

outTEG Outdoor Solution

How to Achieve Signal Coverage in a Landscape with Varied Elevation

Background

In the southwest of France, a company has decided to expand its already ample services of providing Internet connectivity and data center services to customers. More and more businesses and communities in the area were seeking high-quality services, and the local operator thus decided to widen its area of coverage. This Basque operator approached CONTEG, knowing that they can find a suitable partner, specializing in, among other things, developing and manufacturing IT and industrial cabinets.

Brief

The task was both simple and difficult at the same time. The client wanted to widen the coverage of their services to the northern Pyrenees, a mountainous area with many valleys. Installing optical cabling within the set deadline proved to be both unfeasible and prohibitively expensive. The operator thus chose to utilize the technology of microwave transmission as a tested and sufficiently reliable solution. That was the easy part. The more complex factor was the need for high flexibility in terms of scalability of individual connection points, where initially the number of built points would be lower, with an expectation of later expansion. Therefore, the cabinets used had to be sufficiently large and flexible.

Solution

a) CONTEG outTEG outdoor solution

And that is the domain of CONTEG, who took up the task. The client was consulted on all possible suitable cabinets options, starting with standard, single-housing WME-O type cabinets. These meet the high enclosure rating requirement of up to IP66 and offer high corrosion resistance, since they are made of stainless steel and protected by a UV-resistant powder coating, but are restrictive in their options for scalability and changes to configuration as needed.

Though there would be the option to choose a cabinet with the largest expected size, the single-layered housing did not seem like the most suitable choice given the location. Another option was outTEG Lite, a double-layered solution designed for column-mounted installation, like the above-mentioned WME-O. This option also did not seem the most suitable for this type of installation, however.

The mounting on a column was not an issue. The client had already anticipated that such a solution would be needed, since microwave technology requires each installation point to feature a column. But, crucially, none of the solutions allowed the required structural flexibility. The client was thus offered products from the outTEG family, more specifically, model outTEG Double Natural.



b) Technical and cooling solution

The cabinet consists of a stainless steel frame placed on a stainless base. The frame structure allows the client to choose the housing on all sides of the cabinet and even change it during operation. The housing is made of aluminum alloy and is always double-layered. There is a 25 mm gap between the exterior and interior housing, which allows for natural circulation of air from the bottom to the top of the cabinets. There are openings on the underside of the roof that allow air to naturally cool or warm both parts of the housing, thanks to the jet stream effect.

This solution has a great advantage during weather changes and in sunlight, where sunrays fall onto the surface and significantly affect temperature inside the cabinet. Thanks to the double-housing structure, the effects of sunlight are not immediate and changes in temperature and humidity inside the cabinet are gradual rather than sudden. The second major advantage is the option to install the outdoor cabinets in rows and provide additional space for potential future expansion of technologies, which was crucial for the client as they intend to offer services without compromise or limitations.

Solution

c) Flexibility

Another advantage the client greatly appreciated was the option to choose and, if needed, change the housing, where the doors can be mounted not only on the front section of the cabinet as usual, but also on the back or the sides. They can also choose various ventilation or cooling options with regard to the specific location, installed technologies and requirements for operation. Aside from the standard double-layered side housing, the client can also choose an option with a built-in fan, where air is driven through one of the side panels through a filter and exits on the other side through a grate, or another solution, where air is drawn in through grates in the side panels and is pushed out of the cabinet through a fan mounted in the perforated ceiling.

These solutions are advantageous when the power of the installed equipment is higher than what the natural air flow through the double housing would be capable of handling. With regard to the chosen technologies, the client also considered the option of using air-conditioning and thermoelectric units, which Conteg also offers. To begin with, the client chose to combine natural cooling with double housing for most installations, with a few locations using a version with fans. For future expansion, the client would then replace the housings with thermoelectric units based on Peltier cells.

Summary

- The chosen solution, outTEG DN, allows a great degree of flexibility and scalability
- The design of the cabinet and the materials used guarantee long life and rust resistance
- The currently used technology with ventilation can be replaced with a closed-loop system with air-conditioning or a thermoelectric unit in the future
- The independent monitoring provides the user with accurate, up-to-date information about the state and condition of the cabinet and the installed equipment

d) Monitoring

Every cabinet combined installation of components onto DIN rails with a 19" plane for mounting the elements of microwave units and other technologies. Since the operator has their own surveillance center and cares about the quality of their services, every cabinet was equipped with RAMOS PLUS independent environmental monitoring. The monitoring system is connected to temperature and humidity sensors that give the client constant oversight over the conditions inside and outside the cabinet.



The satisfaction of the client and their customers with the proposed and installed solution was evidenced by the fact the client is regularly expanding their coverage and uses tried and tested CONTEG solutions in the form of outTEG Double Natural cabinets.



[outTEG—Outdoor Cabinets >>](#)



[WME-O—Stainless Steel Cabinets >>](#)



[FSM-O—Compact, Stainless Steel Cabinets >>](#)