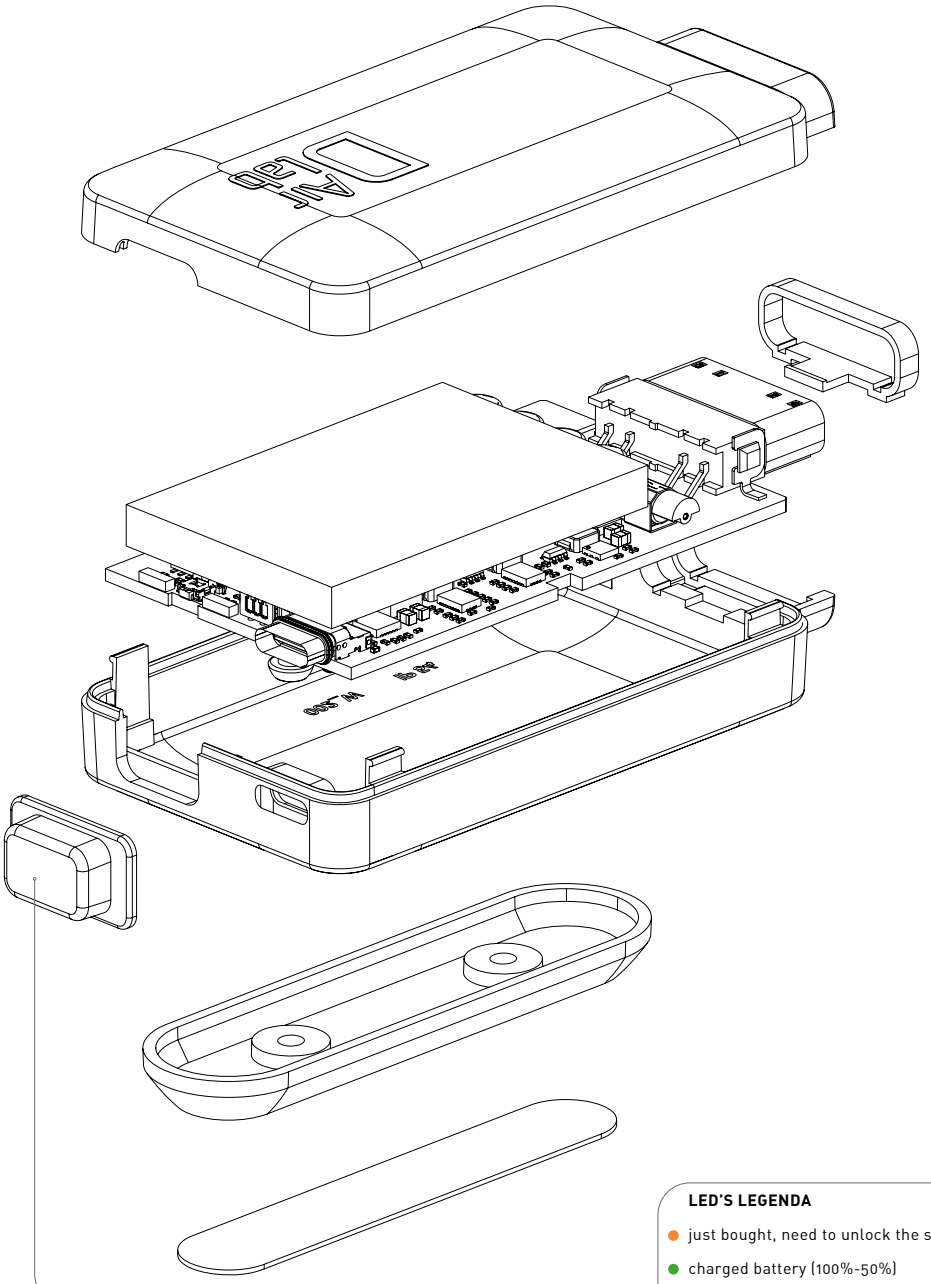
The hardware



WorkAir's hardware has been designed for reliability, which is why it uses quality components sourced from well-known companies coming with the sort of technical assurance that are must-have for PPE.

The electronics unit is powered by a lithium-ion battery that provides **18 hours of continuous use** and can be charged by plugging it into a USB-C port.

The connection with the gas generator is provided by an IP54-rated waterproof connector, while a LED and a vibration notify the user of system's status (battery charge, airbag activated, faults).

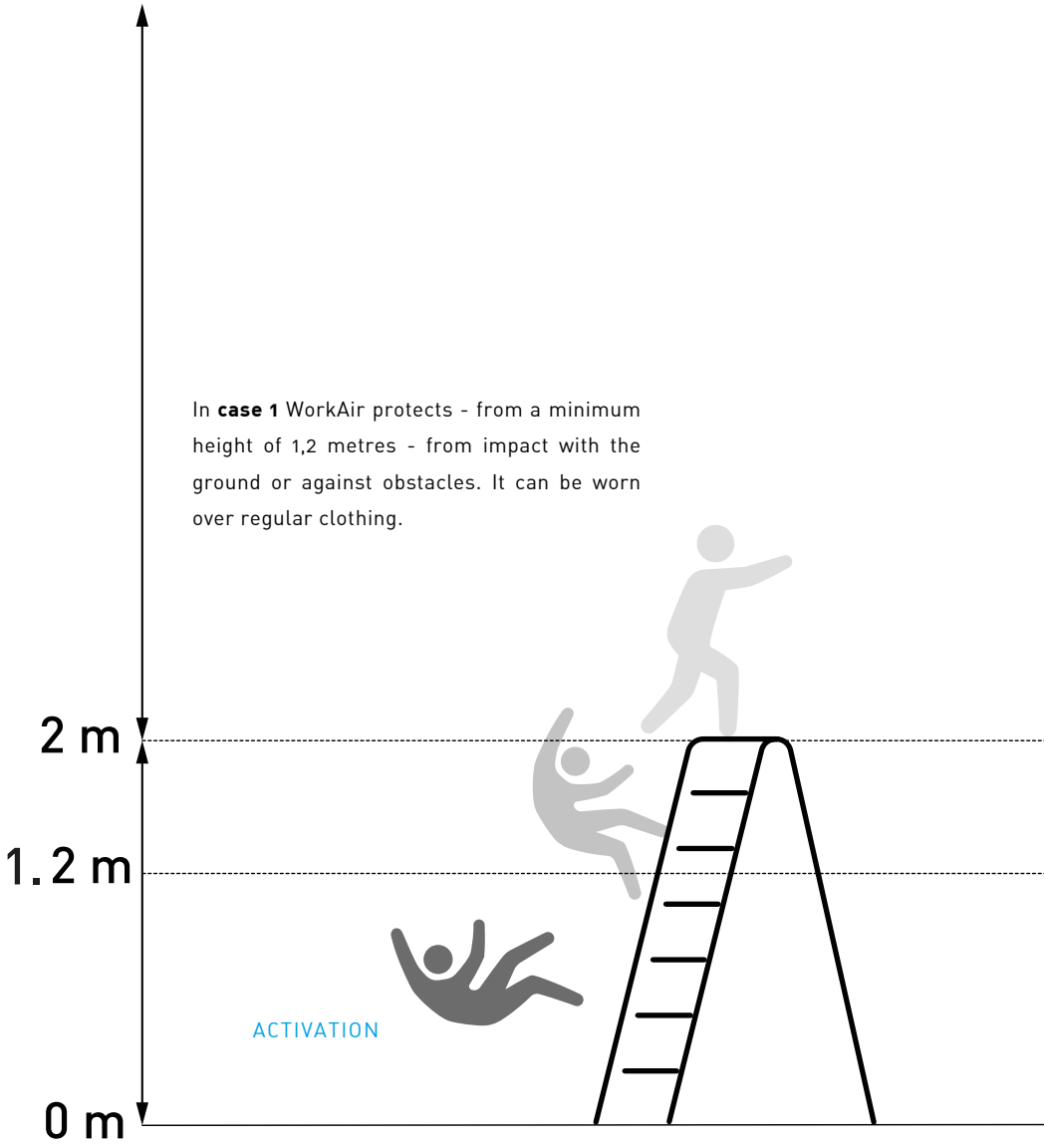


LED'S LEGENDA

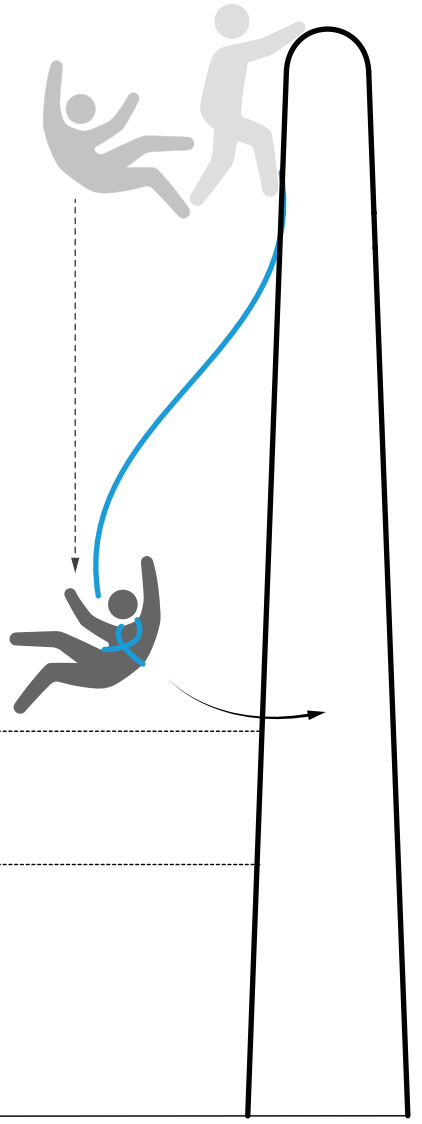
- just bought, need to unlock the system
- charged battery (100%-50%)
- charged battery (50%-25%)
- low battery (25%-0%)
- activated airbag,
  call D-Air Lab's assistance

When it protects

In **case 1** WorkAir protects - from a minimum height of 1,2 metres - from impact with the ground or against obstacles. It can be worn over regular clothing.



In **case 2** (from 2m upwards), WorkAir protects from impacts that might occur as the worker swings against the structure. In this case, WorkAir must be worn **under the harness**, the use of which is compulsory at these heights.



ACTIVATION

Inflates in

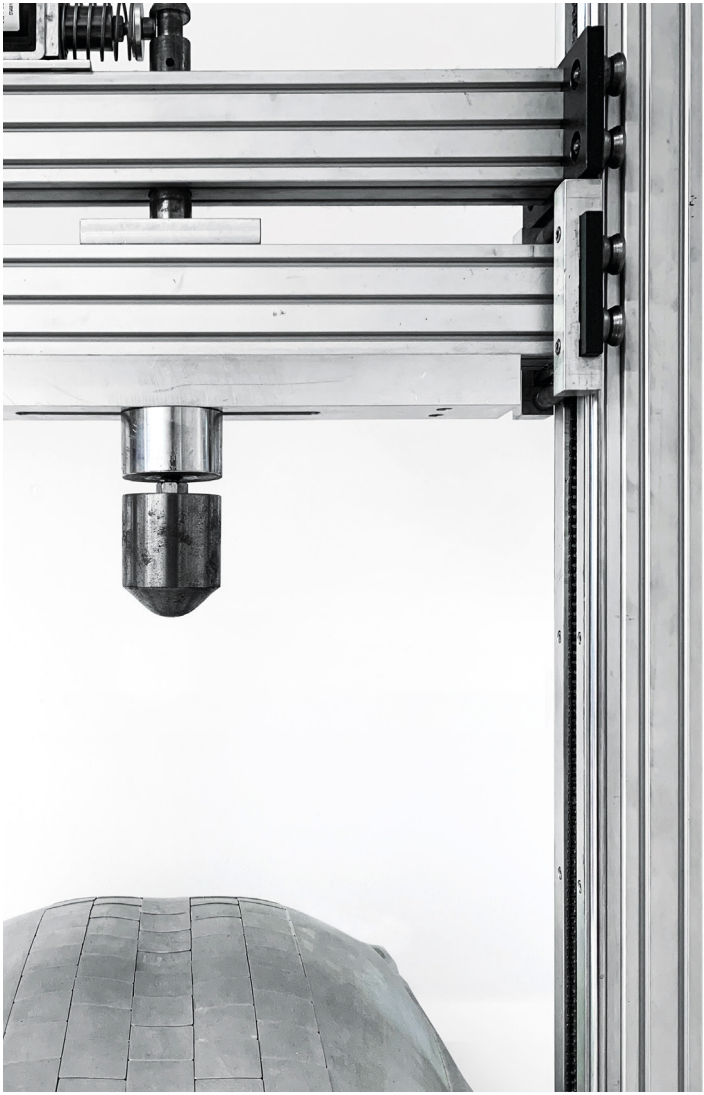
40 ms

Certified PPE

WorkAir is a highly innovative protection device, and current standards have no certification procedures in place for such an advanced system. So D-Air Lab addressed to the Notified Body Dolomiti Cert who, in collaboration with the University of Padua, have devised a set of certification procedures and regulations specifically for this project.

WorkAir succesfully passed the demanding series of **286 single tests**, and it is now the first airbag for workers at height certified as PPE. The device has been tested also under the harness, not being in any way dangerous to the user.

Data provided and the performances indicated for WorkAir are therefore not the result of conjectures, but the result of a precise series of tests whose outcome has been measured with rigor.




CAT

Comfort

Being able to provide workers the highest comfort is the best guarantee for its use. WorkAir presents a series of technical solutions designed to **optimize the air flow** between the product and the user's body.
At the front, the bag is folded inside to leave a useful opening for the air passage. Upon activation, the two folded flaps unfold to fully cover the chest. Inside there also are spacer pads that promote the circulation of air between the body and the bag.

The ergonomics

WorkAir is designed with the utmost attention to ergonomics and ease of use, factors that contribute to widespread use by workers.

1. Spacer pads for ventilation
2. Magnetic closures
3. Side adjustment system and profiled gas generators to adapt to the body's conformation
4. Total weight: 1 kg

1.


Air
lab

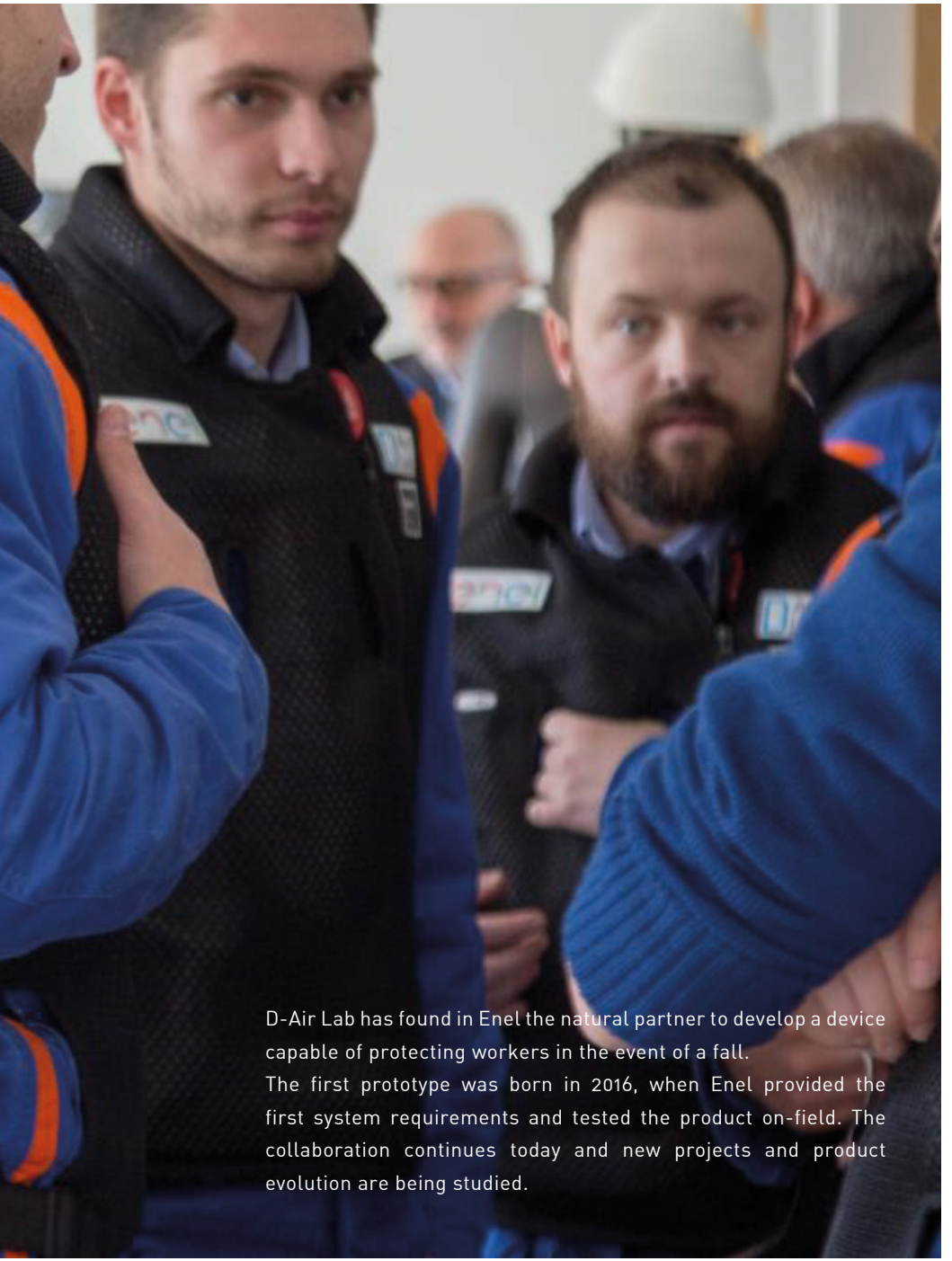
2.

3.


M
Memory
9922
ON
OFF
PRINT
MODE
CAL
SET
M
TARE
Max 8kg d=0.1g

4.


D-AIR
LAB +
ENEL



D-Air Lab has found in Enel the natural partner to develop a device capable of protecting workers in the event of a fall.
The first prototype was born in 2016, when Enel provided the first system requirements and tested the product on-field. The collaboration continues today and new projects and product evolution are being studied.

Technical features

Reinforced
areas

Ergonomic
curvature

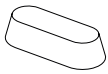
Inflates in

40 ms

Increased protective surface

+20%

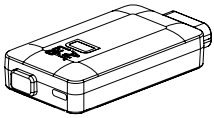
Magnetic
closure

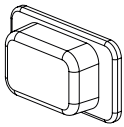


Inner
spacer pads

Adjustment
system

Electronics
integration





How to wear it

without harness


Air
lab

How to wear it

with harness

WorkAir is innovative thinking at work. It's certified technology. It's the new frontier of safety in the world of work.