

Vaaraahi Embedded Case Studies

Our Experience in area of Embedded based technological solution is illustrated below as case studies in various domain and applications.

Energy Metering:

Energy or power metering is about collection of data one Energy consumption for billing purposes. This instrument will provide customer with the energy consumption for specific period along with the Bill for energy consumed. This instrument has been designed in two models for specific application. This instrument can be used for Home and Industries to keep track on the Total units consumed and Total Price for the Energy consumed

The prepaid energy meter is equipped with a smart card interfaces, which contains the validation data that allows or prohibits the Energy withdraw. If validation is found to be failed, the meter will cut the Power line Connection.

The Remote Energy Meter is a Typical meter provided for selected customers. The referred customer based may include suspicious clients or those located very close to other, such as in high rise building. Tens or hundreds of meter ma use RF to send billing data to a common collector unit, which then transmits the data package to the service provider using Telephone modem or through some other link.

RFID Based System Development:

RFID System consists of an Electronic data carrier device of Passive Transponder and the reader that communicates information using Radio Frequency Technology utilisin ISM (Industrial, Scientific and Medical) Band of Frequency. The RF Tag Emits binary bit in radio Frequency and the RF Reader reads this bit and Authenticate for Some specific applications. The security settings of the RF Tag are configured so that all of the data can be read without restricaiton. The Develop RF Reader and as well as specific control design based on RFID Tags . Few of the application are specified below.

- Departmental store
- Automatic attendence
- Security Systems
- Health care cards
- Access control

SPIN and Dip Coating machines for taking thin Film samples:

These Instruments are the primary requirement for research Scholars doing research based on Thin Films. These instruments are used to take sample of Chemicals like Polymer Materials on a Glass Substrate for the desired thickness in order to study its various Properties. Spin and Dip coating machine are the two instruments we developed and tested and these instrument can be used for laboratory purpose.

In the spin coating Instrument, the user can place the chemical sample on a glass substrate and the used can feed various requirements such as Speed and Time control for the desired thickness of the sample.

In the Dip Coating machine, the sample can be taken by dipping the glass substrate in the chemical. In this instrument, the used can control the Dip time, Dip speed, No of dips etc per sample as per required Sample thickness.

GPS Based Auto tracking System:

It is the most advanced and accurate technology available for position Navigation. It provides precision data regarding Latitude and Longitude and other parameters to find the Present position. This system has been designed and developed based on the Jupiter TV30D315 OEM Module receiver and interfaced to the Microcontroller to fetch and analyze the data received from the OEM for some specific applications. This system can be modified as per the clients requirement and can be implemented for navigation applications which are specified below

- Auto tracking of vehicle
- Remote Access Control
- Marine
- Navigation and Monitoring from remote side

Smart Card Based System Design:

The smart card based system are the most widely acclaimed of most of the other solution provided for various application because of their Reliability, Simplicity and having Secured features. This smart card based system has been developed based on ATMEL CRYPTO Memory smart card which is an easy to implement for secured solution by interfacing with embedded microcontroller. This card has designed to keep contents securely, whether operating in an system or removed from the board and sitting in the hackers lab. One card is enough to manage for multiple application. This system can be easily modified to suit requirement of clients. Some of the applications based on smart card specified below

- Attendance
- Health card
- Security system
- Access control
- Customer card for departmental stores
- Banking
- Entertainment

- **SMS Based Home Automation:**

The main purpose of developing this system is to control the remote applications / Devices through SMS Messages. In this system, the user can connect the Home appliances/Devices such as Audio/Video equipments, Lightings, Heaters, Air conditioners etc to an Mobile Phone. Each device will have a unique identification, Password and address of the device connected to the Mobile phone. The user from the remote location can send the proper ID, Password and address in the form of SMS text messages. The Mobile at the remote side will receive the SMS text and decode it and if authenticated, the system will activate the appliances/devices as per the user requirement. This system will also send the status of the device connected to the mobile phone through the same mobile phone to the specific user. The system can modified to suit the below applications