

Product Name

C-THRU: Smoke diving Helmet

Designer

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for the Award**

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for possible exposition in April**

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Description of innovation social values

- product category
- formal and functional features
- problems solved by innovation
 - user
 - field of application

C-Thru is a Smoke Diving Helmet designed for the firefighters to aid them through their smoke diving search and rescue missions. Since it is almost impossible to see within the highly dense smoke, The smoke divers have to crawl on the ground and find their way by keeping hand contact with the walls while carrying heavy air supports and hand held equipments. At the same time they need to keep checking the thermal imaging device and need to keep hold on to one another's air tank handle in order not to lose each other. They also have less than six minutes to rescue all the victims within the building before the smoke kills them. C-thru provides a wireframe vision of the interior geometry surrounding the smoke diver, and enhances the surrounding sounds selectively, thus letting the smoke divers search for the victims more accurately. It simplifies many separate layers of heat and impact protection into a single package. which stabilizes and eases the movements. This unification of equipment also prevents air leakages that happens due to the constant movements of the firefighter.

The Challenge with this project was to provide an accurate way for the Smoke divers to see

Description of technical features

- operations
- technology

C-Thru Smoke diving helmet uses several technologies such as head mounted projection display, retro-reflective image capturing, optical thermal imaging, cloud computing, active noise cancellation, shock absorbing smart materials and heat proofing materials.

The way it works is due to the environmental data received by the optical thermal camera is sent wirelessly to the computing device hand held by the smoke diver leader. The the newly processed data is received by the smoke diver again wirelessly and sent to the head mounted projectors of the helmet. While within the building performing the rescue mission, the calculated wire-frame image data is then projected through the retro-reflective front visor. The smoke diver sees the projected image of his surrounding. All the features of the scene is outlined and informations pop out right in front of the smoke divers cone of vision. A feature very similar to this augmented reality technology is currently being used by the Major Air forces globally.

One of the goals with this concept project was to provide a near future vision of the possible solutions to fire rescue visibility and communication problems via use of technology.

Today right outside of the burning building the smoke diver leader in charge of the rescue mission, creates a hand written map depending on the verbal descriptions of the rescue team inside in order to navigate and guide them back out when the time comes. C-Thru provides an

Dimensions

W 240mm / L 320mm / H 350mm

Materials

High temperature polymers / Retro-Reflective glass / Nomex Fire proof Clothing / Reflective Clothing / Info Graphics / Various Electronics & Software / Shock Absorbing Smart Materials

Certifications

N/A

Benefits for environment

In the long run C-THRU Smoke Diving Helmet will provide better evaluation and records of why "the fire" happens. A fire event is not only a danger for humans but also it has a great impact on the environment. The fumes that come out of industrial products, such as the ones we all use in our daily lives and for the construction of our dwellings contain high levels of dangerous

Benefits for human being

C-THRU will dramatically decrease the casualties of fire events so it will help saving more human lives. Today the result of a rescue mission is all up to the smoke diver's effort. Although to their best of abilities they risk their lives to bring the victims out to safety, they are highly encumbered by many equipment and safety procedures that slows them down significantly. These safety procedures, such as crawling on the floor, keeping a hold on the fire hose, Keeping a hold on the tubing of their team mates, are all because of lack of visibility that produces uncertainty.