Application Story

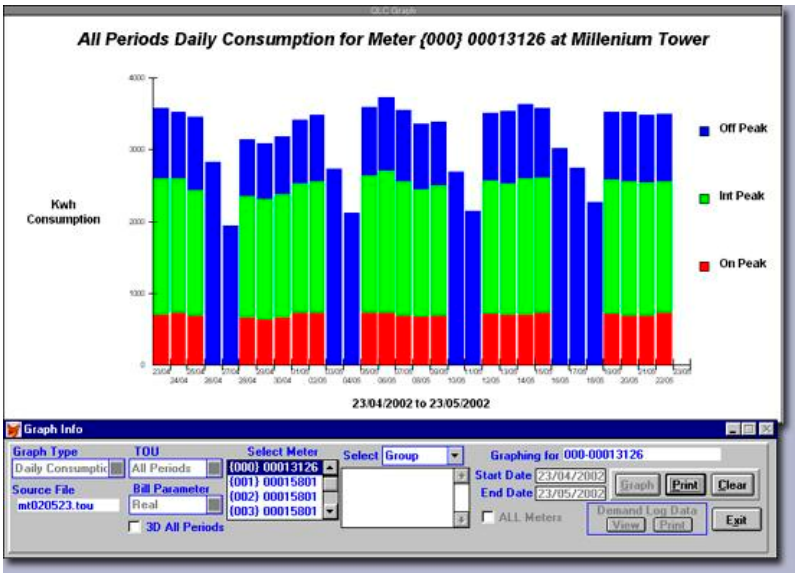
Automatic Meter Reading (**AMR**) via Cellular Networks

Overview:

Automatic meter reading, or **AMR**, is the technology of automatically collecting consumption, diagnostic, and status data from energy metering devices (gas, electric) or water meter and transferring that data to a central database for billing, troubleshooting, and analyzing.

This technology mainly saves utility providers the expense of periodic trips to each physical location to read a meter. Another advantage is that billing can be based on near real-time consumption rather than on estimates based on past or predicted consumption. This timely information coupled with analysis can help both utility providers and customers better control the use and production of electric energy, gas usage, or water consumption.

Objective: collect real-time data from the meters



The benefits of AMR for the utility:

1. Accurate meter reading, no more estimates
2. Improved billing
3. Accurate profile classes and measurement classes, true costs applied
4. Improved security and tamper detection for equipment
5. Energy management through profile data graphs
6. Less financial burden correcting mistakes
7. Less accrued expenditure
8. Transparency of “cost to read” metering
9. Improved procurement power though more accurate data - “de-risking” price

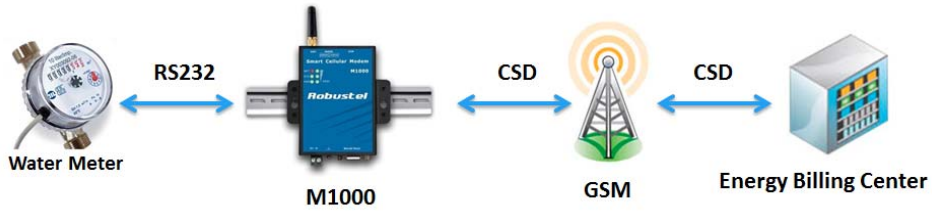
The benefits of AMR for the customer:

1. Improved billing and tacking of usage.

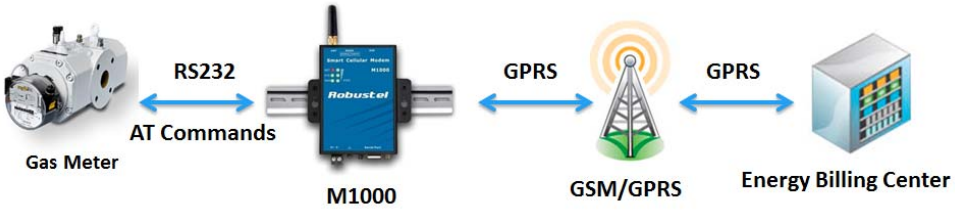
Solution:

They are major three topologies for AMR systems:

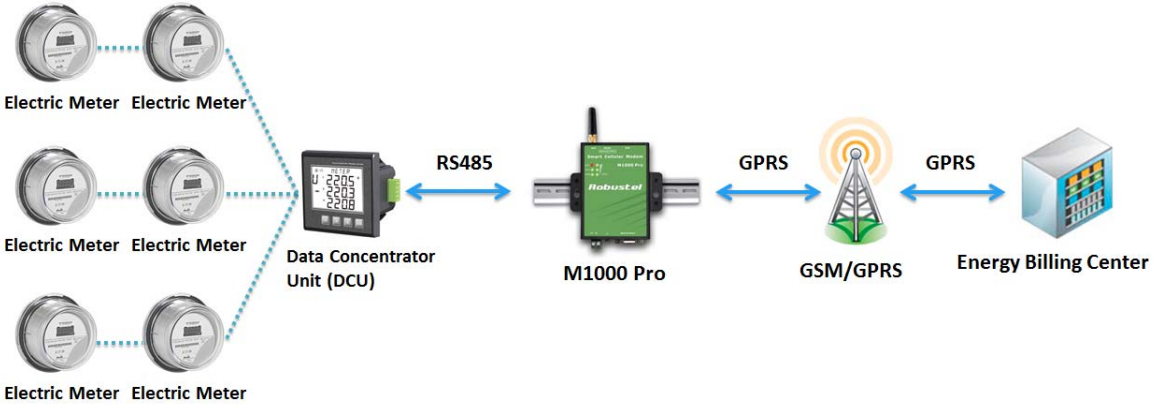
1. Each meter is connecting to a M1000 smart GPRS modem via RS232 by using CSD (data call);



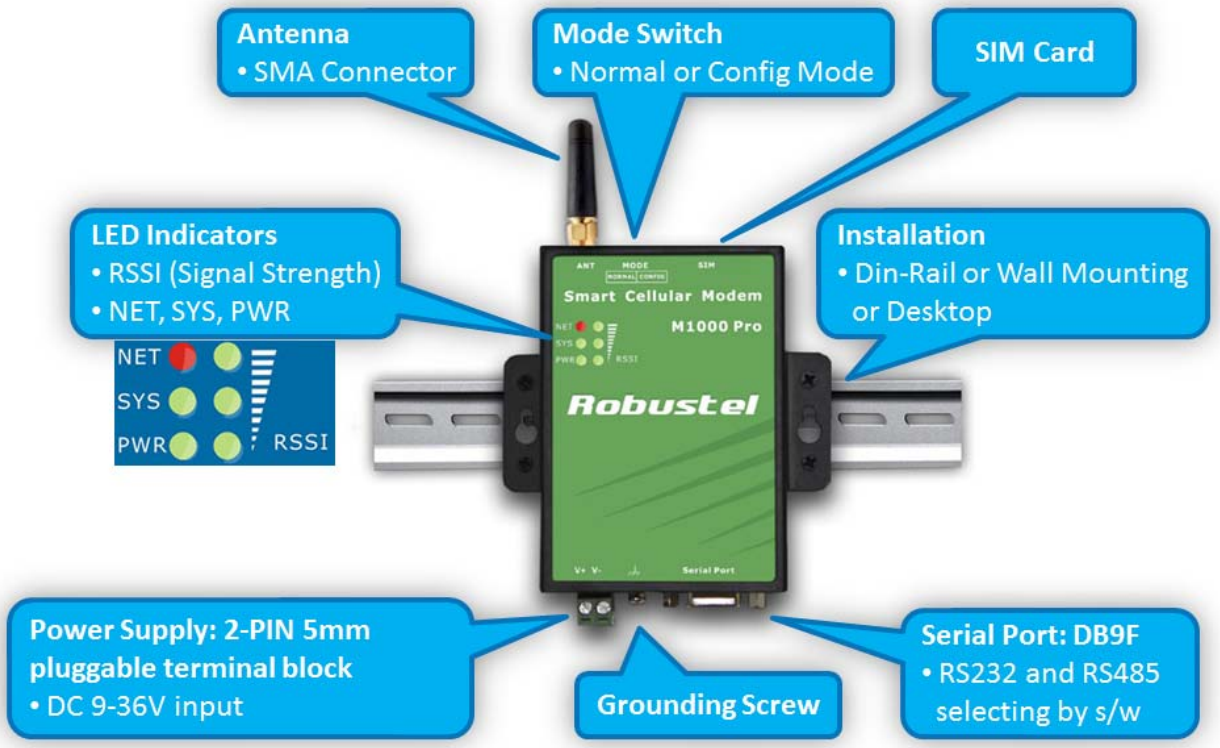
2. Each meter is connecting to a M1000 smart GPRS modem via RS232 by using GPRS (meter control the modem via AT commands);



3. Each meter is connecting to a Data Concentration Units (DCU), which may support up to 32 meters, and each DCU is connecting to a M1000 Pro serial to GPRS gateway via RS485 by using GPRS (transparent transmit serial data to billing center automatically).



Why Robustel:



- **Perfect EMC performance: compliant to IEC61000-4 series high level standard to meet Smart Grid harsh environment demand**
- **Wide operating temperature range from -25 to 70 degrees centigrade**
- **Built-in industrial grade Cinterion wireless module**
- **Low power consumption: idle: 0.6-0.72 watt, peak: 1.2-2.4 watts**
- Configuration mode and Normal mode selecting by switch
- Configurable by Robustel ModemConfigurator Pro GUI
- Auto GPRS connection (no AT commands required) and watchdog for reliable communications
- Transparent TCP client, TCP server and UDP socket connections
- Support Virtual COM by installation 3rd party software
- Various dial-up policies
- Always online: auto GPRS connection while it powered on, auto redial while the line dropped
- Wakeup by serial data/SMS/Caller ID/Preset Time
- Auto GPRS connect/reconnect, Keep Alive command to maintain socket connection
- Auto SMS of IP for dynamic IP SIM card
- Packetization methords: packet length / time interval / special end characters
- Auto reboot at preset time of a day/Caller ID/SMS
- Firmware upgrade via serial interface