A gas leakage detection & accident prevention system (Lianping Hou) (Embedded Processors/Systems)

Gas leakage tragedies and accidents have led to heavy losses over the years. So it is very important to detect any gas leakage and prevent any accidents. So in this project we propose a system to detect gas leakage scenarios and provide a security alert to intended users. We will build the system using a gas detection sensor and interface it with 8051 family microcontrollers along with GSM modem for alerting via a Short Messaging Service (SMS). The system uses the gas sensor to detect any gas leakages. The gas sensor sends out a signal to microcontroller as soon as it encounters a gas leakage. The microcontroller processes this signal and sends out a signal to the GSM modem with required message details. The GSM modem now sends out an alerting SMS to the authorized people so that they may handle the issue and look out for leakages. At the same time, the system can control the stepper motor to tighten the valve. The aim of the project is to design a gas leakage detection & accident prevention system which can provide a security alert to intended users and sends out an alerting SMS to the authorized people so that they may handle the issue and look out for leakages. Anticipated Project Deliverables: 1. Design the gas leakage detection & accident prevention system based on the microcontroller 2. Compile the Embedded code using the c/c++ to give alarm signal 3. Send a notification via Short Messaging Service (SMS) to the authorized people so that they may handle the issue and look out for leakages 4. At the same time, the the system can control the stepper motor to tighten the valve

Prerequisites: Skill Set: Electrical circuit design, PCB design, Embedded System Programming in C/C++, OrCAD Equipment /Facilities Required: Microcontroller, Gas sensor, buzzer/speaker, stepper motor, Stepper Motor Driver, GSM module