THE EURIDIS PROTOCOL :

AN OPEN SOLUTION FOR AMR USING VARIOUS MEDIA

*by **Patrick Mortel** and **Thierry Deneux** –Euridis Association, France*

The Euridis technology, introduced at the beginning of the 1990s, is an efficient and low cost solution, now well proven in many countries for the remote reading of energy meters. Nearly six million meters using the Euridis interface have been installed all over the world.

Euridis is the only international standard (IEC 1142 and the latest version IEC 62 056-31) working with twisted pair cables for the remote reading of residential meters. Euridis meter reading has been adapted to new media to allow its use in all field configurations – radio for existing domestic housings, PLC for small industrial or residential customers, and GSM for frequent remote meter readings. All these solutions make meter reading easier, and the system can also provide more advanced services, such as storage of load curves and monitoring of customer consumption.

The basic Euridis solution uses a field bus for communication. Each meter is linked to the Euridis local bus, which consists of a two-wire cable connected to a magnetic coupler, generally located in the public domain. The operator simply connects a handheld unit to the magnetic coupler so that it can read each meter safely. This is the best and most economic solution in the case of new housings.

Some difficulty may, however, be experienced when installing the two-wire Euridis bus in some existing housings. Some manufacturers have handled this problem by introducing new designs, whereby specific gateways are connected to the Euridis meter interface. This allows Euridis meters to be used with other kinds of communication media like radio, PLC or GSM.

Figure 1: The handheld terminal

HANDHELD TERMINALS

More and more handheld units are making use of the Euridis modem. In France alone, more than 5000 Euridis-ready handheld terminals have been delivered to various energy distribution operators over the last few years, in addition to the 15,000 Euridis-compatible terminals already in operation. Widely used for the remote reading of domestic meters, the handheld unit is generally connected to a coupler located at the front of the terminal.

Another version of the product works with radio. Initially tested with the Radian standard protocol at a frequency of 433 Mhz, the new product can also be used for radio remote meter reading by means of an 869 MHz solution, which is fully compatible with the Euridis standard. In this case, the terminal is supplied with a PCMCIA formatted radio card and an antenna. This solution is fully water resistant.

THE USE OF RADIO IN EXISTING HOUSINGS

Euridis allows reading of electricity, gas, water and heating meters. Data collectors provide the interface between these meters and the local Euridis bus. Sometimes the installation of a Euridis wire bus is impossible or too expensive (for example in the case of existing buildings, or where distances are too long). Here another solution is proposed – radio.

Figure 2 & 3: The radio transmitter and reciever

Two ranges are available – a mono-directional range (a transmitter placed on the meter sends data to a receiver connected to the Euridis bus); and a bio-directional range (a transmitter/ receiver

communicates with a PCMCIA card placed in a handheld terminal).

Different Euridis/radio gateways are now available from various manufacturers, either in 433 Mhz or 869 MHz.

EURIDIS AND PLC

Euridis gives instantaneous access to a maximum of 100 meters connected together on a two-wire bus.

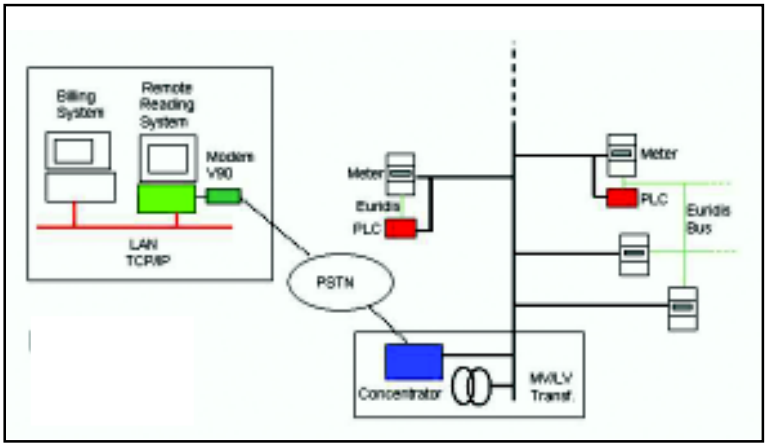

Figure 4: PLC AMR system

The latest developments in PLC AMR systems allow a PLC modem to be connected to a Euridis bus, or directly to the Euridis electronic meter when it is not connected to a bus. A PLC data concentrator, typically installed within the MV/LV transformer station, can communicate with any device from the Euridis bus through its PLC modem and the related LV power lines.

This PLC extension makes it possible to have access to over 1000 Euridis meters from a single PLC data concentrator. These PLC systems are 'plug and play', complying with the IEC 61334 'PLAN' protocol. Different suppliers provide Euridis/PLC gateways which are compliant with the PLAN protocol.

PLC data concentrators usually read the meters at least once a day, and their entire memory is automatically downloaded within a minute by various means, such as RS232, PSTN, GSM and TCPIP. Invoices are then automatically generated. In France, EdF is involved with two pilot projects for residential customers where meters are read automatically and invoices generated (in Nanterre and Bordeaux) and one pilot for small commercial and industrial customers (in Lyon). In addition, several thousands of Euridis/PLC gateways have been installed in both France and Switzerland for EdF and other smaller utilities. The PLC system can become very profitable when monthly meter reading is required (mainly for commercial and industrial customers) compared to a PSTN or GSM solution.

Figure 5: GSM gateway

Depending on utility requirements, some PLC systems are even capable of being remotely upgraded with advanced functions and services, such as load profile recording, tariff control, contactor management and alarm reporting. PLC fits in well with Euridis, especially when functions beyond meter data reading are required.

THE EURIDIS/GSM GATEWAY

More and more utility companies wish to communicate remotely with their meters, even in places where PSTN lines are not available. Furthermore, the main telecommunication operators nowadays offer targeted subscriptions, which makes GSM links to meters affordable. An innovative Euridis/GSM gateway is now available.

This gate-way proposes two communication modes – passive and active.

In the passive mode, the gateway enables bi-directional communication between the GSM network and up to 100 meters linked to the Euridis bus. The request for a reading is communicated to the gateway from a calling station through the GSM network (9600 Bauds). The gateway in turn despatches these orders to the Euridis bus and carries out the effective transmission of the readings on the way back.

In the active mode, the gateway generates SMS alerts: for example, over- or under-consumption and/or attempts to tamper with the meter can be signalled. These signals are communicated to a pre-programmed phone number.

The Euridis/GSM gateway offers an open, easy to install solution for utility companies which have to communicate frequently with their meters in the field.

Newly deregulated markets require that utilities focus on offering their customers a top-class service while introducing cost-effective operating methods in order to remian competitive. In this market Euridis is an extremely effective standardised interface for residential and small industrial meters.MI

ABOUT THE AUTHORS:
Thierry Deneux is General Project Manager of Metering Systems at EDF GDF Services, in charge of the management of all existing meters and associated devices. In partnership with some manufacturers, he has introduced AMR projects using technologies such as radio, PLC or communication gateways. He is a graduate of Ecole Polytechnique de France and of Ecole Supérieure d'Electricité (Supélec).

Patrick Mortel is President of the EURIDIS Association and Electronic Marketing Manager at MAEC, where he is in charge of the AMR systems division. He is a graduate of Polytech'Lille (EUDIL).

ABOUT THE ASSOCIATION:
All users of the Euridis protocol have grouped together to form a Euridis Association in charge of the development, follow-up and widespread use of remote reading products. The Euridis Association is open to any meter manufacturer, utility or software company which would like to have more detailed information about the protocol, the products or the certification process (ie the set of tests which will guarantee that a product is Euridis compliant).

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