



BaxEnergy's Large Scale IoT Monitoring System

Descrizione della problematica o del bisogno nell'azienda o pubblica amministrazione utente.

One of the most influential Utility in the Renewable Energy market faced the need to monitor assets scattered around the World, for tens of GWs and thousands of power plants. The main problem was the difficulty in collecting and harmonizing data coming from heterogeneous systems. The Customer needed a unique Central Data-Hub for realizing powerful real-time overviews and data analysis of all their solar, wind, hydro and geothermal power plants for a total of 34+ GW and 1100+ power plants Worldwide.

Descrizione della soluzione tecnologica (tecnologie usate, architettura, ecc.).

The web-based n-tier Solution is set up in a Customer's private cloud for security reasons, being the entire system linked to mission-critical Renewable Energy assets. The technologies are pushed to their maximum potential in order to ensure the highest level of data reliability, redundancy and availability for the entire virtual environment. BaxEnergy realized a unique Data-Bus acting as a central concentrator for all the data independently from the data source itself, in the pure spirit of Internet of Things. The solution realized acts as a Large-Scale IoT Monitoring System, incorporating a multitude of systems and data sources with a challenge never afforded before.

Descrizione del progetto di implementazione - complessità, tempi, aspetti organizzativi, costi, ecc.

The Large-Scale IoT Monitoring System has been an ambitious and complex project integrating 1.100+ power plants, 20.000+ generation units, 50.000+ devices, generating millions of data points in real-time and trillions of data points stored each year. The complexity of such project required particular attention: from concept to design, from planning to development and delivery. Tailor-made to answer to stakeholders' needs, the project launched at the end of 2013, implemented across 2014 and completed in early 2015 thanks to the hard work of dedicated teams of experts involving Project Managers, Architects, Engineers, QA, collaborating in synergy for a total of 20+ man-years guided by a Steering Committee with a strong field-experience.

Descrizione dei principali benefici raggiunti dall'azienda o pubblica amministrazione utente.

Thanks to BaxEnergy's Large-Scale IoT Monitoring System, The Customer supervises and controls its Worldwide portfolio directly from a central data-hub, designed to collect and store huge volume of data originating from wind turbines, inverters, string monitors, substations, switchgears, sensors and much more. In this way, The Company no longer needs to work with different systems manually downloading and manipulating data. BaxEnergy's system provides a unique data model that harmonizes all data making their access smooth and transparent to company's operators, at anytime and anywhere. Mobility is thus among the key strengths of the project, enabling a mobile workforce that can perform operation and maintenance activities through a simple web browser tablet or smartphone, in a transparent and friendly way. This translates into tangible benefits for The Customer in terms of faster reaction time,



shorter downtime, reduced energy losses, while expanding power plants lifetime and increasing the overall return of investments.

Descrizione degli elementi distintivi e di reale innovatività/originalità della soluzione, anche con riferimento a soluzioni «concorrenti».

The project, replicable and adaptable to any complex digital infrastructure, provides BaxEnergy's Customer with an open solution capable to manage not only multiple technologies and manufactures, but also widely used third parties systems like ERPs and management software solutions, through integrations and synergies with them. In this way, BaxEnergy's Large-Scale IoT Monitoring System offers an excellent coverage of The Customer's needs, providing a unique tailor-made solution with a range of features not available in a single market solution. BaxEnergy's System offers turnkey all the benefits that other competitors have only partially, through a flexible and adaptable superstructure, a powerful data layer capable of harmonizing heterogeneous systems, in order to provide a clear and unequivocal response to customer needs, regardless of the size and type of business. The Customer takes advantage of a proven solution capable to integrate the latest technologies and to address any new challenge, unleashing the power of BigData through predictive analysis across the complex ecosystem integrating a continuously increasing number of IoT devices. Smart edge-technologies will change the way we look at energy in the future.