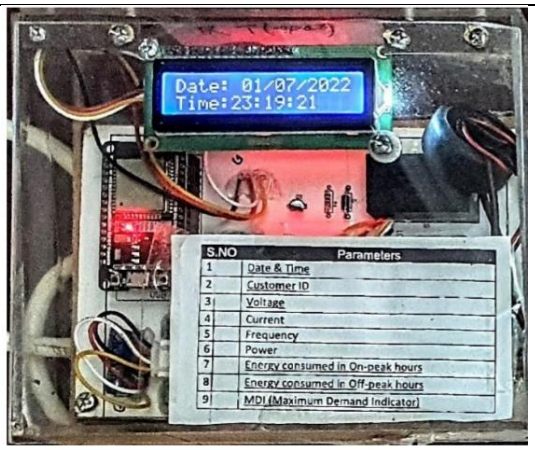
Final Year Project Showcase Batch 2018
Year 2022

Department: Electronics Engineering Programme: Electronics Engineering		
1	**Project Idea**	An IoT-based Energy Metering & Customer Monitoring System which is an effective and less expensive way to monitor energy consumption and provide energy metering services.
2	**Process**	Energy meters will be connected in chain topology that will forward consumer data meter-by-meter till the last meter is connected to internet via Wi-Fi and will end at a server. The consumers will be able to track their previous energy consumption with the help of an Android Application for service satisfaction and queries. Furthermore, the service provider will also be able to monitor data for transmission service optimization.
3	**Outcome**	Enable the Energy Distribution Companies (DISCOs) to optimize their services based on extensive data-centric approaches as well as curb the suspicion of the consumer for overbilling by real-time monitoring capability.
4	**Evidence (Theoretical Basis)**	The object of our project to devise a hardware and software integrated system for solving the problem of automated energy meter reading by chain networking. As stated in the problem statement, Pakistan has regulations for GSM devices that is immensely more complex than in other countries and has slowed the roll out of automated meter reading. After the first phase of the project, we have managed to design an energy meter that is best suited for the implementation we plan to design.
5	**Impact on Sustainability of Urban Regions or SDG-11 "Sustainable Cities and Communities"**	This implementation of Energy metering network can be implemented in urban cities of Pakistan which is less labor-extensive and less network infrastructure-extensive whilst improving customer satisfaction of Energy provider companies
6	**Competitive Advantage or Unique Selling Proposition** (Cost Reduction, Process improvement, Attainment of any SDG (Sustainable Development Goal), increase of market share or capturing new market or having superior performance over a competitor. In summary, any striking aspect of the project that compels the industry to invest in FYP or purchase it. Some detailed description is required in terms of how, why when what. You can select one or more from the following dropdown and delete the rest of them). Please keep relevant options, delete the rest of them, and correct the sequence	
a	**Attainment of any SDG** (e.g. How it is achieved and why it is necessary for the region)	**SDG#11** Sustainable Cities and Communities Increase in population density has made it difficult to track energy consumption data, whilst existing manual meter-reading methods also dem to be slow and labor-extensive **SDG#12** Responsible Consumption and Production Accurate and mapped consumption data an assist supplier side in generation, transmission and distribution. Consumer can control and limit their energy consumption on the other side.

b	**Environmental Aspect** (e.g. carbon reduction, energy-efficient, etc.)	Building a data-centric approach to live sustainably consequently reducing domestic energy demand over a large-scale
c	**Cost Reduction of Existing Product**	Indigenous design and production cuts down the cost of labor in large scale production. Modular approach in design assists repairs in the long run Low-reliance on connectivity cuts down on running costs of deployed system
d	**Process Improvement which Leads to Superior Product or Cost Reduction, Efficiency Improvement of the Whole Process** (e.g. What is the issue is current process and what improvement you suggests)	Solutions offered currently in the market are GSM-based that provide one reading per month. They just address the problem of billing whilst giving little to no functionality of monitoring. All that and costing 300-400% more than our solution. Our approach is essential for making energy distribution data-oriented, cheaper to deploy and efficient in terms of running
e	**Expanding of Market share** (e.g. how it expand and what is the problem with the current market	We aim to target two markets, domestic energy consumers (B2C) and energy distribution companies (B2B).
f	**Capture New Market** (e.g. Niche market or unaddressed segment)	We have segmented our market on geographic, demographic, behavioral and psychographic basis as shown below **Geographic Segmentation** Pakistan **Demographic Segmentation** Age: 25+ Gender: Male, Female, Transgender Occupation: Domestic residents, Power distribution companies **Behavioral Segmentation** Sustainable-lifestyle oriented, tech-savvy, Money-Driven, Power-Driven, Organized, Vision-Driven. **Psychographic Segmentation** Environmentally conscious, educated, medium to high consumers of energy.
7	**Target Market** (Industries, Groups, Individuals, Families, Students, etc) Please provide some detail about the end-user of the product, process, or service	[B2C] Our Target Market is Homes or offices that would like to monitor their energy consumption and reduce it. Homes or offices that believe that they are being over-billed on their energy consumption. [B2C] We also target energy distribution companies that can benefit from detailed consumer behavior for analytics and optimization of their systems
8	**Team Members** (Names along with email address	Abdul Salam Shaikh (asalamshaikh125@gmail.com) Syed Affan Alam (affana092@gmail.com) Mohammad Hammad Alvi (alvihammad89@gmail.com) Syed Asher Hussain (asherhussain009@gmail.com)
9	**Supervisor Name** (along with email address)	Ms. Sidra Rahman (sidrarahman@neduet.edu.pk)

10	**Pictures**	 S.NO | Parameters 1 | Date & Time 2 | Customer ID 3 | Voltage 4 | Current 5 | Frequency 6 | Power 7 | Energy consumed in On-peak hours 8 | Energy consumed in Off-peak hours 9 | MDI (Maximum Demand Indicator)