

## **Project: Energy Meters**

Customer : Various State Electricity Boards / Datapro  
Industry : Power Distribution  
Application : Energy Metering  
Tools : C/C++/Assembly  
Platform : Embedded Chipsets

### **Background**

Datapro is a leading manufacturer of electronic 3-Phase 4-Wire Tri-vector Energy Meters. Their energy meter products are approved by various State Electricity Boards (SEB's) and their constituents. The design involves using a controller and several industry specific chip sets to achieve the functionality of measurement, metering, data storage and tamper detection & protection.

### **Application Brief / Need**

State Electricity Boards post huge losses due to power theft that is rampant both in residential and commercial connections. The challenge lies in creating theft detection mechanisms and facilitating meter readings in specified time slots to enable analysis of the meter data. Also, since meters are read manually by people, there are optical connectors through which readings are taken by the operator onto a meter reader so that manual alteration of readings can be prevented.

Since the mechanism of theft keeps changing, the design specifications of the meters to detect it keep getting enhanced periodically.

Another design challenge is to use cost effective chipsets and alter the design to replace chips that are reaching end-of-life / useful life period by their manufacturer.

Additional R&D is being done in the area of two way meters [meters that can communicate with the SEB's online to alert it of theft] and pre-paid metering.

### **Project Scope / Solution**

All designs and firmware are created with a minimum life in mind [determined by production plan of manufacturers of the chip sets]. In addition to this, special attention needs to be given to using cost effective hardware which is capable of performance in extreme tropical weather.

Additionally, due to cost pressures there are limitations of resources on the hardware side that requires optimal and efficient embedded code.

### **Benefits / Value Proposition**

A robust hardware/ firmware design which is cost effective in an extremely cost sensitive market and performs to the specification and vagaries of extreme weather and is capable of handling design changes from order to order and one SEB to the next.