



Landis+Gyr brings PLC based smart metering to Slovenia

Thanks to a smart metering solution that comprises integrated PLAN PLC communication interfaces from Landis+Gyr, Elektro Ljubljana, the largest Slovenian utility covering the Slovenian capital Ljubljana and its greater region, is now one step closer to achieving its mission and vision: the ability to offer all its customers a comprehensive, high-quality, reliable and competitive supply of electricity and related services, building on more than 110 years of business know-how and skill.

Achieving business and regulatory objectives

The Slovenian utility chose Landis+Gyr as a partner to build a smart metering solution, which comprises a smart metering system using a PLAN PLC based interface. The utility wanted to introduce dynamic tariff control to a total of 6,600 end consumers – 4,000 of whom lived in areas where existing infrastructure did not support these types of services.

Today, Elektro Ljubljana is able to offer all of its customers the benefits offered by dynamic tariff control and also fulfill the latest government tariff regulations. Prior to the decision to invest in Landis+Gyr's solution, Elektro Ljubljana carried out an in-depth analysis of the situation and all possible technical solutions. It wanted to install smart metering infrastructure in several areas, including an area that had no ability to offer dynamic tariff control. In total, over 6,000 end consumers were affected by the utility's decision. The utility chose Landis+Gyr's solution as it was best able to meet its technological and economic requirements.

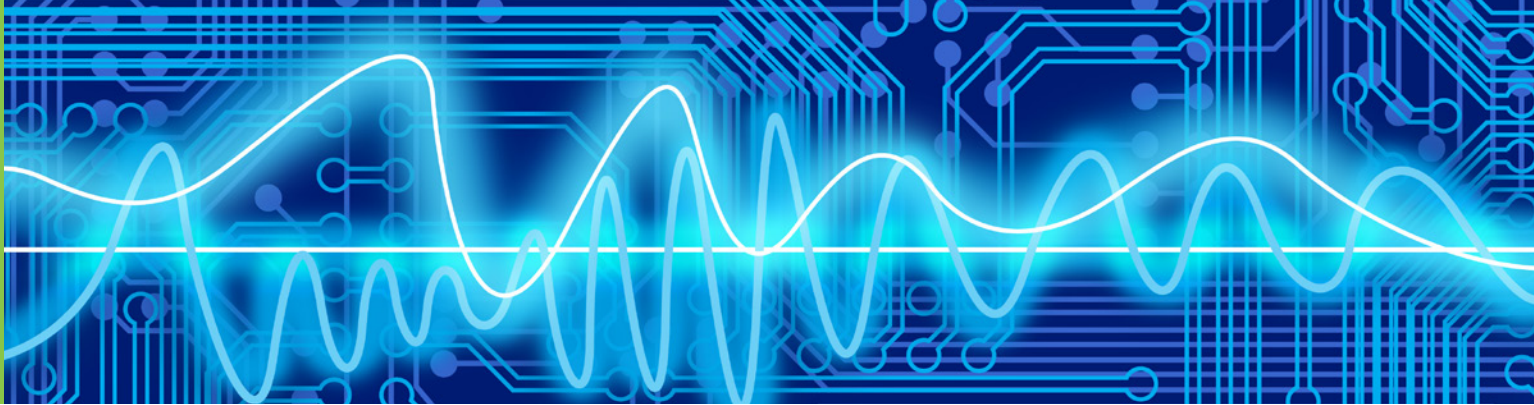
With the technology deployed, not only dynamic tariff control, but also additional services to end consumers are available. These include more accurate monthly

billing, monitoring of individual consumption through a web portal and, above all, the opportunity to optimise their individual consumption patterns. This demonstrates that the investment paid off, not only in regulatory terms, but also in terms of the way in which smart metering gives a utility the opportunity to become future-proof through offering a portfolio of services to its customers.

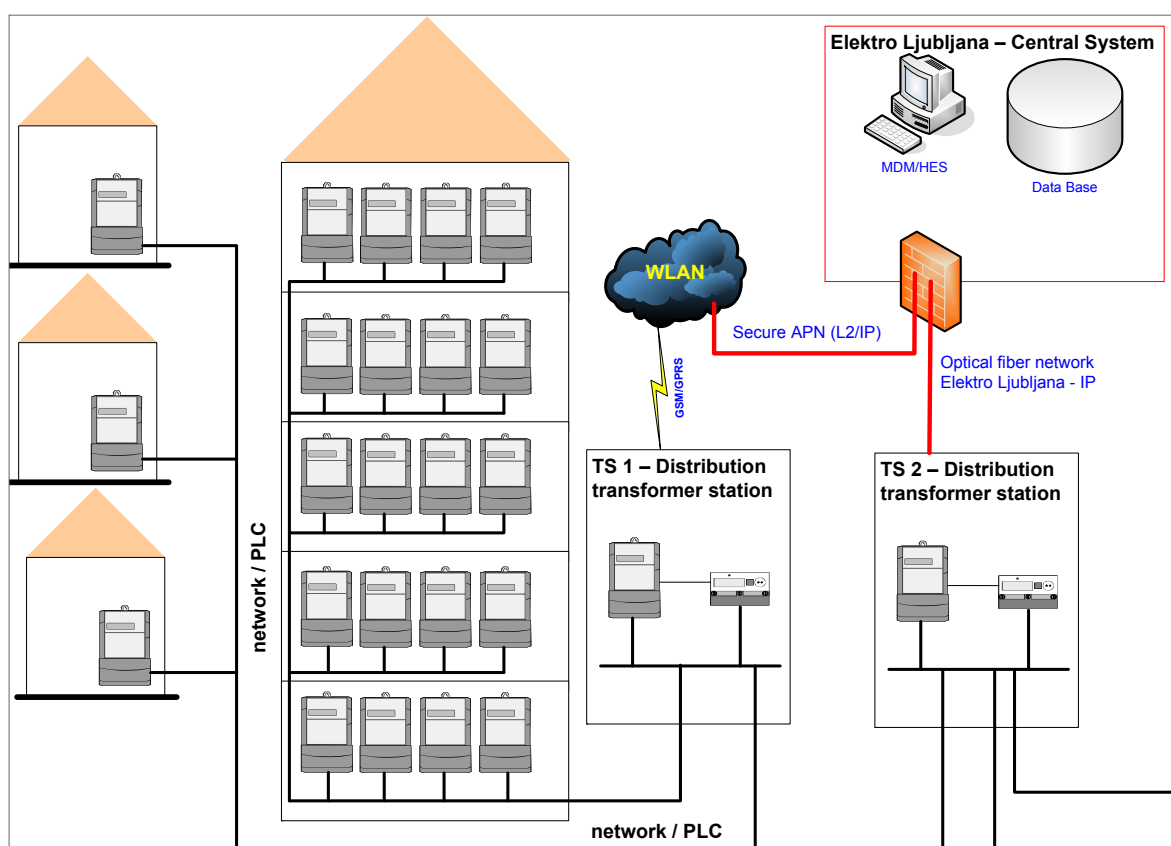
PLAN smoothes the way to a smart future

Ensuring equal application of the tariff regulations for all end consumers, as well as smooth and reliable operation is crucial. This can be achieved by installing a top modern and functional metering point set up with an information communication connection to the central system.

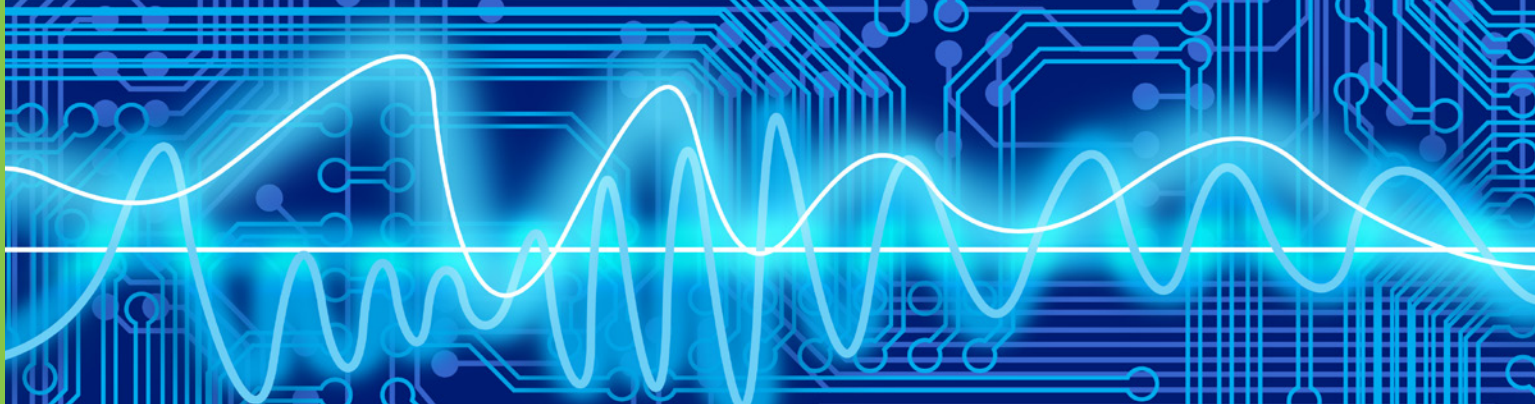
Elektro Ljubljana chose Landis+Gyr's PLAN PLC based communication, which is known as the most robust and technically sophisticated technology available on the market.



The utility is deploying a Landis+Gyr electricity meter with a PLAN communication interface to each of its 6,600 end consumers, and a Landis+Gyr data concentrator with GSM/GPRS or Ethernet connection to the central system (depending on where the utility's own fiber is available) to each of its 246 transformer stations.



Landis+Gyr measurement data concentrators and industrial & commercial meters with CS / PLC communication interfaces are installed in each of Elektro Ljubljana's transformer stations. The control meters at the transformer station are installed on the secondary side transformer so that the utility can continuously monitor all losses. It can also provide additional quality parameters that give an overview of operations in the utility's entire distribution network.



Deployment, including preparation, was handled systematically. With the help of Landis+Gyr, utility employees were trained in all areas of the new technology implementation, the concept of performance and the installation of components. Installers were provided with straight-forward instructions as well as a contact number for field experts. Furthermore, since deployment, the utility has employed additional manpower in order to fully establish operations and provide technical assistance to field experts.

Elektro Ljubljana requested that the pilot phase ensure 100 percent functionality be established and fully operational in all areas of the solution during the trial period. Since first installation of measuring equipment the entire system has worked seamlessly.

After the pilot phase was successfully completed, mass deployment was initiated in June 2008 and ended in mid December 2008.

During deployment, the availability of installed metering points, the collection of data from data concentrators as well as comparison of energy consumption of all end consumers against the control energy measurements per transformer area was constantly monitored. When a deviation occurred, a clean-up was initiated immediately.

Follow up performance measurements

In March 2009 Elektro Ljubljana, in cooperation with Landis+Gyr, carried out further performance tests of the PLC communication in the same area. They wanted to check if the performance of the installed solution was affected in any way by changes in the network. The tests were done in different categories depending on the topology conditions chosen. The number of repetitions needed for successful communication, data throughput, level of effective PLC signal as well as loss of communication frames was recorded. The most unfavorable conditions for PLC on the distribution network were deliberately chosen – a rural network with long (>700m) air feeders and a high urban density network comprising a large number of single family houses, apartments and small to medium sized industrial plants.

Measurements have shown that the PLC technology provided by Landis+Gyr is easily able to overcome these conditions – in the rural network, the PLC signal is, even after a 700 meter distance, without repetition high enough for successful communication, in an urban network an average 1.06 credits (the majority of metering points has communicated on credit 0 and 1, approximately 16 percent on credit 2, 8 percent on credit 3, and less than 2 percent on credit 4) were needed to assure 100 percent of measurement data is received by the corresponding data concentrator.

Out of four million communication frames sent during the performance measurement phase, only around 4,000 frames (0.1 percent) were lost, therefore the time taken for query repetitions made by data concentrators could be optimized. This enables the utility to extend the amount of metering points installed under one data concentrator.

Next steps

Due to the success of the project, Elektro Ljubljana has decided to continue to deploy Landis+Gyr smart metering hardware and software, and by mid 2010 the utility plans to deploy a further 30,000 metering points.

About Elektro Ljubljana

Elektro Ljubljana is the leading Slovenian utility. It has operations in the field of electricity distribution and production using renewable energy and offers related services. Elektro Ljubljana has approximately 325,000 metering points, each of which will be equipped with a smart meter by 2020, as set out in the EU energy directive. www.elektro-ljubljana.si

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