

POLYTECHNIC OF TORINO
FACULTY OF ARCHITECTURE
Degree in Architecture
Honors theses

High altitude rescue (over 5000m) without the use of the helicopters: analysis of the present condition and plan proposal

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in collaboration with:

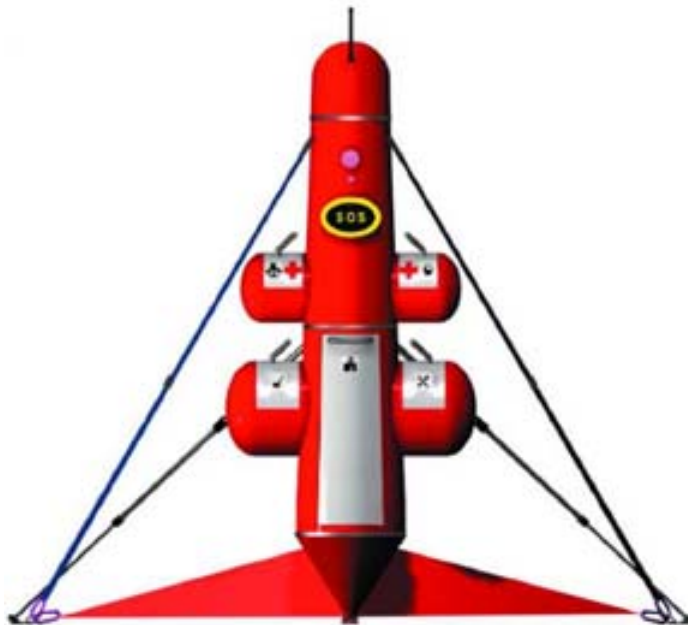
EV-K2-CNR Project "Scientific and Technological Research in the Himalaya and Karakorum Regions"

C.N.S.A.S "Italian Alpine and Speleological Rescue Corps".

The aim of the thesis was to check security at extreme altitudes and try to improve the level through an Industrial Design plan.

To summarize the project, the research began with the general analyse of the operations of mountain rescue associations in Italy and in other regions, and includes interviews with people experienced in mountain security. To provide a comprehensive analysis, experts from main mountain sectors (which include: climbers; rescuers; intellectuals and researchers) were questioned.

From the interviews has appeared a common topic: the problem of the security in some areas of the mountain environment defined by the experts as "remote areas". Extreme altitude was included in this group. Every expert gave some indications about the security in these remote areas.



From the above questioning it was possible start the exact analysis of the security at extreme altitudes: the main problem for people that go to these altitudes (over 5800m) is the lack of oxygen in the air, the acclimatization is not possible anymore and extended sojourn can cause high altitude sickness with the consequent risk of death.

The interviews were schematized and used to design an hypotetical kit or rescue module.

The rescue module exhibit the following features:

1. Be easy to recognize when is placed in the enviroment.
2. Possibility to send an SOS.
3. Medicines and oxygen containers (to treat the high altitude sickness).
4. Food container.
5. No possibility to bivouac (the therapy against the high mountain sickness is effective only if the alpinist descends fast to lower altitudes).
6. An alpinism rucksack for transportation.



THE RESCUE MODULE

The rescue module should be made with red fluorescent plastic to aid the visibility in the high mountain environment. It should be cylinder shaped with the following dimensions: 2 meters high and diameter Ø35cm.

The module would contain a radio set (solar panel feed) with just one button visible to avoid confusion. Pushing the button would be possible using the palm of the hand and would result in the sending of an SOS signal to the closest base camp.

The module would contain medicines and oxygen for the treatment of the high altitude sickness. Every container is easily recognizable thanks to special symbols *printed on.* Other containers would hold energy bars and vitamins tablets.



On being disassembled the module should fit into a rucksack and weigh as little as 11kg.

The assemblage would be easy thanks to simple joints, the anchorage to the ground occurring through expansion bolts, flat tapes and telescopic sticks.

The module has to be placed in windy places so that the snow can't cover it, due to the turbulence created by the wind. Two fabric wings keep the snow on the back side and create turbulence on the access side so that the wind always keeps it clean.

At the end of its use (for instance after the climbing season) the module can be disassembled and stored so that there are no marks left on the ground.

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