

SUCCESS CASE 43.2025

Sustainable Street Cabinet

HOUSING THE NEW COMPONENTS THAT DIGITALIZE THE LOW-VOLTAGE NETWORK



THE CHALLENGE

The objective of this initiative was to find new sustainable and innovative materials and engage partners for the production of Enel's **street cabinet of the future**, allowing for better integration with the surroundings and improving the overall Enel brand. In this context, the sought cabinet design needed to have a **reduced environmental impact** and be intrinsically **secure, modular, and capable of housing new components for the digitalization of the low-voltage (LV) network**.

THE SOLUTION

The innovative cabinet design, selected among those submitted by the participants of Enel's [Open Innovability Challenge](#), uses 100% recycled Polycarbonate (PC) and 45% recycled fiberglass (BMC) for its basement. Furthermore, it is equipped with the following features and characteristics:

- An improved anti-tamper system.
- Increased ventilation for internal components.
- Additional space to host new digital devices.
- Easy assembly, disassembly and installation of internal components.
- Modularity of installation, with 3 possible configurations (see Figure 1).

MAIN ACHIEVEMENTS

- The cabinet body is made of 100% recycled PC reinforced with 10% self-extinguishing fiberglass. The cabinet base is made of 45% recycled/circular BMC.

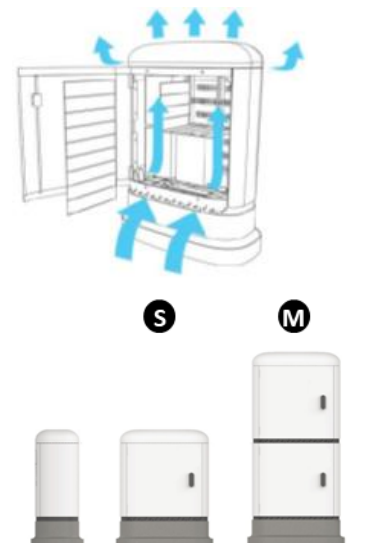


Figure 1. Schematics of the cabinet's ventilation (top) and its three possible configurations (bottom).

- All materials are 100% recycled at the cabinet's end of life.
- The internal box layout is designed to allocate electronic and communication devices.
- The expected cabinet's lifetime is above 35 years.
- The operating conditions are improved thanks to heat exchange achieved through a natural ventilation design.
- The street boxes are standardized by type.

KEY SUCCESS FACTORS

The new street cabinet successfully passed all types of tests, demonstrating **full compliance with technical and safety standards**. The innovative design of the unit complies with international regulatory requirements and with current standards associated with traditional benchmark models.

The tests conducted on the materials (PC and fiberglass) included:

- Verification of category of flammability – Self-extinguishing.
- Verification of category of flammability – Glow-Wire.
- Verification of comparative tracking index (CTI) of material.
- Resistance to ultraviolet radiation.

The technical conformity assessment on the “Enel Street Cabinet” included:

- Verification of protection degree.
- Verification of dielectric properties.
- Verification of resistance to static load.
- Verification of resistance to torsional stress.
- Verification of resistance to mechanical shock impacts.
- Burglary test.



The structure was engineered to maximise internal capacity and functionality. The new street cabinet can in fact **house a greater number of devices and components within the same space**. One of the most innovative features of the new street cabinet is its **high efficiency and modularity**. Depending on the specific needs, the structure can accommodate up to three modules. This operation is made even easier thanks to **enhanced ergonomics**, which simplify both installation and maintenance activities. In addition, a **natural ventilation system** ensures longer-lasting components by improving operating conditions.

The new cabinet was installed in several training centres to support **hands-on instruction and fine-tuning of installation procedures**. To further validate its performance, 100 units were

deployed in real-world conditions across a wide range of environments and operational contexts. This **extensive field testing** confirmed the main improvements introduced in the design, such as increased capacity, enhanced modularity, and improved thermal performance, ensuring that the solution was robust, versatile, and ready for large-scale adoption.

WAY FORWARD

The new street cabinet is the **new reference model to be installed across Italy**, becoming the standard solution for all future deployments nationwide.