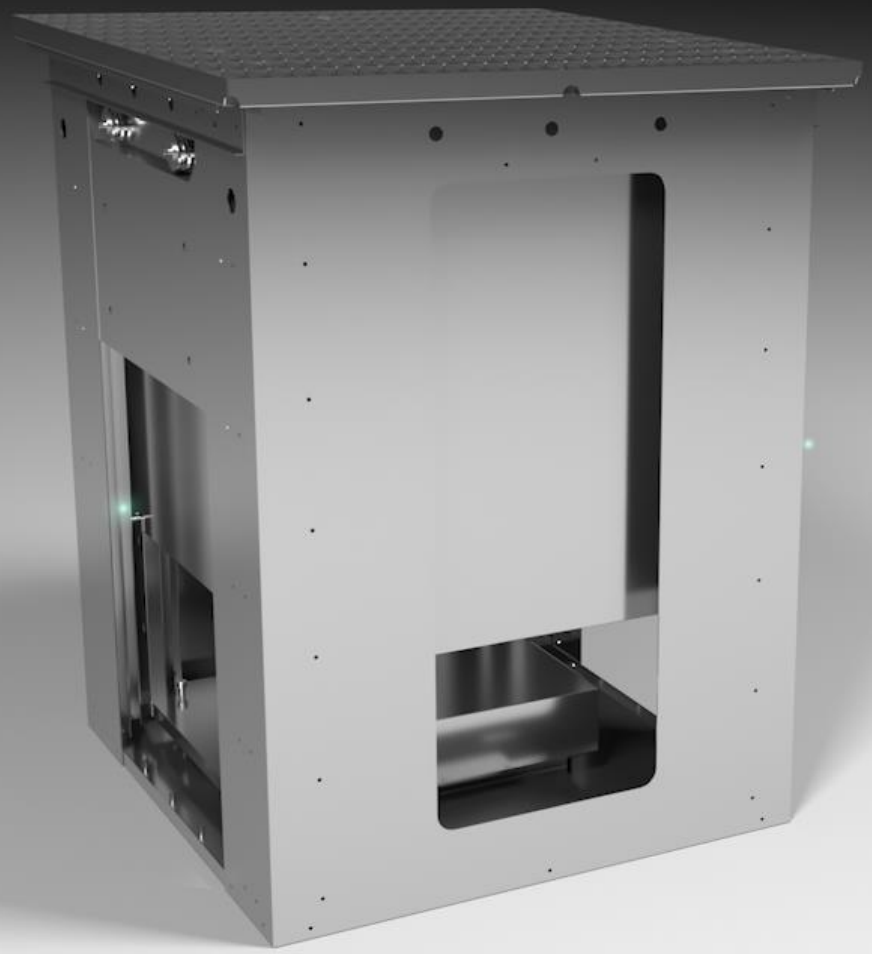
Engineering
the energy saving

the Passive Cooling



PASSIVE UNDERGROUND CABINET

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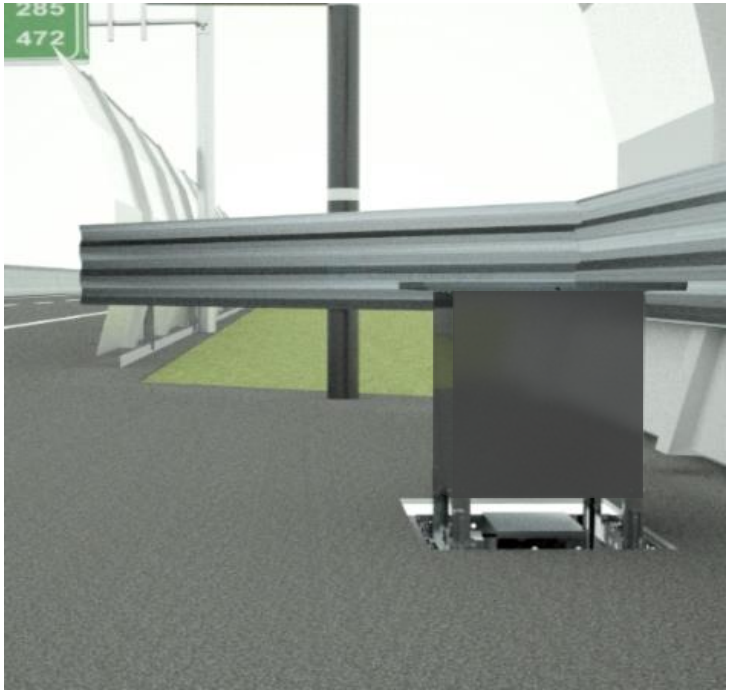
Passively Cooled Underground Cabinet

PUC Underground Cabinet is the result of a specific and detailed research to identify the most suitable configuration to house electronic equipment according to the innovative Smart Road project requirements. The **thermal control** is the key-feature of this device design in addition to the mechanical properties here below described.

The adopted project criteria enhance the operative and installation aspects, from the cycle-life cost and maintenance point of view as well.

The result is a **passive cooled** underground cabinet that can provide distinctive and unique features.



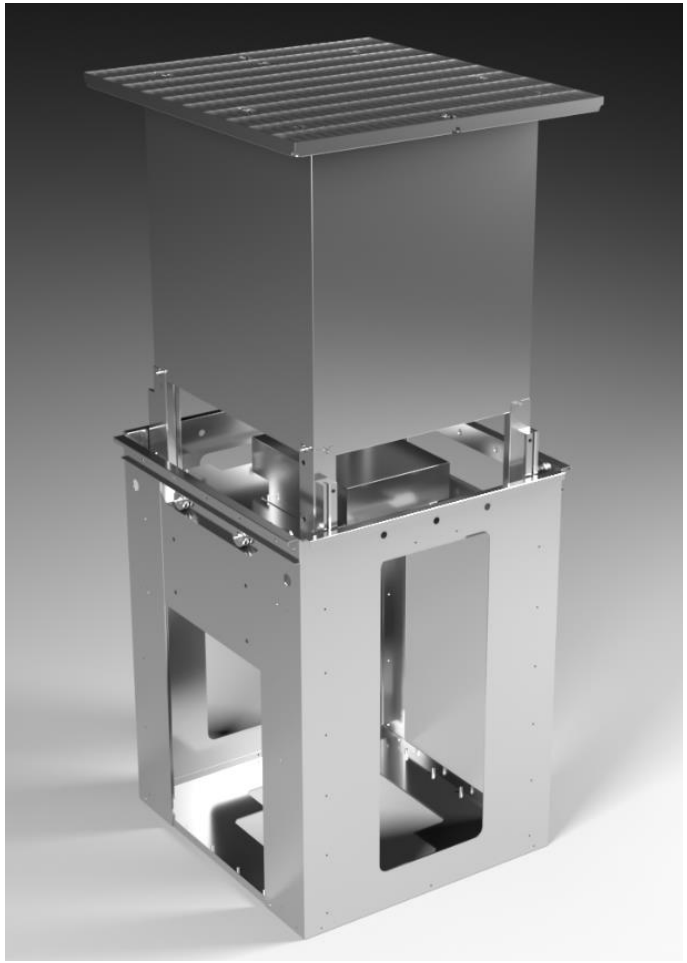
Main Characteristics

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 consitute an 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

Technical data



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

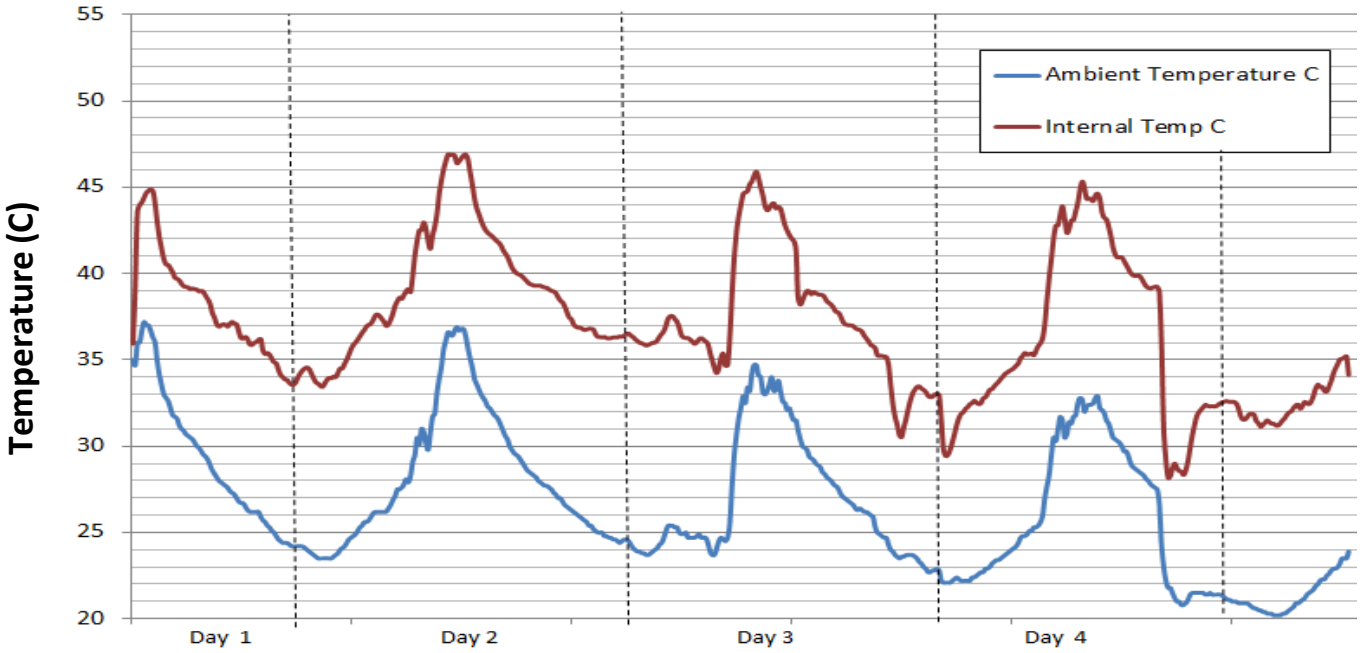
The cabinet, in the solution developed for the Smart Road Project Salerno Reggio Calabria (ANAS Project), have a 540x500x550mm (LxWxH) space available for equipment and batteries.

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 paramenters 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 termperature below 50 C, even with summer environmental temperatures.

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

Typical Construction

CABINET IN OPERATIVE POSITION

CABINET IN EXTENDED POSITION FOR INSPECTIONS

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