



# PLC Technology and its application possibilities

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Key words: IT Management, transformation stations, PLC (Power Line Communication), FSM (Field Service Management)

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## Local network data in PLC Technology

PLC technology represents the development of data and voice transmissions through an electrical network of low and medium voltage power, through modulation.

The main advantage of this solution is that it can develop a transmission network for data and voice without the need of dedicated cabling. In fact, its use as a transmission support for the power supply infrastructure was the main reason that allowed this technology to penetrate the market, seeing how power supplies are found in every village and every home, even in places that were not reached by other telecommunication systems (telephony, CATV, optical fiber, wireless), and in each building a power supply network can be found in every room.

In this case, the fact that a work station can be connected to a plug anywhere in the building through a modem slave PLC, correlated with the aforementioned regarding specifics of the non-process applications that need to be used in the context of transformation stations, specifics that consists in relocating the working point, make the PLC technology a very well suited option.

PLC technology evolved over time, nowadays becoming a mature broadband technology. Equipment that can presently be found on the market reaches up to 45 Mbps and the beginning of this year brings the launch of an equipment series of 200 Mbps. These speeds allow the development of a network with a significant number of users, who have enough bandwidth available for most types of applications. Moreover, the new modulation systems ensure a great stability against electromagnetic disturbances, which allows the use of this technology in industrial environments.

The scheme of a low power voltage PLC data network is shown in the picture below.

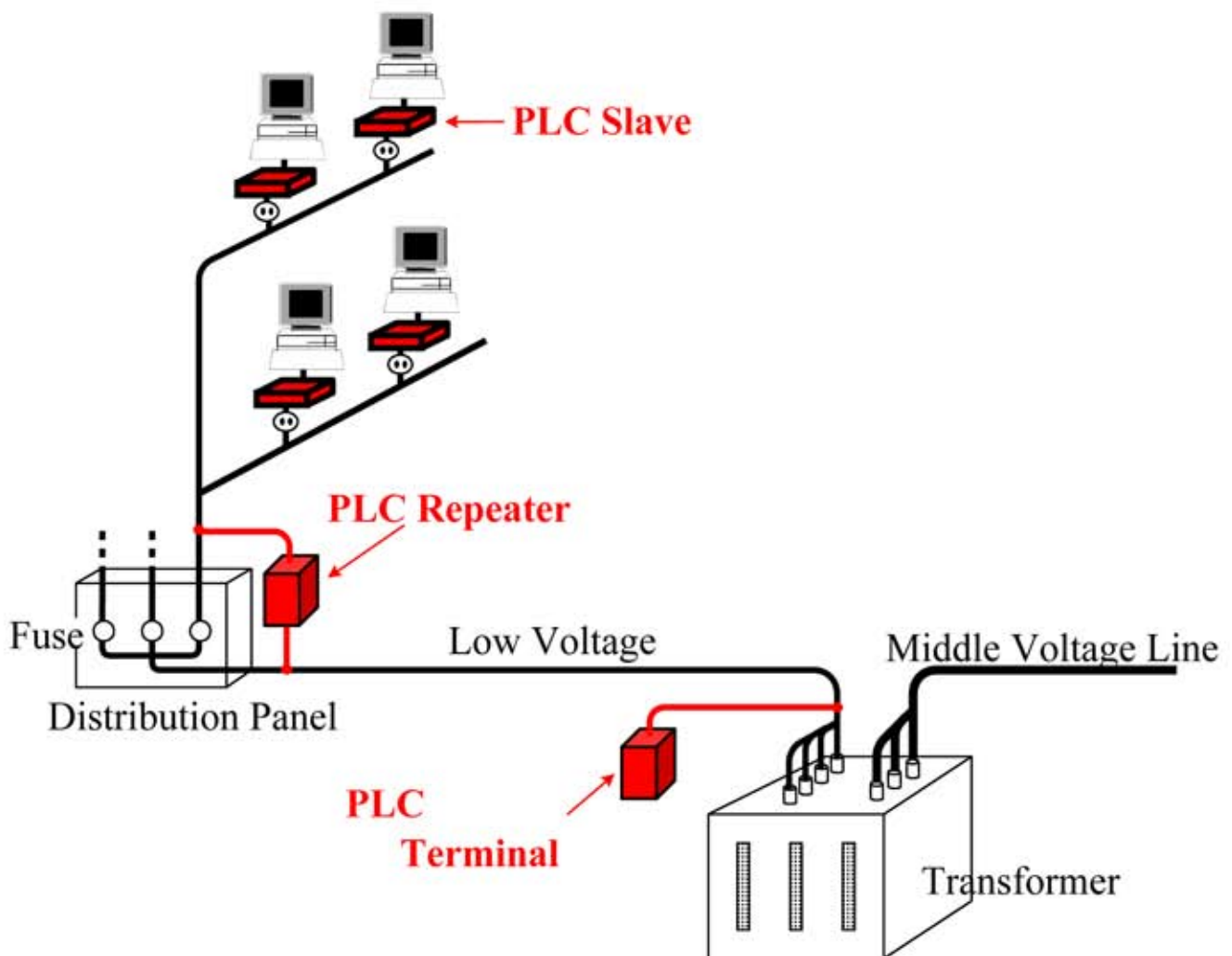
The elements of such networks are:

- Terminal equipment (Master)
- Repeater (which restores the attenuated signal and ensures its phase distribution)
- Slave equipments associated to workstations

The picture shows several stations mounted in different outlets, but taking in account the typical

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applications, their use frequency and the probability of simultaneous use of various applications, we may consider the existence of only 1-2 slave equipments that can be moved, as deemed necessary in other workplaces.



If the applications used require Internet access (for example the Nonconformities application or RCM), then this can be achieved by injecting the Internet signal in the PLC Terminal Equipment.

The picture above shows a simple PLC data network, dedicated to this specific case.

PLC technology facilities are a lot higher, also allowing voice transmission (using the same equipment) as well as developing medium voltage networks. Also, PLC technology enables the use

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of specialized PLC slave equipment and the implementation of applications like: telemonitoring / remote control, video recording and surveillance, security systems or electricity consumption management.

PLC technology makes possible the development of extended networks, with dozens, hundreds or even thousands of users, ensuring the possibility to control the transfer rate assigned to each user, performance management and various options to secure data transfer.

This technology is already mature, present in several countries in the stage of commercial operation and under a continuous expansion, independent from the development of its own infrastructure or from using the infrastructure provided by a telecom operator.

TELETRANS started in 2003 a pilot project on PLC technology, by installing in its headquarters a local data network, with Internet access plus a local voice network with an output in the public telecom operator network. Results of tests and measurements carried out for several months have proven the viability and quality of this technology. These results have led to the decision to amplify the pilot into a public area, together with the preparation for this service's commercial launch.

In its capacity as a subsidiary of NC Transelectrica JSC for telecommunication and information technology services, TELETRANS considers that implementing PLC solutions in transformation stations is a low cost, reliable and versatile option, which enables on a short term the possibility of using certain computer applications, not directly related to system process in these locations.