**XN Project: Sponsor Project**

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**XN Project: Sponsor Deliverable**

The goal is to understand power and energy delivered and consumed overall and by specific products like Solar Panels and Genset generators. Our team will develop and deliver an interactive dashboard to address the business questions from the sponsor.

**Executive Summary**

Studer Innotec was founded in 1987, is an ISO certified company that develops and manufactures autonomous energy solutions for remote areas: inverters, hybrid inverter/chargers and MPPT solar charge controllers. They offer both off-grid and on-grid technologies. Their products are developed and manufactured entirely in Switzerland which has high quality standards in place ensuring the products are extremely reliable. The applications of the products include solar applications, mobile energy applications, 24/7 security applications and other applications which are used in the industrial market. For example, Studer Innotec offers global backup solutions for all industries requiring a reliable and uninterruptible power supply for their appliances and ensures the completion of complex processes.

**Goal and Objectives**

From the information provided by the sponsor, our team has decided to provide insights to the sponsor based on the following business questions:

* Total Power (kW) and Energy (kWh) Delivered to Installation
* Total Power (kW) and Energy (kWh) Consumed
* Power (kW) and Energy (kWh) from Solar Panels
* Power (kW) and Energy (kWh) from Genset

**Project Scope**

Analysis using the data provided by the sponsor, Studer Innotec, using tools at our disposal, including, Tableau and Python. Our focus would be to parse the log files using Python. We are still finalizing the scope of the data that we would be using for this project. Since the business questions that our team is working on do not require developing any predictive models, modelling would be out of scope.

**Tools and Techniques**

Our team has chosen to work with Python in Jupyter Notebook and Tableau for the sponsor project. We will be using python for data cleaning and data preparation. To develop an interactive dashboard as requested by the sponsor, we will be using Tableau. We are also exploring other options for parsing the log files in an efficient manner. The parsed data from the log files will be fed into Tableau to develop the dashboard.

**Data Preparation & Exploratory Analysis**

The Studer Innotec dataset has multiple folders with various log files, Xtender, and Messages information in CSV format. There are 1866 Log files, 18 Message files, 16 RCC files, 1 VT file, 48 XTENDER files. From these we have decided to work with the log files provided but since there are many in number, we decided to start working with a few of them to begin with and use more if needed as the project progresses.

The data from the log files will be parsed, and any null values will be removed. The data will be formatted properly to ensure all the columns have the right data type. For example, the timestamp column will be split into Date and Time columns respectively, the Date column can further be split into Year, Month, Day. Splitting the Date like this will allow us to get more granular while answering the business questions.

**Conclusion**

The sponsor’s business question for this project entailed understanding how Studer Innotec would optimize the delivery of solar energy. Studer Innotec aims to ensure renewable energy sources like solar adoption in all areas, including remote areas. For the company to achieve its objective, it is necessary for them to understand the power and energy delivered by specific products like solar panels and genset generators. The techniques used to tackle the sponsors’ business questions will be Tableau and Python applications. Using Tableau, we will create an interactive dashboard for the sponsor to use and achieve the desired objectives and python will allow easy data preparation and cleaning Here, most emphasis will be placed on log files, one of the most significant folders in Studer Innotec’s dataset. Of all folders, the log files are beneficial as they will enable us to understand the project better while answering the business questions.

**References**

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