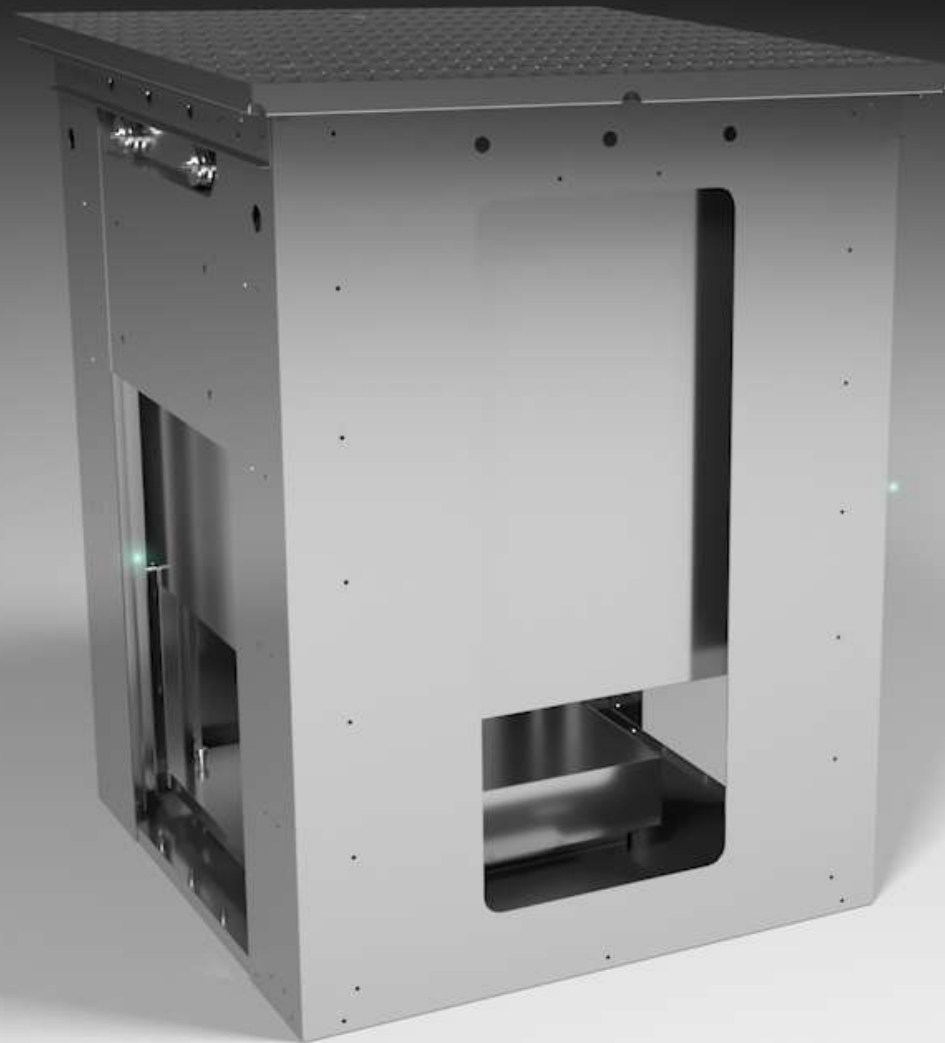




Engineering
the energy saving

the
Passive
Cooling

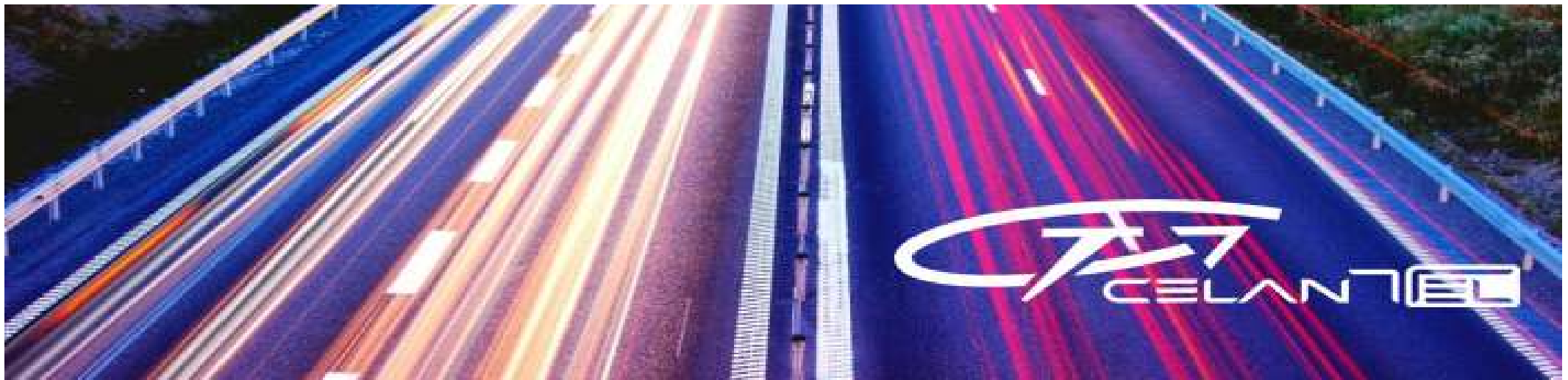


**PASSIVE
UNDERGROUND
CABINET**

The study required to Celantel of the most suitable arrangement to house equipment related to the Smart Road Project brought to the design of the underground cabinet, having as a main peculiarities those related to the thermal control together with other mechanical features herein described.

The design criteria adopted emphasizes the installation and operational aspects, both on the life cycle cost side and those related to the maintenance.

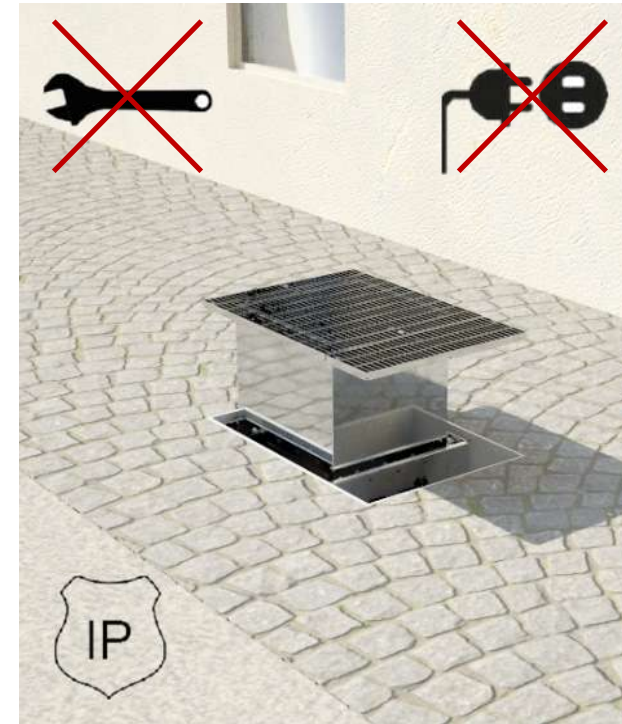
The achievement is a passively cooled underground cabinet with characteristics providing distinctive and unique features.

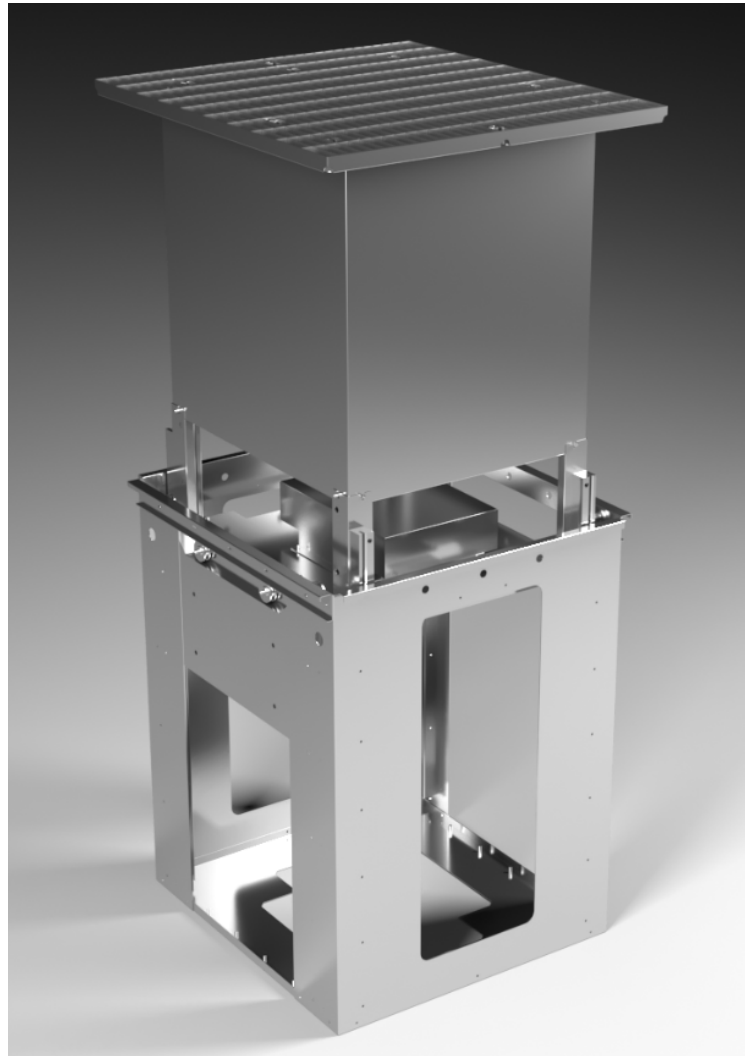


The module is composed of two parts, one laid down in the precasted concrete and the cabinet inserted in it.

The latter can be easily erected by means of proper device and both constitute a unique assembly able to ensure:

- temperature control with **zero energy consumption** and **zero maintenance**;
- compact and functional housing for equipment and battery;
- cabinet erection ensuring easy access to the operations required;
- total tightness;
- zero impact on the environment both aesthetically and energy wise-
- the housing will be tailored based on the specific design requirements;
- to fit the equipment in the cabinet the 19 inches rack can be utilized.
- **Thermally tested** in two versions for **90W** and **200W** heat dissipation





INTEGRATED
HEAT EXCHANGER
**OF THE PATENTED
PASSIVE COOLING SYSTEM**

**PHASE CHANGING MATERIAL
(PCM) INTEGRATION FOR
IMPROVED PERFORMANCES**

THE CONSTRUCTION, MATERIALS AND
TECHNOLOGY, IS REALIZED ACCORDING TO THE
**EE.UU HSE DIRECTIVES IN TERMS OF HEALTH,
SAFETY AND ENVIRONMENTAL RULES.**

THE CINEMATIC EFFECT OF **LIFTING** THE
CABINET FROM THE BURIED STRUCTURE IS
ACHIEVED BY MEANS OF SLIDING GUIDES
AND A PULLEY WEIGHT BALANCE SYSTEM.

Cabinet material:AISI 430

Frame material:AISI 430

Bolts:SS grade A2

Protection rating:IP 68

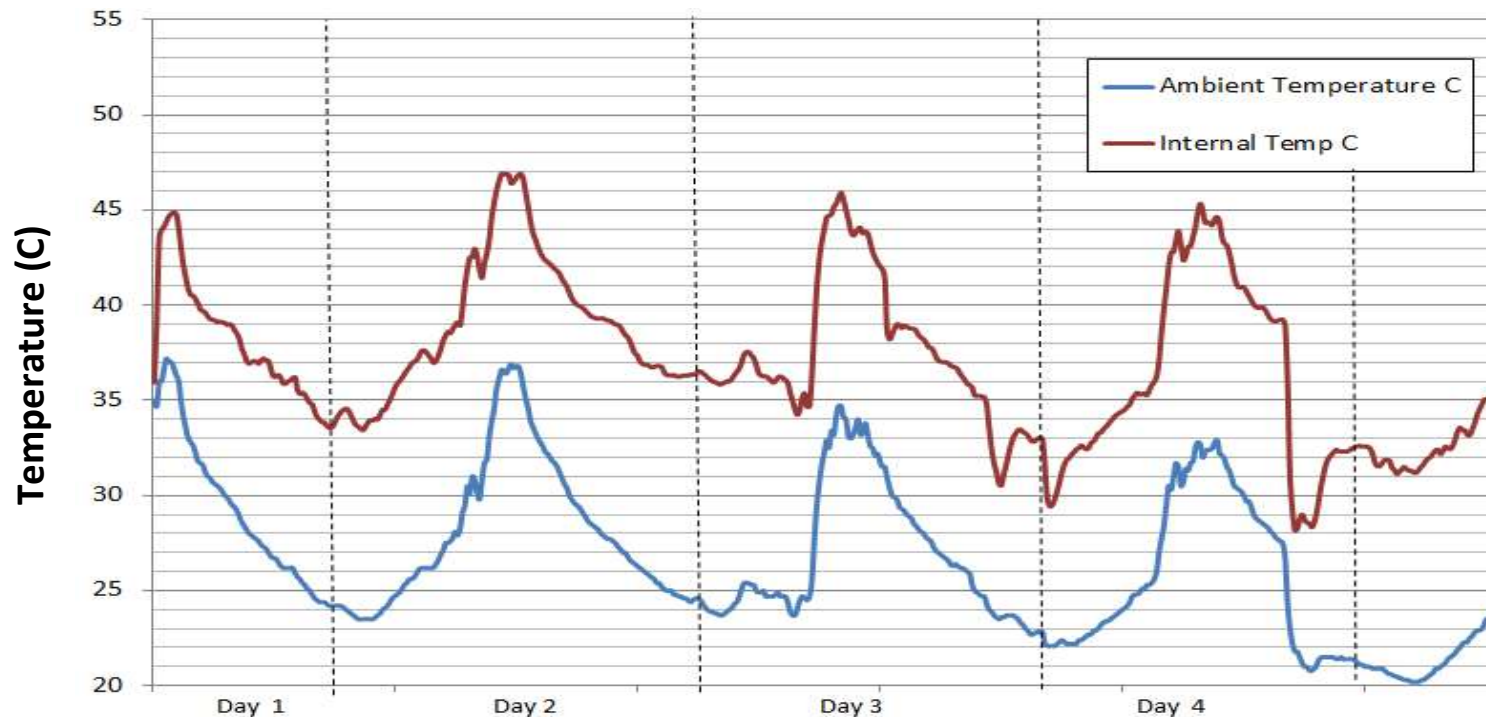
The cabinet, in the solution developed for the Smart Road Project Salerno Reggio Calabria (ANAS Project), have a 540x500x550mm (LxWxH) space available for equipment and batteries.

Cabinet can be customized both mechanically (dimensions) and thermally depending on the project requirements

Performances - Field Thermal Test EXAMPLE

The cabinet has been thermally designed taking into consideration all the parameters involved i.e. temperatures, heat dissipation, construction materials, shapes and environmental conditions.

For this specific example of Italian Smart Road Project, here illustrated, an heat dissipation of 90W have been considered.



The thermal test performed on field, confirms a maximum internal temperature below 50 C, even with summer environmental temperatures.

The thermal test has been conducted considering the installation of the device into a concrete plinth surrounded by soil with 90W heat load continuous applied



CABINET IN
OPERATIVE
POSITION



CABINET IN
EXTENDED
POSITION FOR
INSPECTIONS



Engineering the energy saving

Celant.Tel srl

Via Pellizzari 28 20871 Vimercate (MB) - ITALY

Ph. +39 0396084217 Fax +39 0396084213

info@celantel.com

www.celantel.com

<https://www.celantel.com/cabinet/#passive-underground-cabinet>

<https://youtu.be/1wOTMJKt84>