



Photon^{Plus}

Illuminating Everything

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PHOTONPLUS® IS A

MIX

A mix of elements that gives life to an innovative solution, able to combine the potential of photorefraction and photoluminescence.





PHOTONPLUS[®] IS A CHEMICAL-PHYSICAL COMPOUND CAPABLE OF ABSORBING DIRECT LIGHT AND/OR INDIRECT LIGHT ACROSS ITS SPECTRUM

This makes an object simultaneously photoluminescent and photorefractive, providing the substrate on which Photonplus[®] is applied visible both in absence and in presence of light.

PHOTONPLUS[®] RESPECTS THE PROPERTIES OF THE SUPPORT ON WHICH IT IS APPLIED OR IT IS ATTACHED TO, ALLOWING APPLICATION TO A WIDE RANGE OF MATERIALS AND PRODUCTS SUCH AS FABRICS, VARNISHES, PLASTICS, PAINTS, ADHESIVES, PAPER, CARDBOARD AND FLEXIBLE MATERIALS IN GENERAL.

“It would be nice to train at night worrying only about pushing your limits, without the fear of getting run over.”

Veronica Larsen
Professional marathoner,
Boston.



PHOTOLUMINESCENT EFFECT

Is composed of pigments, artificial or natural, that capture light and release it for a defined time, enlightening the surrounding area.



PHOTOREFRACTIVE EFFECT

Is composed of micro glass spheres with high reflective properties; very small spheres with variable diameter and weight, that hit by a beam of light send it back to the source.



The size of the pigments, intensity, color and the duration of the effect are fully depending on the functionality of the product on which PhotonPlus® will be applied.



PATENT

PHOTONPLUS®
DERIVES FROM
THE PASSION FOR
CLIMBING OF ONE
OF THE INVENTORS.

Every alpinist, amateur or professional, recognizes that the three main situations of greater risk during a climb are:

- return from the summit/descent
- route in the dark
- visibility in emergency situations



OBTAINING A SOLUTION FOR TECHNICAL CLOTHING THAT CAN INCORPORATE SIMULTANEOUSLY PHOTOREFRACTION AND PHOTOLUMINESCENCE IS A SIGNIFICANT INCREASE IN PERSONAL SAFETY.



“The time it takes to locate a missing alpinist makes the difference between finding him dead or alive.”

Claudio Pezzola

Alpine Guide helicopter rescue 118.
Valle d'Aosta.

The substance had to return simultaneously the properties of photoluminescence and photorefraction as well as being modulable in different fields of application. High-visibility refractive spheres and photo luminescent pigments have proven to be the most suitable to support the tests conducted.




HIGH-VISIBILITY REFRACTIVE SPHERES

We tested numerous refractive spheres and “crystalline” ones were chosen as they do not alter the color of the object on which they are applied and are compliant with safety regulations, ensuring a wide field of application.



PHOTOLUMINESCENT PIGMENTS

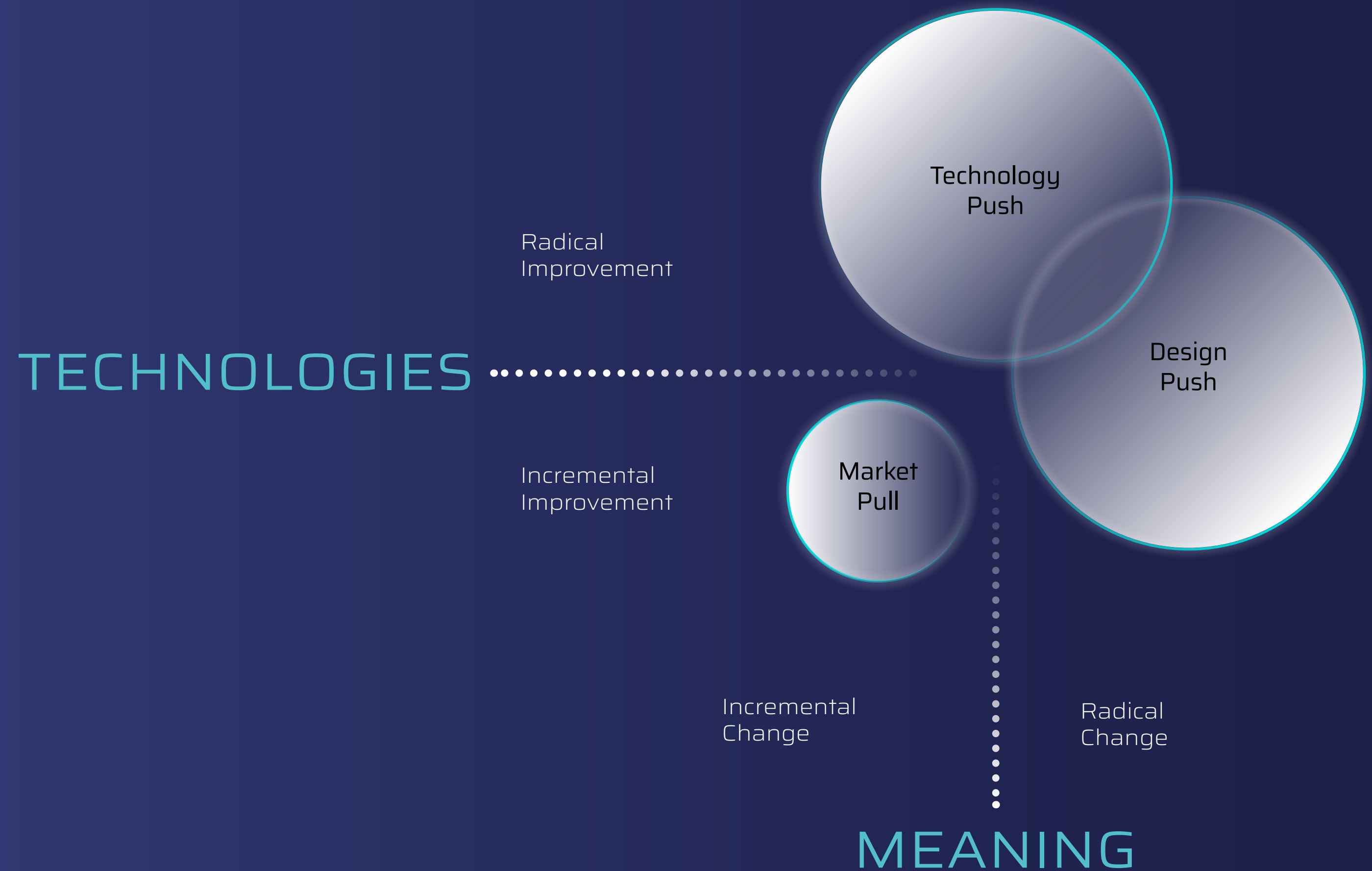
We tested and analyzed numerous products on the market evaluating, among others, non-toxicity, biodegradability, recyclability and adaptability to different surfaces.

A person is shown from the back, running in a dark environment. They are wearing a dark blue athletic outfit with reflective yellow-green stripes on the sleeves, waist, and legs. The person's arms are outstretched, and their hands are open. The background is dark, with a vertical light source on the left side, creating a strong contrast and highlighting the reflective elements of the clothing.

“PhotonPlus increases and completes the protection of the person, ensuring full visibility in every light conditions”.

The main features of this patent concern:

- The simultaneous presence of both properties (photoluminescence and photorefraction)
- The wide spectrum of possible implementation



Source: Verganti R (2009). Design Driven Innovation. Harvard Business Press, Boston, USA

Laboratory tests were carried out by “Plume S.r.l.” a spin-off of the department of Physics of the University of Studies Milano-Bicocca.



Tests and studies* are focused on:

- ⊕ YARNS
- ⊕ FABRICS
- ⊕ HYBRID AND COMPOSITE FABRICS
- ⊕ TEXTILE COATINGS/ INKS
- ⊕ COATINGS FOR METALS AND PLASTICS
- ⊕ PAINTS FOR ROAD SURFACES
- ⊕ ADHESIVE COATINGS

*It is possible to carry out targeted studies on other materials and with different methods of application (e.g. plastic, glass, composite materials etc.).

“If you could see through the darkness created by the smoke, you could help colleagues in need.”

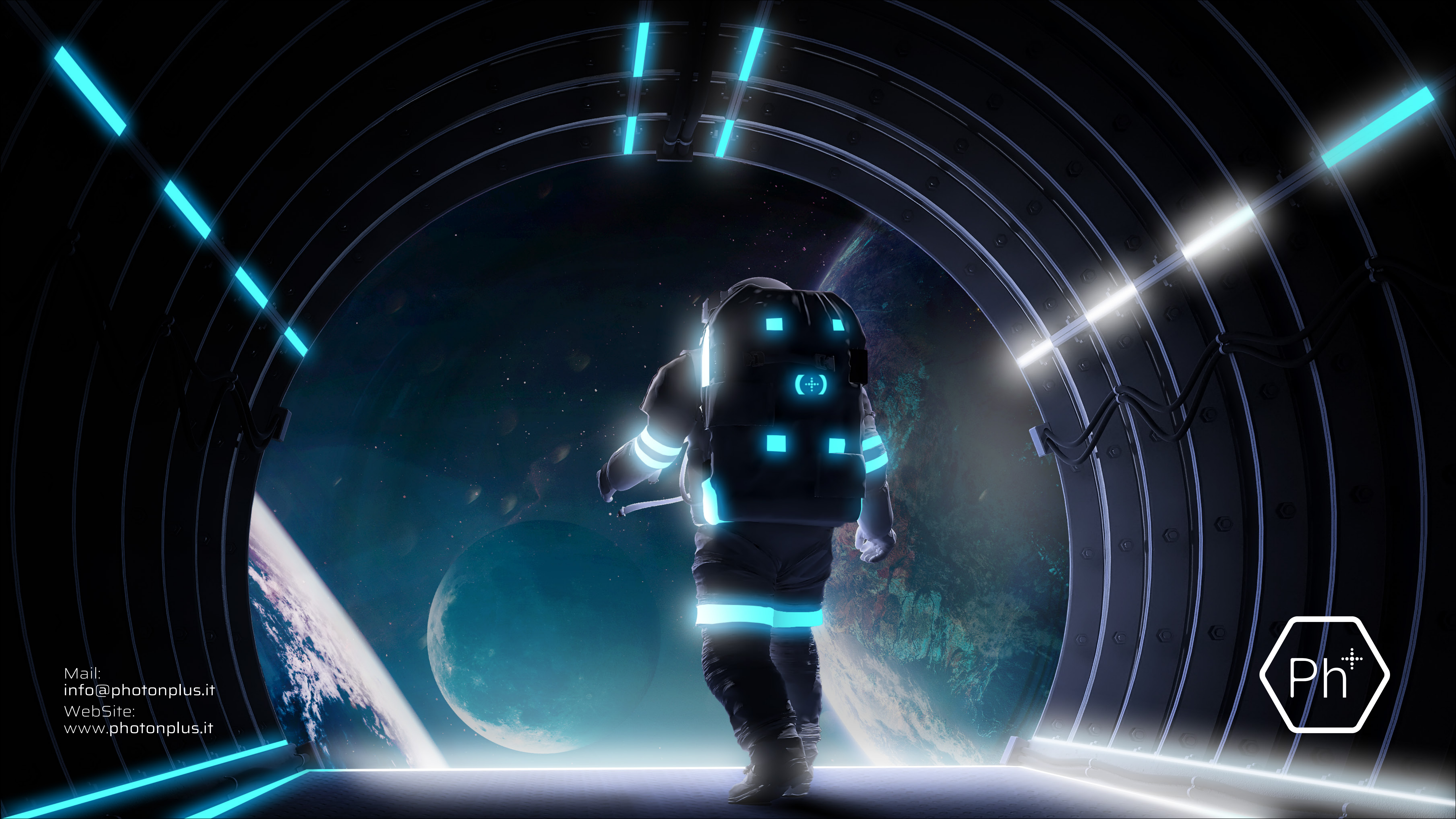
Andrea Benelli

VVP - firefighters on permanent.

Provincial Command Fire Department, Genoa.



PHOTONPLUS[®] IS MADE OF NATURAL AND MINERAL MATERIALS AND IS NON-TOXIC, NON-IRRITATING, NON-FLAMMABLE, RECYCLABLE AND BIODEGRADABLE.
(DIRECTIVE 1999/45/EC)



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