



**Engineering**  
the energy saving

the  
Passive  
Cooling



**Our challenge on railways**

**LEVEL CROSSING  
(PL17) in Cavriago (RE - IT)**  
FER Railways



**LEVEL CROSSING  
PL10 in Reggio Emilia (RE)**  
FER Railways

**Devices able to control the temperature without any energy consumption and maintenance**



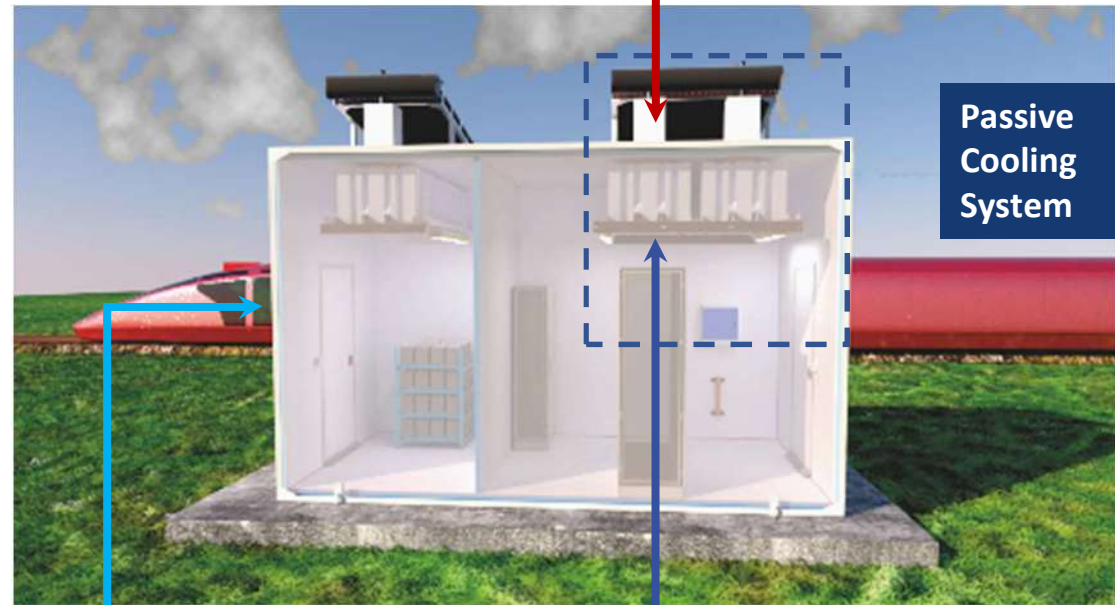
No energy consumption, necessary for the air conditioning, (or highly reduced).



Considerable increase of the global reliability due to the absence of mechanical moving parts and fluids under pressure. No maintenance required thanks to the sealed and "elastic" hydraulic circuit, refills free.



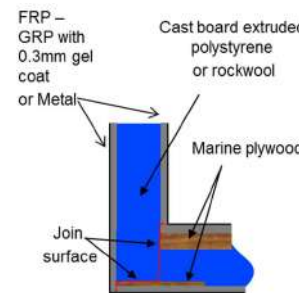
The devices are housed in a room without direct air entrance and with a temperature control without sudden jumps.



**External heat exchanger:**  
During the night it allows the regeneration (cooling) of the accumulated liquid.

**Passive Cooling System**

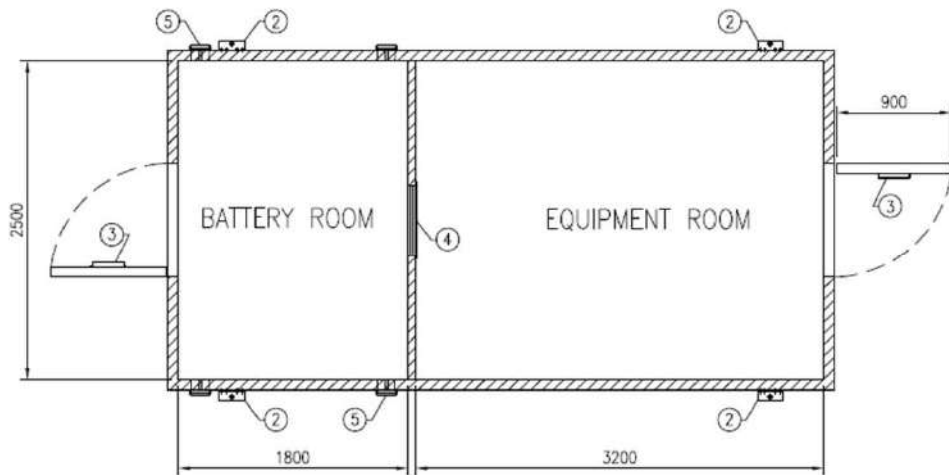
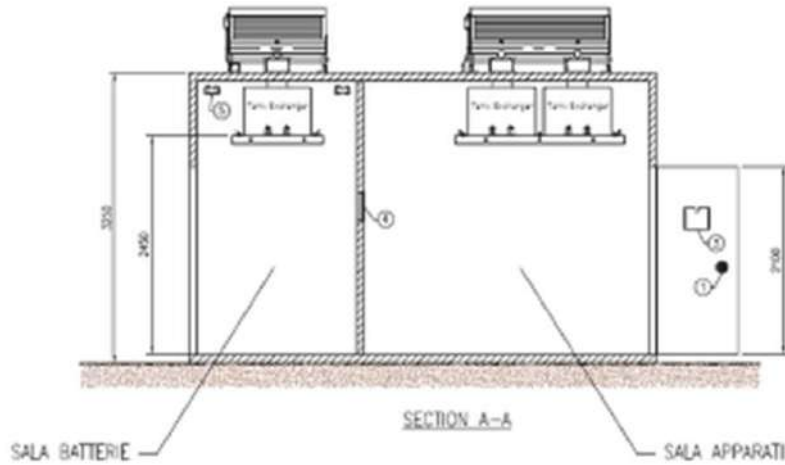
**CORROSION PROOF & MAINTENANCE FREE GRP SHELTER BODY**



**Additional details on [www.celantel.com](http://www.celantel.com)**

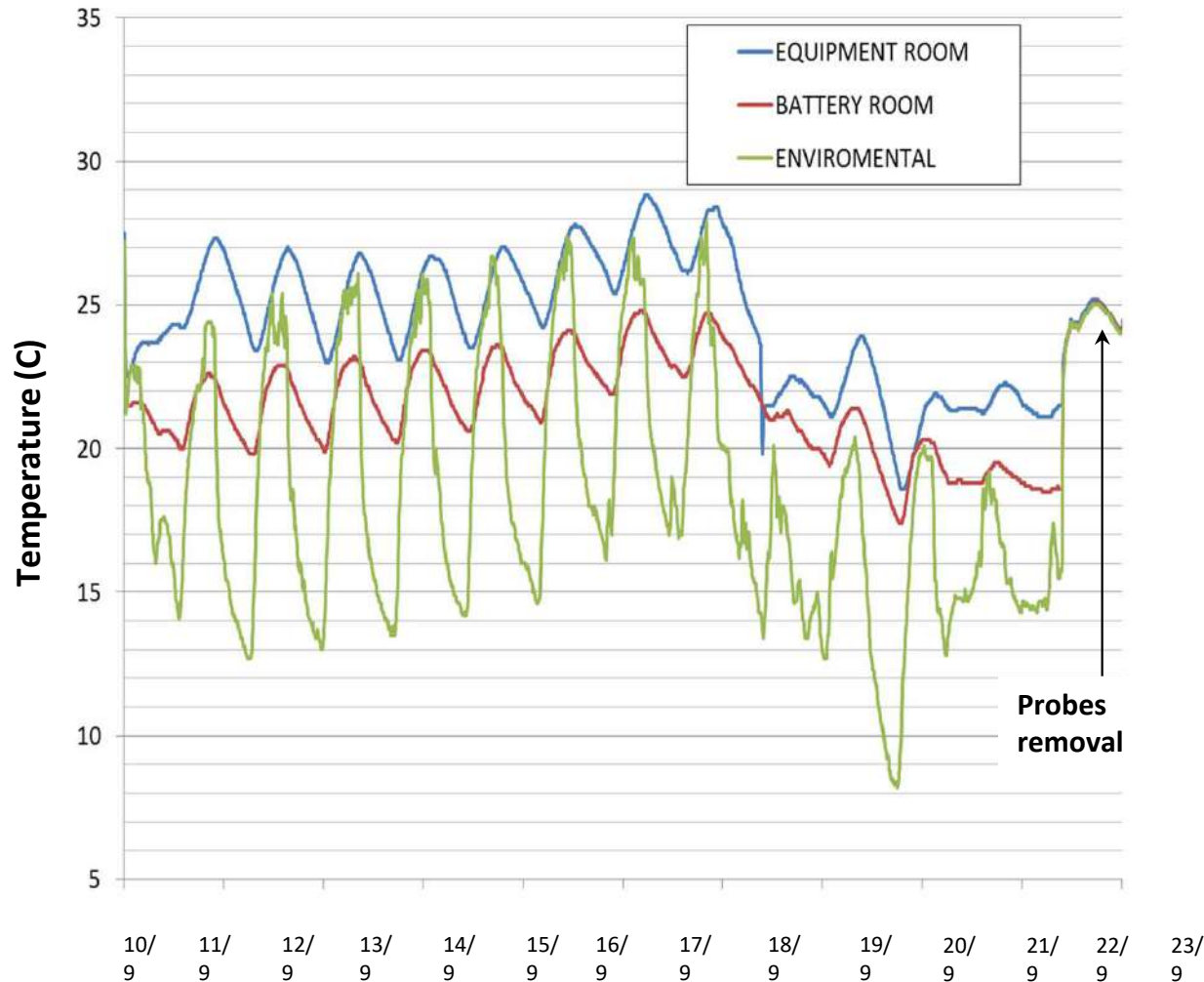
**Tank/ Internal heat exchanger:** integrated in a single system made of SLHDPE allows the transfer and the collection of thermal energy from the internal environment to the water inside it and viceversa.





**Shelter body dimension and characteristics will be tailored on specific project and field installation requirement**





Environmental Thermal Probe installed under shadow.  
 Thermal Probes installed at medium height in each room.

**1500W: overall heat dissipation confirmed by the Customer.**

- Area of Installation:  
North Italy – Mid Italy

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- Expected Maximum Internal Temperature:  
**42°C**  
**(35° of 90% of the time)**

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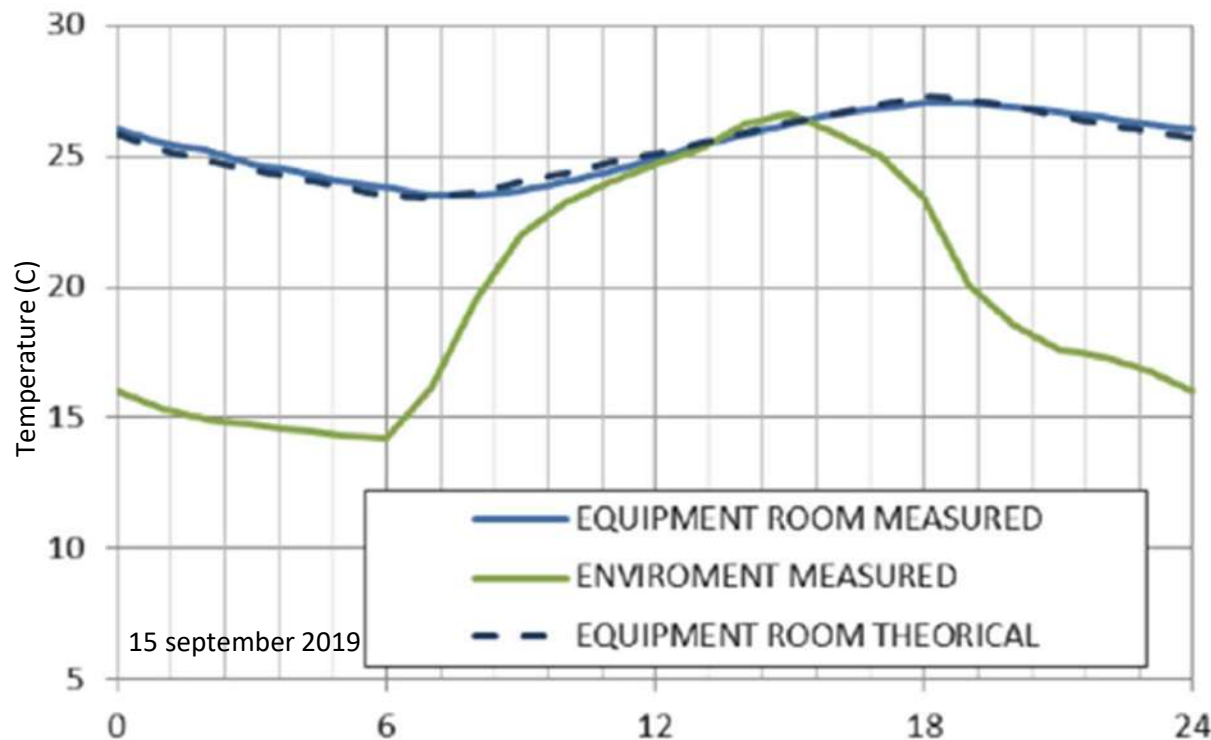
- Internal Equipment Heat Dissipation:  
**1500W Continuous**

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- Minimum External T Temperature: -10°C

## PL10 recorded data fitting.

Satisfactory Experimental-Theoric Data Matching



These recorded data has been analyzed through Celantel thermal simulator software.

The overlap between the theoretical thermal response with the actual recorded temperature data is almost perfect. This validates the project.



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