



DISCOVERING BAXENERGY

VISUALIZE YOUR DATA LIKE NEVER BEFORE



BaxEnergy's Large-Scale IoT Monitoring System

The Challenge

One of the most influential Utility leaders worldwide in the Renewable Energy market faced several problems due to the need to simultaneously control and monitor assets scattered around the World, for tens of GWs and thousands of power plants. The main problem exposed by The Customer was the difficulty in collecting, elaborating and

harmonizing data coming from heterogeneous systems. The Customer needed a unique Central Data-Hub for realizing powerful real-time overviews as well as data analysis of all their solar, wind, hydro and geothermal power plants. To accomplish The Customer's challenges with success, BaxEnergy with its Large-Scale IoT



Monitoring Solutions project has been the first and only independent company in the Renewable Energy market able to connect such large amount of total GW (34+) and power plants (1100+) connected Worldwide.

Technological Solution

The web-based n-tier Solution has been set up on The Customer's private cloud for security reasons, being the entire system linked to mission-critical systems of Renewable Energy assets. The technologies used have been pushed to their maximum potential in order to ensure the highest level of data reliability, redundancy, and a Disaster Recovery scenario of the entire virtual environment.

BaxEnergy realized a unique Data-Bus acting as a central concentrator and vector for all the data independently from the data source itself wherever and whatever it is, in the pure spirit of Internet of Things. The solution realized acts as a Large-Scale IoT Monitoring System, incorporating even competitors' solutions operating in confined perimeters and unable to scale out to challenges never afforded before.

Project's Implementation

The Large-Scale IoT Monitoring System has been an ambitious and complex project as it aimed at integrating into a Central Data-Hub more 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 relevant project required particular attention to each phase: from concept to design, from planning to developing and delivering. Tailor-made to answer to The Customer's 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, who collaborated in synergy for a total of more than 20 man-year guided by a Steering Committee with a strong field-experience.

The Benefits

With such a large number of geographically distributed assets, gathering under one roof all the data regardless of the technology and manufacturer is of paramount importance for The Customer.

Thanks to BaxEnergy's Large-Scale IoT Monitoring System, The Customer can now supervise and control its Worldwide portfolio directly from a central data-hub, designed to collect and store huge volume of data originating from multiple devices including, but not limited to: wind turbines, inverters, string monitors, substations, switchgears, sensors and much more. In this way, The Company no longer need 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 smart-phone, in a transparent and friendly way.



This translates into tangible benefits – at all level of action - 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.

Value Added Innovation

The project, replicable and adaptable to any complex and digital infrastructure, provides BaxEnergy's prestigious 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 pre-existing systems, both inwards and outwards.

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 and even more, 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 of integrating the latest technologies and to address new challenges, such as managing a vast BigData ecosystem and the integration of an increasing number of IoT devices and smart edge technologies that will change the way we look at energy in the future.

"We accomplish The Customer's challenges with success by bringing him to the height of Innovation"



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