Development of the Family Meters Reading

Yang Youtao

(Beijing Institute of Metrology and Test, Beijing ,100029, China)

Abstract : Gas meters, Electricity meters, Water meters and Heat meters 4 Family Meters Reading Management system. Long distance reading meter system -----Wireless Automated Meter Reading (WAMR) system. Potential to use GSM/GPRS radio communications interface technology in meters reading system.

Keywords: Family Meters, Wireless Automated Meter Reading (WAMR) system

1. Introduction

In modern society, Gas meters, Electricity meters, Water meters and Heat meters are many Families exist daily life need already. The traditional meters reading manage way is each energy supplier taking care of their meters. Like gas supplier manage gas meters, Water supplier look after their water meters, something like that. Suppliers first read the meters and record every family's meters reading, then give the bill count number to the banks. People have to pay the 4 different suppliers bills every month. It really is a hard work for the suppliers and the families. Because all these job are manual works. Manual reading meters need many people power and material resources. And manual works is very easy to make some mistakes, losing reading or reading meters number wrong. That is the society focus question. For energy suppliers, it will effect bill balance, prolong capital circle periods .It connects with suppliers service quality, trouble the people problems etc. . So the countries, the suppliers and the customers all want to solve this problem. Then the WAMR system which basic on computers and GSM/GPRS will replace the traditional manpower meters reading. Meter Management system, Long distance reading meter system, Wireless Automated Meter Reading (WAMR) will bring a great opportunity for the enterprises. Then these will really end the manual meters reading work. It will save lots of people power and the material resources, it means save times and money.
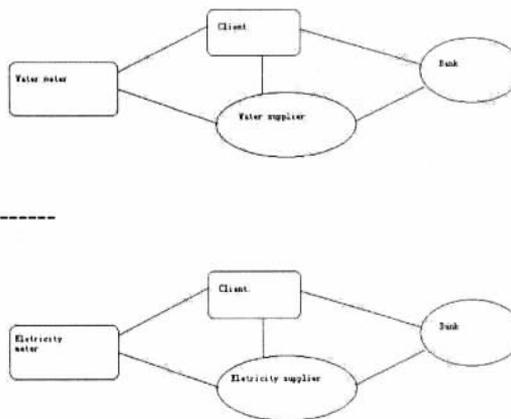

figure 1

2. WAMR system

Wireless Automated Meter Reading (WAMR) system is set up by the technology which is based on GSM/GPRS, implementing computer's technology and databank technology. The aim is solving inhabitant's meters reading and managing automatic. The system includes the management terminal, the RF/radio communication network and the intelligent family meters. The meters in commonly is used the single chip microprocessor. The meters work independently. The meter has a SIM card itself.

GSM network has been tested out stability sky-high. Further more, GSM DATA center has more self-contained data security system. GSM net usability is better than the carrier wave net and the wire net. Because WARM system do not visit telecom short-message gateway directly, it

does not restrict much by telecom. The system may auto-correct some mistake itself.

3.   WAMR   Advantages

Wireless Automated Meter Reading system may avoid manual meters reading mistake. At the same time, it only takes a short time for data analysis rapidity. Along with wireless digital network development, adopting the mature GSM wireless communications digital technology and the GPRS technology will come into using.

The WAMR system features:

a)   Remote meter reading
b)   Sky-High net stability
c)   Pre-payment applications
d)   Multi-utility system
e)   Data transfer using switched or mobile telephone networks
f)   Radio Communications
g)   Radio Pre-payment Advantages
h)   Low infrastructure cost

Remote meter reading/configuration

Provides communication gateway into the home

Potential home network expansion to include other appliances
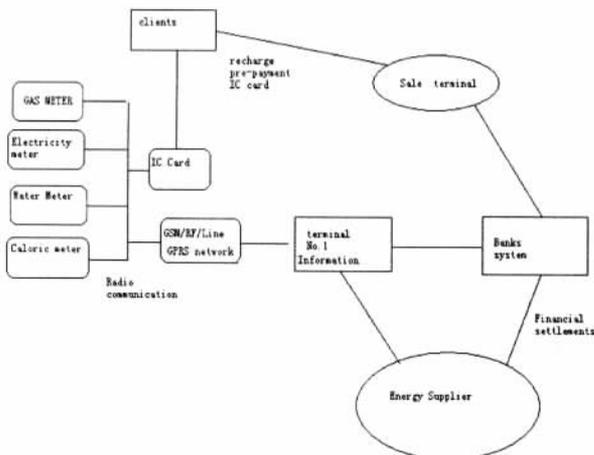
Potential payment terminal in the home

figure 2

Gas meters, Electricity meters, Water meters and

Heat meters own common 1 IC smart card. IC card may be recharged, pre-payment for the meters, people may also use it in shopping and in the bank ATM to exchange money. So the first way, people may pay through the IC card. The second way the meters may through the wireless communications digital technology, people could pay in the bank counter. The energy suppliers may will get the money (financial settlements) by the bank system. It is more safe, easier and efficient.

Suppliers Business Benefits:

a)   Security
b)   Accuracy
c)   Reliability
d)   Interfacing

4.   WARM specialty structure

Communication Module and Main Station, one meter outfit a piece of SIM card. Installation low cost and simple, The WARM system take full advantage of GSM network, It does not rebuild network lines.

Maintenance cost low but simples, Maintenance fee mostly come from SIM cards recharge and re-change new meters.

Carrying out WARM system cost mostly from short-message communication fee.

5.   WARMS function

5.1 Real time gather and record meters data.

5.2 The base station send-off reading command, when the meters got the command, auto-send the data to the base station, then the base station send it to the main station system.

5.3 Auto-reading meters mode.

5.4 Consumer meter abnormity alarm.

5.5 Share data commonly.

5.6 Opening data interface, it may connect with the sale management system and the finance management system .

5.7 It may statistic analysis meters reading, then

provide exact count number.

6. Conclusion

SMS (GSM message service function) is the mobile cell basic function. It has been applied at large, and the technology is successful , maturity. SMS function may send text files. GSM terminal units are capable of data transmission through SMS. Utilizing SMS function, We may affiliate SMS service function into every family's meter, then the wireless Automated Meter Reading (WAMR) system will come true. This method's technology is successful and maturity. We may make use of existing the GSM network, It does not put into lots of money to buy and rebuild the costly system facility. Meter reading is not restrict by the distance and dimension. So in my opinion, adopting SMS service function of GSM for the wireless Automated Meter Reading (WAMR) system is the feasible blue print.
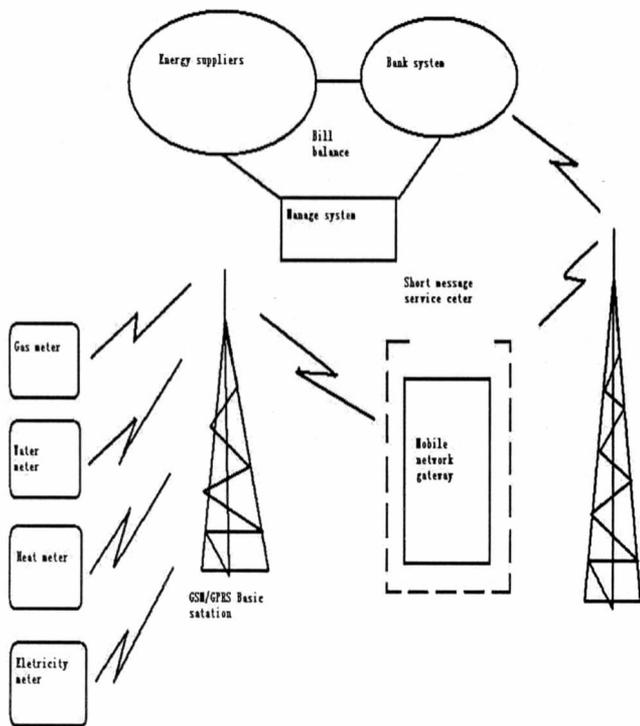
figure 3 the WARM structure Demonstratio