

Advanced Metering

SOLUTIONS

Landis+Gyr *advantis*

THE SMART SOLUTION FOR METERING IN LIBERALISED ENERGY MARKETS

Landis+
Gyr⁺

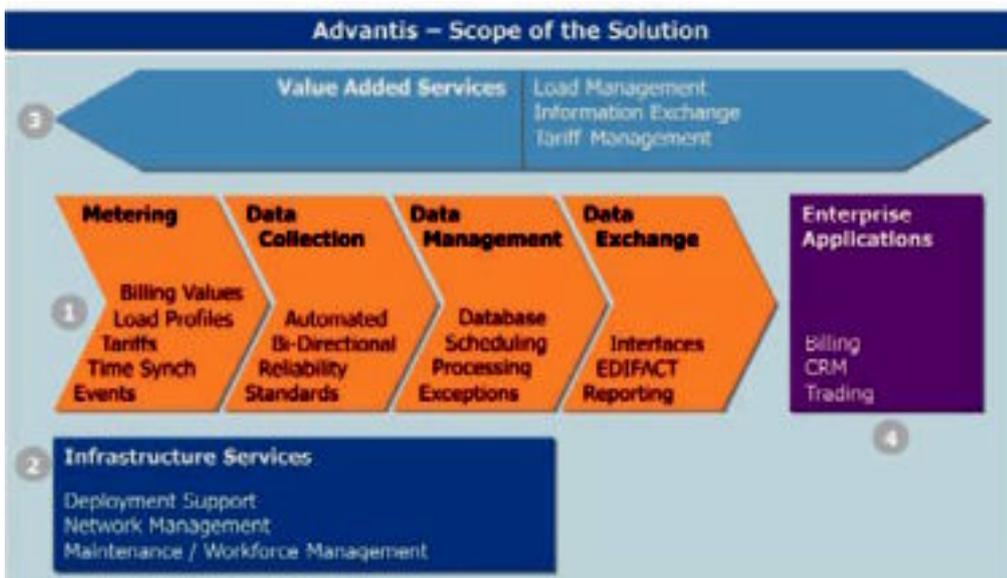


THE SMART SOLUTION FOR METERING IN LIBERALISED ENERGY MARKETS

advantis is an advanced metering system catering for the special needs of the liberalised energy markets - a complete solution developed by Landis+Gyr, the world's leading supplier for energy measurement solutions.

advantis covers the complete value chain from the meter to the billing interface and is designed to suit large-scale, residential metering systems. Therefore, it provides all user-friendly tools required for handling large numbers of customers.

advantis revolutionises the traditional value chain of the energy market and adds value to core processes such as meter data collection, supplier change, tariffication, meter management and energy supply. In conclusion *advantis* results in new chances for players in liberalised energy markets, more efficiency for utilities as well as higher customer satisfaction.



- 1 The core process provides meter data to the enterprise applications like a billing system.
- 2 Infrastructure services help with the deployment and management of a large network of meter nodes.
- 3 Value Added Services use the AMR infrastructure and provide value beyond the delivery of billing values.
- 4 *advantis* interfaces smoothly with existing enterprise applications.



ADVANTAGES OF *advantis*

- Direct communication between meters in private households and enterprise systems of utilities, enabling processes of liberalised energy markets
- Fast return on investment and low total costs of ownership, delivering the performance needed in liberalised energy markets
- Higher efficiency due to automation, decreasing operational costs of utilities and thus strengthening their market position
- Detection of energy losses in networks in combination with measures like prepayment or switch-off, instantaneously increasing profit of utilities
- Periodic or spontaneous remote access to the meter, allowing for an acceleration and optimisation of key business processes
- Extensive reporting capabilities, generating daily, monthly or other periodic reports and therefore, offering maximum flexibility for customer specific data
- Rapid access to the data needed to answer customer enquiries, thereby improving the customer relationship
- Open architecture and internationally standardised interfaces, offering seamless integration of third-party meters
- Pluggable communication module, permitting flexible implementation of future communications technologies and avoiding costly meter changes
- Self-configuring data concentrators, vastly simplifying system extensions
- Scalability and modularity, ensuring tailor-made systems and extensions according to specific customer requirements
- High reliability and performance, as expected from the leading supplier of metering equipment and systems
- One system incorporating the knowledge and experience of Landis+Gyr, a company at the forefront of metering technology for over a century, and a leading systems supplier for three decades

METERING

The *advantis* range of meters covers all residential and industrial/commercial applications, and displays outstanding quality and performance. The meters can be equipped with a communications module for Power Line Carrier (PLC) or GPRS/GSM. Alternatively, an external telephone network (PSTN), radio or Ethernet communications module can be connected. Replacement of a communications module does not require any meter re-certification, since communications are independent of the measuring elements.

Optional functionality includes external controls, e.g. for boiler control or load shedding, and the connection of third-party meters with standard interfaces and protocols.



DATA COLLECTION

The meters communicate either directly with the *advantis* central system, or with a data concentrator providing the link with the central station for up to 2000 meters. The concentrator stores the metering data for several days, so that they can be sent to the central system immediately on request.

Another key function of the data concentrator is the detection of new meters connected to its PLC network. A new meter is registered, and its configuration data sent to the central system. Typically, a data concentrator is located at a utility transformer station, and utilises GPRS/GSM, the PSTN, or an Ethernet link to communicate with the central system. If a GPRS connection fails, the system falls back to GSM data mode.



DATA MANAGEMENT

The *advantis* AMR central system offers a complete set of user-friendly features and functions, according to state-of-the-art and latest requirements:

- Acquisition of billing and load profile data directly from the meters, via data concentrators, or from handheld terminals
- Data segmentation, permitting data areas to be segregated according to system-specific factors and allowing for restricted access of individual users according to their profile, e.g. gas, electricity, industry
- Report generation, using a standard set of templates and calculation functions enabling customer-specific reports
- Comprehensive monitoring and logging of events in the meters and the central station
- Tariffication, including extensive tariff agreement features
- Remote time synchronisation and setting
- Data import and export for communication with third-party systems, using XML format, via TCP/IP over a corporate network or using an EDI subset, to customers, partners, regulators or others
- Communication protocols for a wide range of products from Landis+Gyr and third parties
- A user-friendly tree format for accessing metering data in a structured way
- Convenient storage of original data in the relational database and record of modifications in a copy of the relevant data
- Data plausibility checks and validation according to user-defined rules
- Substitution and marking of missing or implausible data
- Adaptation to current / voltage transformer ratios (CT/VT)

TARIFF MANAGEMENT

advantis includes full tariffication in the meter, and the option to define and apply tariffs to load profile data. Tariff programs can be defined from the *advantis* central system with a start-time. Downloading is allocated to either individual meters or groups of meters, and the tariff status registered in the central system.

LOAD MANAGEMENT

The optional load management functionality of *advantis* meters provides for up to two control outputs in the meter for control of external equipment. Normally, these outputs are controlled by the internal tariff program, permitting equipment such as boilers to be switched off during high-rate periods; it is also possible to include a power-limiter function, so that the outputs can control an external breaker or contactor if a pre-defined power limit is exceeded. The second output can be switched on request from the *advantis* central system. This function can be used, for example, to shed loads at critical times via a broadcast command.

REVENUE PROTECTION

In many countries utilities encounter huge non-technical losses in their distribution networks. In most of these countries metering is based on a dated generation of mechanical meters that have to be replaced anyway. As *advantis* offers means to detect and switch off sources of losses, utilities are able to reduce high cost of opportunities and optimize energy management.

ENTERPRISE APPLICATION

Landis+Gyr specialises in the value generating processes from the meter, through the communications systems, to the data validation and management system in the central station. At this point, data are usually transferred to the enterprise applications packages used for energy trading, network management, bookkeeping, etc. Landis+Gyr has extensive experience in defining and implementing the interfaces necessary for the transfer of data to and from these systems.



SECURITY

advantis provides a high level of security, as required for a system handling personal data and finances. In the central system, detailed access rights are allocated to user groups by the administrator, and can be clearly defined for data segments with read/write permission, and individual user names and passwords. For communication with the data concentrators and meters, *advantis* implements the recommendations of DLMS/COSEM, which define access rights for each user group, and client identification by means of passwords.

POWER QUALITY

The meters record all power outages, exceeding a pre-defined time, and transfer the information to the central station. This feature can be extended optionally in order to cover 1-phase and 3-phase over- and undervoltage at the metering point.

INTEROPERABILITY

The *advantis* architecture is based on international standards, enabling third-party meters - conforming to the appropriate standards - to be easily integrated into the system. Interoperability is ensured on all levels: At the central station level for meters connected to a public telecom network and conforming to DLMS or IEC 62056-21 - regarding DLMS, short name and logical name addressing are supported. At meter node level and PLC communication meters conforming to IEC 62056-21 using OBIS identifiers can be connected via the CS bus (20-mA loop). At a GPRS/GSM meter node level transparent communication to the central station is provided for meters connected via CS bus and conforming to DLMS.

INFRASTRUCTURE SERVICES

A full range of infrastructure services is available from Landis+Gyr for *advantis*, including:

- Project consulting, planning and engineering
- Installation management
- Operator and administrator training
- System maintenance and support, including remote diagnosis

FUNCTIONALITY

METER	Full range of domestic, commercial, industrial applications	■	
	PLC communication (Meter also acts as repeater)	■	
	GPRS/GSM communication (as alternative for PLC)	■	
	PSTN, radio, Ethernet communication interface (external)		■
	Remote time synchronisation and setting	■	
	Tariffication	■	
	Tariff download	■	
	Control outputs		■
	Load management functionality		■
DATA CONCENTRATOR	PLC communication to meters	■	
	Automatic meter detection and configuration (for PLC)	■	
	GPRS/GSM communication to central station	■	
	Automatic failover from GPRS to GSM	■	
	Ethernet communication to central station	■	
	PSTN communication to central station		■
	6 days metering data storage for up to 2000 meters	■	
CENTRAL STATION	Basic billing and load profile acquisition	■	
	Communication protocols for third-party meters		■
	Time synchronisation and setting	■	
	Handheld terminal readout		■
	CT/VT ratio adaptation		■
	Validation and plausibility		■
	Manual data substitution	■	
	Data segmentation		■
	Tariffication		■
	Report generation and calculations		■
Data import and export		■	
		STANDARD	OPTION



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