

## **Introduction**

- Electronic meters can be connected to LAN for data readout.
- Market deregulations needs more data and often data readout.
- Prepaid

## **What can GSM read from meters?**

- Cumulative consumption (for active and reactive energy)
- Archive for 18 billing periods (every period has maximum demand and cumulative consumed energy)
- All other data (time tariff table, date of reset, load limits )

## **What can GSM change in meters?**

- Time tariff table
- Date of billing periods reset
- Functions of auxiliary relays ( load limit, heating switch on or off etc.)
- Power limits
- All other programmable parameters like number of tariffs, scrolling speed etc.

## **What else can GSM do?**

- Billing period reset
- RTC synchronization
- Service information readout

## **How does GSM system work?**

- Host computer sends request by sending SMS to certain GSM module on meters side
- GSM module on meters side depending on request reads data from one or more or all meters connected to LAN . If request was for programming, module programs certain parameters ( for example time tariff table ) in one or more or all meters.

### How does it look?

- GSM module is built in the meters box
- It can be connected to two LAN terminals PK 100
- Can read data from 199 meters
- All information about meters connected to GSM module, needed for data readout, is on the SIM
- In case that GSM module must be changed, it is enough to put SIM in new GSM module.



### GSM installation

GSM module is connected to power line (230 V 50 Hz ) and to the LAN terminal PK 100

### How can GSM system work like a prepaid system?

- One auxiliary relay ( there are two in a meter) should be connected to the coil of strong relay for customer connection or disconnection.
- Customers can pay for electric energy in many different ways
  - In bank
  - By credit card
  - Buying ticket with number
- After receiving money electric distribution company sends credit by GSM to customer's watt hour meter.
- When customer spends his credit of energy he will be cut off by the relay unless he buys new credit.

### How can GSM replace RCR?

- Data readout also corrects RTC built in meter, and RTC can not collect big error.
- Time tariff table for daily tariff exchange can be reprogrammed by GSM.
- Every single meter can be individually accessed and auxiliary relays (for heating or hot water) can be switched on or off

### Comparing with RCR

- Does not need expensive signal injector
- Communication in both directions
- Price of GSM module is almost equal to RCR receiver price
- Lowest starting investment
- Simple implementation

## Money calculations for 100 000 customers RCR vs. GSM

- Signal injector 1 000 000 €
- 100 000 RCR each 50 €,all 5 000 000 €  
All together 6 000 000 €
- Minimum for start 1 000 000 €
- Communication in one direction without data readout of meters
- 100 000 GSM receivers, 50 € each
- All together 5 000 000 €
- Minimum for start only 1000 €
- Communication in both directions
- Possibilities of meters data readout

## Money calculations

- 1 SMS for meter reading or programming 0,06 € \*  
30 € per SIM per year \*
- Meters GSM module (for 199 meters max) 200 € \*\*
- PC module 100 €
- Software (negotiation) €

\* price for Croatia

\*\* present price ( the bases : 1000 pcs/y)

## GSM vs. PLC

- No need for filters in power lines.
- Price for GSM module is similar to price of PLC modem.
- Data from meters goes directly to PC in electro distribution office. There is no need for relay station like in PLC systems.
- Easier system introduction.

## Advantages

- Simple and fast implementation
- Minimal investment
- No need for special infrastructure
- Permanent access to meter´s data
- Different possibilities (prepaid, load control etc.)