

Unlock The Full Potential of Your Buildings!

Abstract

Builtrix helps Energy Managers to Uncover Energy Saving Opportunities in Commercial Buildings using Data Analytics. The success of every energy improvement needs regular benchmarking and assessments of energy performance, but this process is expensive, time-consuming and complicated. Builtrix provides an affordable, simplified, and easy-to-integrate solution for commercial buildings. With IoT solutions, Builtrix provides a web-based platform to monitor and analyze energy consumption for commercial environments.



Introduction

Recent advances in smart grid and green building technologies are promoting the need for smart but simplified energy analytic tools. The connectivity and energy data rollouts are much more established than ever. Thus, the market drivers are:

- Increasing demand for energy-efficient systems
- Increasing operating costs

Our path is defined based on the success of our customers and the needs of society. The problem and solution have already passed the validation phase and several successful projects are being fulfilled and customer feedback is considered in the product learning curve. Industry 4.0 action plans have increased the opportunities for the companies with energy efficiency solution. The main opportunities may be listed as:

- Government initiatives and incentives
- Growing adoption of cloud-based platforms
- Accelerated Digital Transformation (e.g. COVID-19)

Challenges

Businesses are spending a considerable amount of costs on utility consumptions, mostly on energy. With the integration of renewable energy, the levelized cost of energy is increasing. Businesses are willing to improve the energy efficiency in their buildings, but operational (energy) managers do not have enough time to evaluate the energy performance of their properties with the available tools in the market.

“ *Businesses usually do not know when, where, and how their energy is consumed. More importantly, they are not aware of their energy saving potentials neither have the proper tool to help them in planning energy efficiency plans.* ”

► Unlock the full potential of your buildings

The market leader is still using papers and excel sheets to analyze energy consumption and benchmarking, which are very time consuming and costly in terms of manpower. Meanwhile, the building automation technologies could contribute and leverage the energy analytic actions. But they are expensive, inflexible in data portability, and not user-friendly. Recent surveys demonstrate that 80% of building managers are using only 20% of their BMS capabilities. The 20% includes lighting and HVAC schedules and some annual reporting. The other 80% would enable them to benchmark their building and make right decisions for maintenance, improving energy infrastructures, deploying renewable energy, and generally model their building energy consumption behavior. Thus, the problem is not solved considering the main concerns of end-users, namely the time, cost and action plan.



How will solve the problem?

Our solution comes with several features mixed with the best design for end-users in UI application. These features include business intelligence and historical data analysis, future cost and consumption prediction using analytical approaches, and benchmarking using statistical and machine learning algorithms.

One of our **key features** is converting the **building energy efficiency metrics** into human language and sending them **as notification to end-users**. Builtrix uses NLP (Natural language processing) technology to create these messages. These notifications are designed to be actionable. To develop our critical ML (Machine learning) algorithms, the building meta-data and live consumption data are collected using a REST API and pushed to our scalable database. Then, advanced big-data stacks are used for the processing of big-data and datasets are stored in our scalable cloud storage where the ML algorithms and API gateway can use them as required. To enrich the case study population, more buildings' data



are imported from the open-access databases. A set of important features of the buildings are selected for training the Clustering Algorithm (e. g. K-Means). After the training, test and validation phase, the model is deployed at the endpoint and the output is used for generating the expected baseline for each cluster. The baselines are the time series predicted by Deep Autoregressive Recurrent Networks (e. g. DeepAR). The trained bucket is deployed in the endpoint to provide services on the visualized widgets in the UI.

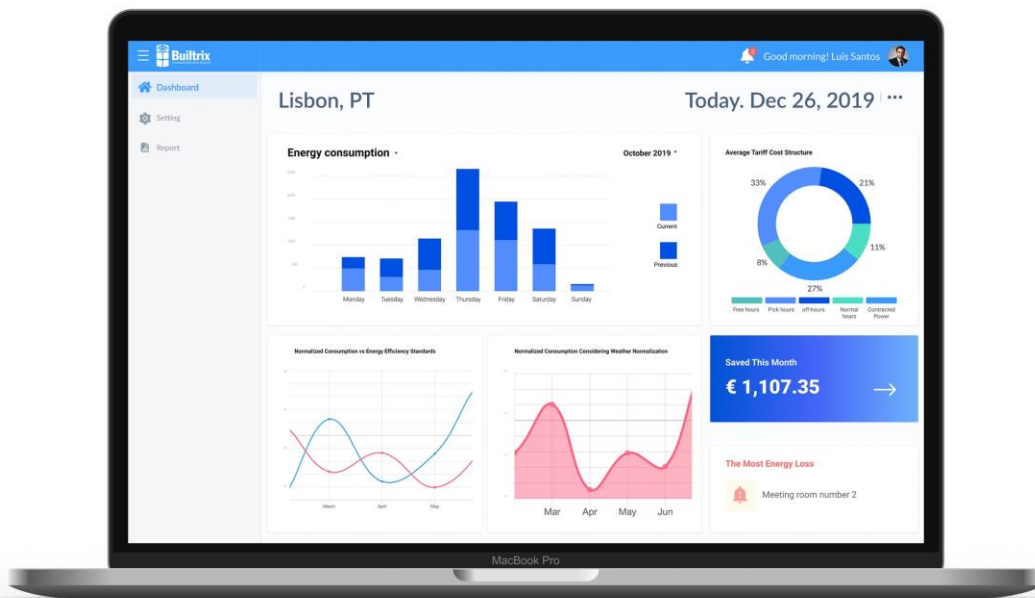


Figure 1: Bultrix main dashboard page

Bultrix envisions to be an innovative leader in the Commercial Building market by providing Analytics & Monitoring Solutions. Bultrix position in the market is a virtual assistant that communicates to and helps asset managers to uncover energy saving opportunities in their buildings. It runs over the cloud infrastructures and can be called safely at any time, any place. It communicates with human language and delivers customized and actionable insights on building energy efficiency.

References

- Reference 1 <https://www.builtrix.tech/>

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