IoT Project - Smart Energy Efficiency System for Factories

Overview

The Smart Energy Efficiency System consists of sensors (voltage, current, pressure, temperature, light and time), variable frequency drives, contactors, switches, regulators, connectivity devices to connect to local network or internet, cloud / local storage and data analysis tools.

Mechanism

Factories would consist of motors, pumps, heaters, lights as a part of various machinery or individually. The load cycles of these components would in most cases vary with the working cycles with time, products, time of the day etc.

Using sensors, the power usage over the working cycles of various equipment would be monitored against the output parameters like machining operation, pressure, temperature, light levels etc. This would reveal the unnecessary power consumption of equipment in terms of idle / unnecessary running, excessive output and hence loading than what is required.

This can be eliminated by using network connected devices like switches, contactors to switch off the unnecessary devices or reduce their speed / intensity by using variable frequency drives / regulators. A customized program would then emerge for the particular facility.

Usage of power from renewable energy sources like solar (electricity and heat) can also be clubbed in with the usage patterns, mix of conventional and renewable energy aligned with each other. Use of energy efficient devices is considered as a basic necessity even without this system.

This would result in significant reduction in power consumption with an ability to monitor, control,optimise and automate the energy consumption patterns.