The diagram that you see on the left side of the screen is the block diagram of the developed system. The system starts by registering a new user by using the developed Android application and then uploading the data into the main unit device. A user’s unique passcode is generated by the system during the registration process. After uploading the data into the main unit, the device will then broadcast the changes to the system through RF communication in order for the meter unit to update the list of registered users in its own memory. After successfully updating the list of users, the new registered user can now access electricity through the meter unit using the unique passcode that is generated by the Android application during the registration process. The meter unit will perform measurements on the AC line and then send the measured values to the main unit for permanent storage on the SD card. The raw data obtained and stored on the SD card is sorted accordingly for each registered user of the system by the use of the Microsoft Excel application. By using the excel application, the raw data obtained from the main unit can be organized for easy analysis and data reference for graphical representation. The billing process can proceed with the already organized data and the administrator can perform billing with the use of the developed android application and the official bill receipt from the local electric cooperative as reference to compute the direct cost of electricity per kilowatt hour. The users will be notified of how much their electric energy consumption is and how much they are going to pay through SMS text message. The picture that you see on the right side of the screen is the perspective view of the system.

This is the prototype of the developed system. What you see on the screen is the main and meter unit of the system along with its labeled parts. On the top view, we can see the OLED display of the main unit as well as the LED indicator and the power chord. The serial port of the main unit is located on the bottom part of the device. On the right side of the main unit, we have the switch for the secondary microcontroller. And on the left side is where the buttons and the SD card slot of the main unit are located. For the meter unit, the only visible parts are the OLED display, keypad, outlet, and the power cord.

This is the internal layout of the parts of the developed system. We have the internal layout of the main unit on the left side and the internal layout of the meter unit on the top right side. Also shown on the right bottom part of the screen is the user interface of the developed android application of the system.

What is shown on the screen is the architectural design of the system. The arrows in the diagram represent pathways and connections between the components, which are illustrated according to their type and intended function in the system. The arrows pointing to and from determine whether the components are inputs or outputs, with components having double arrows operating as inputs and outputs. The main and meter units of the system are also isolated, with each having a box to indicate that they are two separate devices.

Now we will play a video that shows an overview of pretty much how the system actually works so that you can understand how it is used and how data gathering, sorting, and even the billing process is done.