



Final Year Project Showcase for Batch-2016

<p style="text-align: center;"><b>Department of Electronics Engineering</b> <b>Telecommunication Engineering Programme</b></p>		
<b>1</b>	<b>Project Idea</b>	Smart Metering Using Power line Communication
<b>2</b>	<b>Process</b>	To demonstrate that both data and electricity can be transmitted simultaneously using existing electrical infrastructure
<b>3</b>	<b>Outcome</b>	We have successfully achieved our desired outcome that is to get the electricity utilization data of consumer section on the receiving side that is basically electric board office using power line as a communication medium
<b>4</b>	<b>Evidences (Theoretical Basis)</b>	The data was able to be transported successfully from one end ( the consumer’s section) to the other end ( the vendor’s section) using the already installed electrical wirings infrastructure.
<b>5</b>	<b>Competitive Advantage or Unique Selling Proposition</b> (Cost Reduction, Process improvement, Attainment of any SDG (Sustainable Development Goal), increase of market share or capturing new market or having superior performance over competitor. In summary, any striking aspect of the project which compels industry to invest in FYP or purchase it. Some detail description is required in terms of how, why when what. You can select one or more from following dropdown and delete rest of them)	
<b>a</b>	<b>Cost reduction of existing Product</b>	The cost spend on hiring meter readers can be saved by adopting our proposed project idea as it uses the already installed AC wirings for automatically transporting the meter’s data providing real time monitoring as well.
<b>b</b>	<b>Process Improvement which leads to superior product or cost reduction, efficiency improvement of whole process</b> (e.g. What is issue is current process and what improvement you suggests)	Existing metering method involves the meter reading through manual labour means meter reader goes door to door to collect the meter reading from the energy meter installed at consumer premises, this method is sometimes erroneous and also time consuming, also the users are not aware of the resources how much they have utilized unless they get their final bill statement. The above mentioned disadvantages of the current method can be removed and improved by bringing automation in existing method which provides real time monitoring so our project Smart metering using power line communication based system will save the cost spend on hiring employees for the task of meter reading each month, Also the chances of getting erroneous data will be eliminated because it automatically collects the reading and send it to board office as well as since the system uses the existing installed powerlines for the transportation of the data so the need of installing extra cables is minimized
<b>c</b>	<b>Attainment of any SDG</b> (e.g. How it is achieved and why it is necessary for the region)	Our project also addresses some sustainable development goals issued by UN <ul style="list-style-type: none"> <li>• SDG-7: <u>Affordable and clean energy</u>: Powerline</li> </ul>



		<p>communication based smart metering uses the electricity infrastructure for data transmission securing reliable electricity delivery and using the existing electrical infrastructure more efficiently through by using electrical grid applications too</p> <ul style="list-style-type: none"> <li>• <b>SDG-9: <u>Industry Innovation &amp; Infrastructure:</u></b> “No New Wires “concept leads to the creation of innovative infrastructure leading to the fact of utilizing already installed powerlines as a medium of transportation of the data</li> <li>• <b>SDG-11: <u>Sustainable cities and communities:</u></b> This SDG is addressed by our project in a way that it removes the need of installing extra cabling for transportation of the data and already the existing powerlines can be used thus making an affordable means for transportation of data and improves urban planning and management.</li> <li>• <b>SDG-12: <u>Responsible consumption and production:</u></b> It provides real time monitoring capability of the electricity consumption and thus providing in capability to detect theft</li> </ul>
<b>d</b>	<b>Expanding of Market share</b> (e.g. how it expand and what is problem with current market	Our project helps to utilize things more efficiently as the electrical wirings which were only previously used for the transportation of electricity can now be used simultaneously for data transmission, thus providing a cost effective approach in utilizing the already installed electrical infrastructure.
<b>e</b>	<b>Any Environmental Aspect</b> (e.g. carbon reduction, energy efficient etc.)	It assures affordable and clean energy as power line communication based smart metering uses the electricity infrastructure securing reliable electricity delivery and using the existing electricity infrastructure more efficiently through by using electrical grid applications too.
<b>6</b>	<b>Team Members</b> (Names & Roll No.)	Ayesha Warsi (TC-16004) Suhaira Ali Khan (TC-16006) Syeda Fariha Ashrafi (TC-16029)
<b>7</b>	<b>Supervisor Name</b>	Dr. Irfan Ahmed ( <a href="mailto:irfans@neduet.edu.pk">irfans@neduet.edu.pk</a> )
<b>8</b>	<b>Pictures</b>	<u>Consumer Section:</u>



**Data of consumer section shown on LCD at the transmitter side**



**PLC connection with the micro-controller**



**Final view after designing the consumer's section fully**



**VENDOR's SECTION:**

**The connection of receiver PLC with the micro-controller**



**Reading obtained on serial monitor at Vendor's side**

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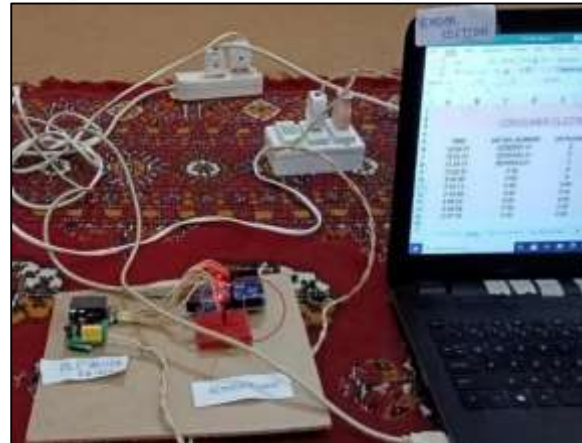
COM3
-----
SERIAL ID:
00000000-00
Interval: 600ms
20-20:00:00
CLOCK: 00:00
CLOCK: Time, YearID, Data, No, Demand, No, Demand, Load, Price:
00:00, TIME, 18042015-01, 1, 400, 400,
00:00, TIME, 18042015-01, 2, 400, 400, 1200,
00:00, TIME, 18042015-01, 3, 400, 1200, 200,
00:00, TIME, 18042015-01,
  
```

**Reading data from arduino into excel**



TIME	No	FMC	Number	Interval	Previous	Instant	Power
18:24:14	1	00000000-01	1	600	400	400	600
18:24:14	2	00000000-01	2	600	400	1200	200
18:24:14	3	00000000-01	3	600	400	1200	200
00:00:00	0	00000000-01	0	600	400	0	0
00:00:00	0	00000000-01	0	600	400	0	0

**Complete Vendor Section Setup**



**View of Fully Completed Project**



		
9	Video	<a href="https://drive.google.com/file/d/1orVMHAi9gFuB9-iFY4bDF3N6ewvS0iAh/view?usp=drivesdk">https://drive.google.com/file/d/1orVMHAi9gFuB9-iFY4bDF3N6ewvS0iAh/view?usp=drivesdk</a>