

Gianna Latini¹, Marco Adami¹, Nicola Pozzan², Fabrizio Casadei²

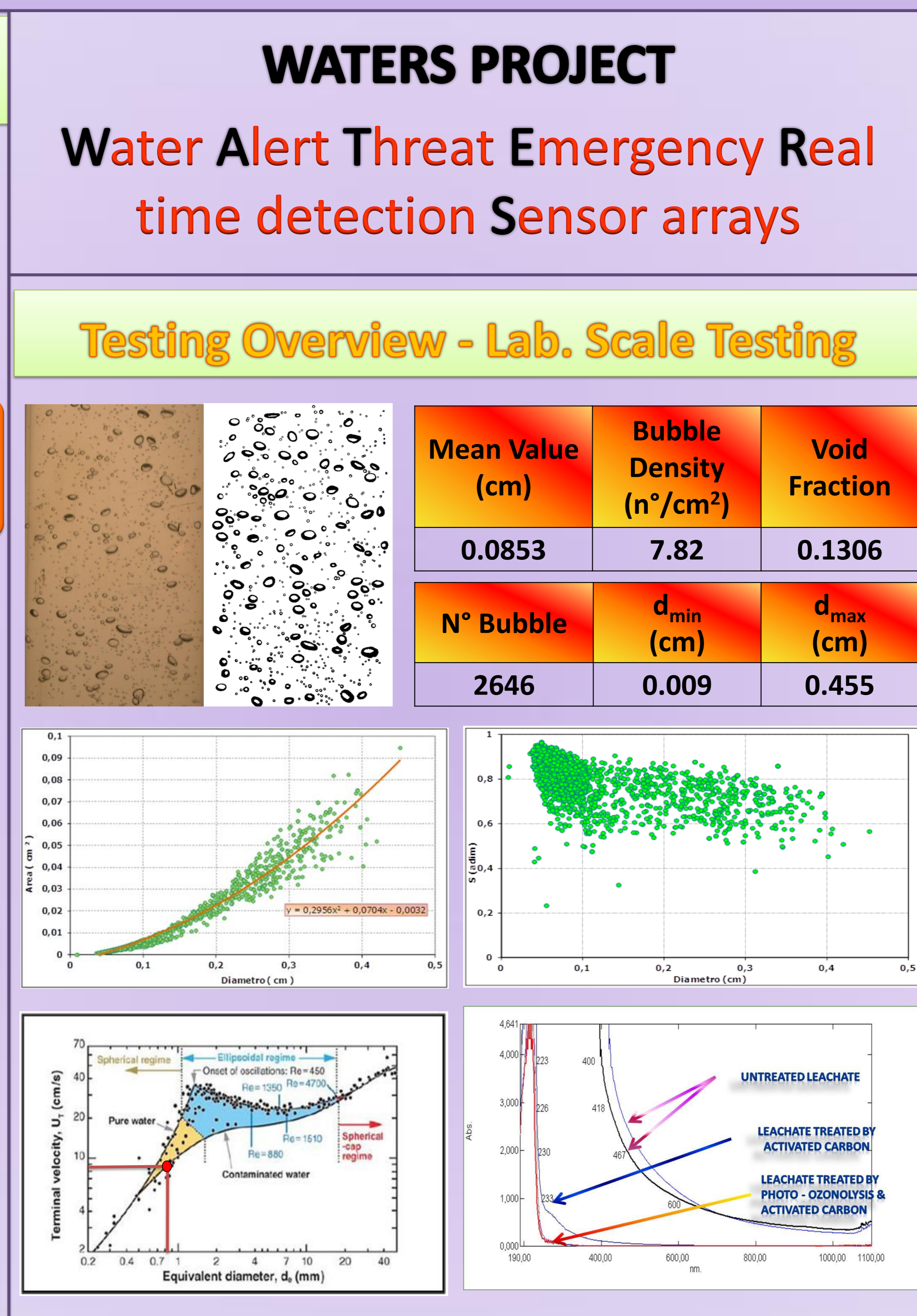
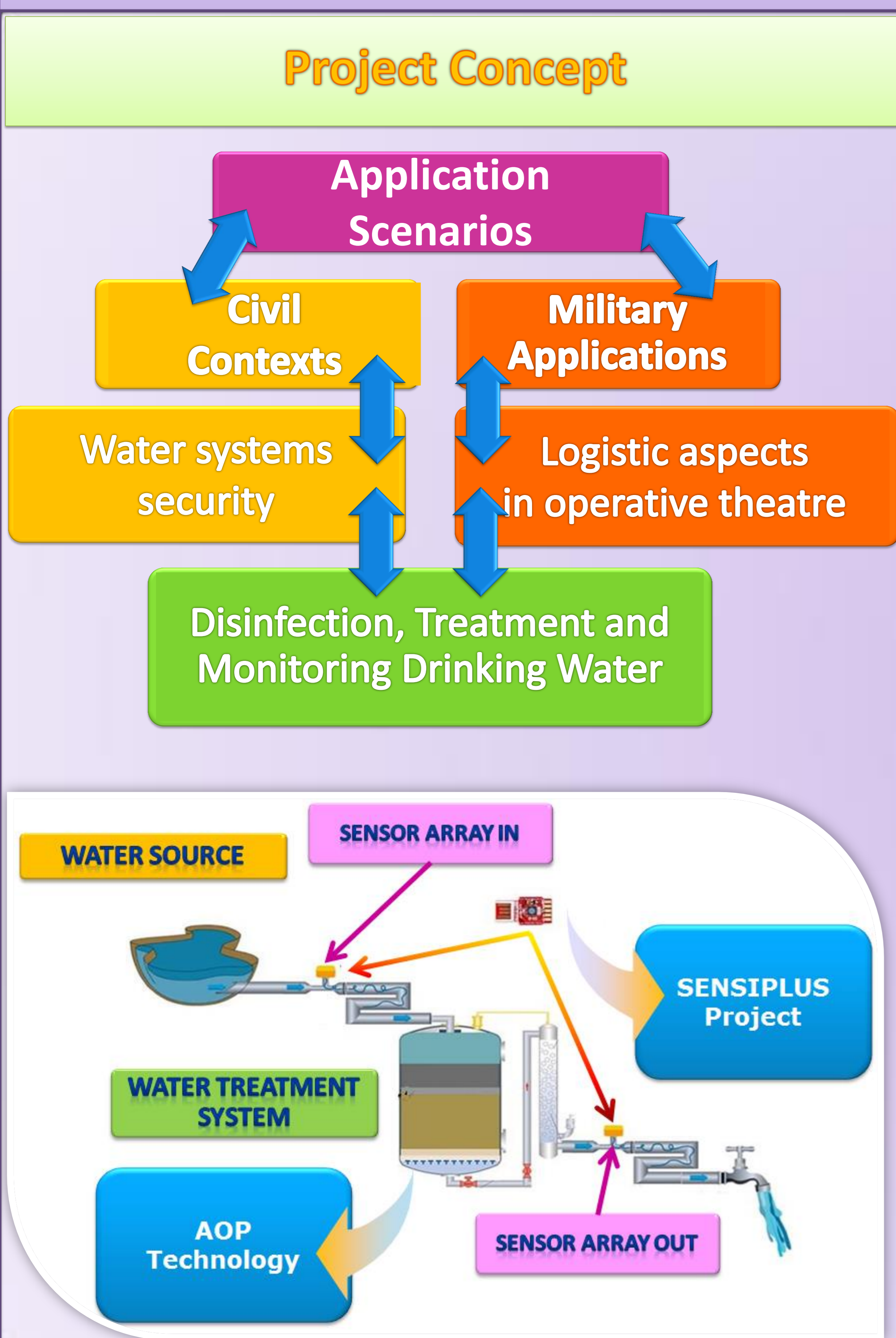
AERO SEKUR, Via delle Valli - 04011 Aprilia (LT), Italy
ECO RESEARCH, Via Friuli, 11 - 36015 Schio (VI), Italy

There is a long history of using water as a political or military target or tool, going back over 2,500 years. Water resources and systems are attractive targets because there is no substitute for water. Water resources are a prime infrastructure target for destruction or compromise by terrorist acts. Water can also be used as a tool or weapon of terrorism: since it's fluid, water can be used as a delivery vehicle to carry destructive agents throughout the ecosystem, water system, and to human and animal populations. Finally, water is a very important logistical support during military operation since water is fundamental for hydration of soldiers, vehicle maintenance, decontamination operations.

WATERS is a system can be used for protection, monitoring and water systems security. It's architecture allows to check the quality of the water through a sensor system placed in inlet and outlet of the disinfection system based on Advanced Oxidation Process (AOP) technology. AOP system is based on ozonisation, activated carbon filtration and UV process. The sensor system can provide constant monitoring against a possible contaminations of chemical, biological or radiological agent.

CATER50S is a transportable system that is able to produce water everywhere and in any geographical condition and doesn't need the availability of surface water because it works through the condensation of moisture from the air and it is also suitable to operates in hostile environment. The system provides continuous supply of water in compliance to the legislations the regulates the drinking water process. The system guarantees a good production of water even in a very bad climatic condition (lower percentage of humidity and higher temperature).

Keywords: Water systems security; Advanced Oxidation Process; Water purifying mobile system; Condensation technology



World Patent Technology

PRE - OZONOLYSIS ACTIVATED CARBON PHOTO - OZONOLYSIS

Sensor Array

Faster response by about x5 (100s ms)
Nanocrystalline makes highly stable
Self heating to 300°C, very low power

Project Concept

- Water purification system is able to ensure continued supply of water respects the chemical-physical parameters of the regulations in force, the hygienic purity and stability of the quality.
- The unit is mounted on a wheeled cart electrically motorized and is designed to reach in fully autonomy the site of use even after it has been parachuted.
- The system is provided with a condensation module which does not need of the availability of superficial waters and is suitable to operate in a hostile environment (sabotage water resources chemical weapons use).
- The system works through the condensation of moisture from the air. The module offers a good production yield of water even with very low percentage of humidity

CATER50S PROJECT

Main Futures

HANDLING & TRANSPORT

- Towing
- 18-Wheeler
- Pick-up truck
- Parachutable with PAS (Precision Airdrop System)

USE

- Fast deploying
- Quickly Set - Up
- Strength
- Not require availability of surface water
- Operational autonomy

SUITABLE FOR ANY OPERATING SCENARIO

Technical Specifications

Operating temperature	-15°C ÷ +55°C	
Relative humidity	25% ÷ 60%	
Production capacity	50 liters in 2-6 hours	
Ozone generator	Power	4 kW
	Ozone Production	0.5 - 2 gr/lt
	Compressor power	1.1 kW
Activated carbon filter (GAC)	Capacity = 600 l / h Pressure = 0.5 bar	
UV Lamp (LED)	Flow rate 300 l/h Power 5 kW	
Alkalinity, pH and mineral salts corrector	Flow rate = 2 l/min. Autonomy = 200 lt	
Air filtration	DELTA CELL95 = class F9 10 µm HEPA H13 = 10 µm Absolute filter = 0.2 µm	
Total Weight	2500 Kg	
Dimension	W x D x H = 4.5 meters (including trailer hitch) x 1.4 mt x 2.3 mt (exhaust)	
Generator		
Electric power	18.8 kW @ 3000 rpm	
Power supply	230 to 380 volts AC and 24 V DC, 20 Ah	
Fuel tank	50 liters	
Noise level	<65 dB @ 7 mt	
Power consumption	230 g/kWh (4 l/h to 13 kW)	
Weight	300 Kg	