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## Smart Power Demand & Consumption Analyser

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### ABSTRACT

In Sri Lanka, electricity is generated by Ceylon Electricity Board (CEB). customers need to pay bill according to the user/customer categories and the usage. There are some parameters effect the bill. Such as maximum demand and power factor etc. When the demand is high, suppliers must produce more electrical energy. That's why the maximum demand charge imposes on industrial /bulk customers. Another consideration is the power factor. Poor power factor is directly reflected on electricity bill and reduced the system capacity. Another one is, there are many power interruptions from the CEB side. So, this project is proposed to identify abnormalities in the electrical system, determine Maximum demand pattern in real-time, as well as can minimize the unwanted power consumption via realtime data, plan the backup power and monitoring the power consumption. Some primary electrical parameters are needed to achieve our goals. Such as voltage, current, power factor. So, this project/ gadget built-up with current and volage sensing circuit to capture the waves pattern. Then inputs are processed by microcontroller and derive the electrical essential data, such as Power-factor, Maximum demand, Apparent power, consumption, and Real power. After that, all electrical parameter values are uploaded to cloud via internet of things (IoT), and the analysis part will be carried out using real-time and historical data and plot the load curve. Through that analysis, the client can identify the abnormalities in the electrical system and monitor the power factor variation. According to the test, more accurate data can be generated from this system. This system more user-friendly because there more features added in the centralized dashboard to customer get idea or decision from historical and real-time data analyzation. Through the dashboard client monitor the power factor variation, load curve, power demand and consumption details.

**Keywords:** *Apperent power, Internet of Things, Maximum demand, Power factor, Real-time data.*