1. Challenge

How can we optimise the energy consumption of the infrastructures managed by the Basque Technology Park Network (BTPN)?

2. Subsidiary challenges

- How can we optimise the collection, processing and exploitation of energy-related data from the various BTPN infrastructures?
- How can we make energy consumption data smart so that we can act on them and automate the response of installations?
- How can we centralise the information generated and extract value for more efficient energy management?
- How can we plan the implementation of energy-related measures on BTPN infrastructures in an automated way?
- How can we automate the measurement of the environmental impact and carbon footprint generated by the BTPN?

3. Possible solutions that can be applied

- A platform to control installations intelligently, which is interoperable with the current building management system (BMS) and has the capacity to integrate information from different sources (internal and external).
- Tools for integrating BMS solutions with new technologies such as big data, machine learning and artificial intelligence with a focus on self-managing infrastructures.

4. Context

The 2024 strategic plan for the Basque Technology Park Network (BTPN) has identified sustainability as one of its core values, with energy transition and the climate neutrality of its installations among its priority objectives. It also plans to invest €17 m in this transition in order to achieve energy self-sufficiency by 2035. Bearing in mind that significant work has already been done to reduce consumption, the objective now is to optimise infrastructures.

In this context, the technology parks have made progress in terms of monitoring and collecting energy information on their buildings through building management systems (BMS), which also make it possible to automate and centrally control buildings. Every building managed by the BTPN has its own automated systems, all of which are connected to a central management system.

Work is also currently underway to identify the remaining sensors and/or those needed to monitor the rest of the installations, so as to obtain an overview of the infrastructures in terms of energy.

The next step for the BTPN is to address the concept of "Smart Buildings" and interrelate the existing information in the BMS tool with external variables (e.g. climate, or humidity sensors) in order to make decisions that optimise the energy consumption of the infrastructures. The aim is also to automate the detection of infrastructure needs in terms of optimising energy use so as to reduce human interaction in decision-making and shorten response times.

Finally, we hope that the installation of a smart infrastructure management system will improve the use of renewable energies installed in the RPTE itself, by improving the contribution of photovoltaic panels, reducing the need for natural gas and electricity, and measuring and optimising the carbon footprint generated by the wind farms in an automated way.

5. Objectives

- To view and monitor energy consumption.
- To optimise energy consumption by providing intelligence to the data generated.
- To automatically detect incidents and schedule both preventive and corrective actions.
- To shorten response times to incidents.
- To increase the comfort and safety of infrastructure users.
- To increase self-generated renewables in the energy mix.
- To calculate the carbon footprint associated with the use of buildings.