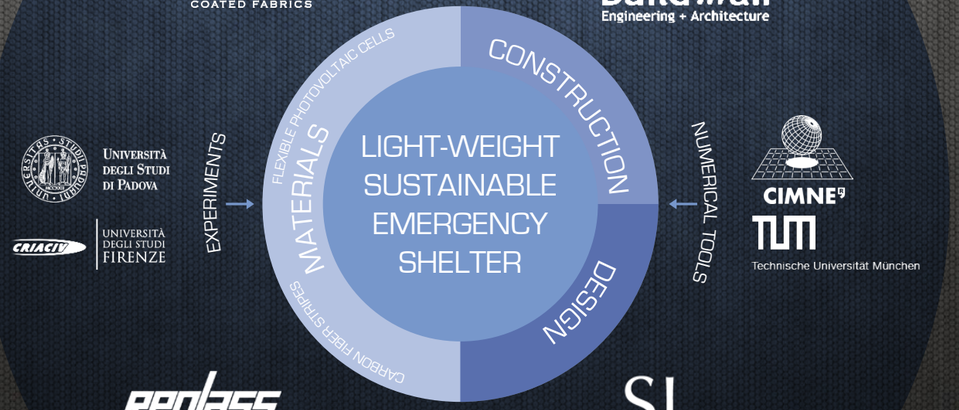
PARTNERS

naizil® COATED FABRICS

Build air Engineering + Architecture



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CAPACITIES

Available from January 2015

uLites

ULITES EMERGENCY SHELTER

Ultra-lightweight structures with integrated photovoltaic solar cells: design, analysis, testing and application to an emergency shelter prototype

ULITES EMERGENCY SHELTER

INFLATION PROCESS:

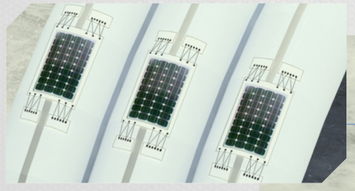
First inflation in about 30 minutes.
Pressure 20mbar

MANTENANCE:

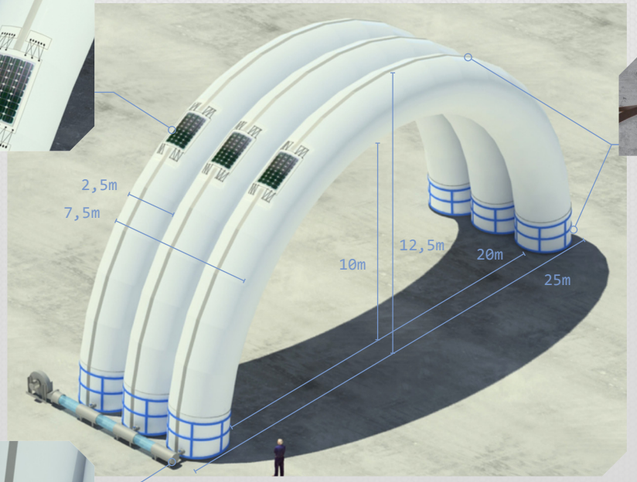
5-6 minutes of air inflation once a day

Pressure inflation is automatically activated when pressure decreases below 10mbar, inflating again up to 20mbar

Total energy consumption aprox. 250W/day

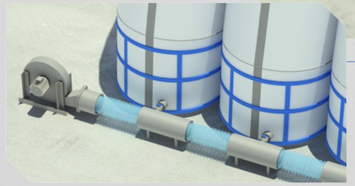


PHOTOVOLTAIC CELLS (NAIZIL)



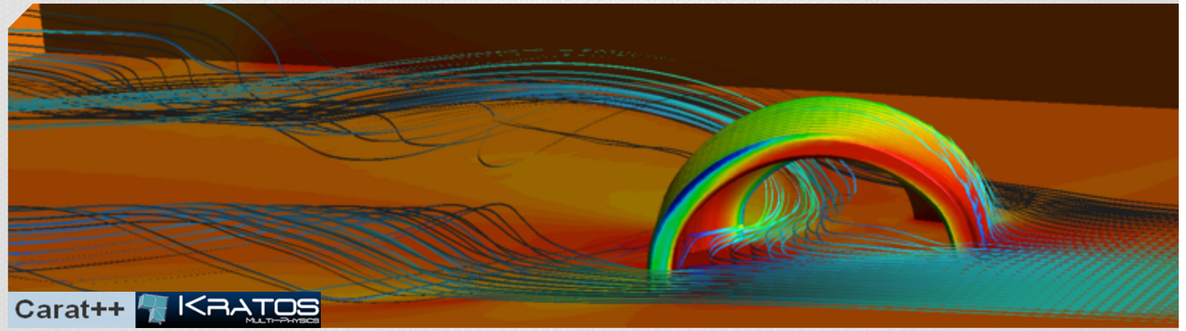
EMERGENCY SHELTER (one module)

REGLASS STRIPES AND ANCHORAGE (REGLASS)



BLOWER AND AIR-DUCTS SYSTEM

- Standard available area (1module): **150 m²**
- Weight: **250 kg/tube**
- Folded volume: **0,75 m³/tube**
- Average setup time: **less than 2 hours**
- Recommended personnel: **8 people**



VIRTUAL WIND TUNNEL (CIMNE AND TUM)

TECHNOLOGICAL IMPROVEMENTS:

» **BETTER PERFORMANCES:**

› **SUSTAINABLE** Flexible photovoltaic SOLARPANEL modules will be used on the shelter thanks to the very low energetic requirements achieved

› **LESS AIR LEAKAGE** Leakage reduction from values around 2000m³/h down to values lower than 0,1m³/h thanks to an improvement in the manufacturing process and the use of materials with better PVC coating

› **NO NEED OF CONTINUOUS AIR IMPULSION** A"mixed" system has been designed, which combines the energy storage by means of "over-pressure energy" and the use of batteries to store the "extra" energy generated by the photovoltaic cells

» **INNOVATIVE MATERIALS**

› **FLEXIBLE PHOTOVOLTAIC CELLS:** SOLARPANEL. Material characteri-zation via uniaxial and biaxial tensile tests performed.

› **FLEXIBLE CARBON FIBER STRIPES:** development and testing of a new high-toughened thermosetting resin. 0.15-0.33mm thickness, some cm curvature radius. Creation and testing of new anchorage system (FIG REGLASS STRIPES AND ANCHORAGE)

» **INNOVATIVE SOLAR ENERGY SYSTEM**

› 3 SOLARPANELS Nominal power 80W each
› 220Ah battery + inverter + charge controller
› ACS (Automatic Control System): to automatize and remote control the parameters and behavior of the structure

» **NEW INTEGRATED DESIGN TOOL** An integrated VIRTUAL WIND TUNNEL tool has been developed for the calculation and design of the shelter.

› Both CFD and FSI calculation.
› Atmospheric Boundary Layer Generator Module.
› User friendly integrated pre and post processing

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