



METERING & MONITORING

Optimizing power line communication

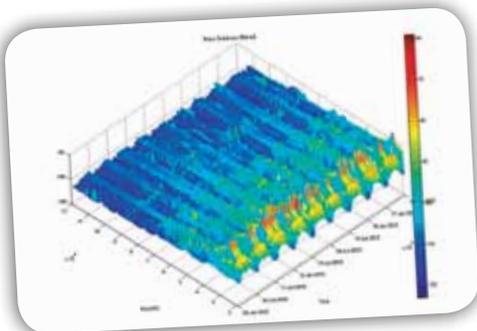
- > Long-term high frequency measurements
- > Advice on effective PLC
- > Technical specifications
- > Troubleshooting PLC

Distribution network operators all over Europe are exploring the feasibility of power line communication (PLC) over their electricity grid. PLC has been chosen as one of the main technologies for the remote reading of electricity meters. The importance of this type of communication requires that these systems operate reliably. But how can you ensure there are no disturbances on the electricity network hampering the transfer of data? Laborelec, the technical research and competence centre for electricity of the GDF SUEZ Group, has the expertise and the tools to help you.

Laborelec has been studying grids and PLC for years. By combining this experience with their expertise in telecommunication, our experts have been able to develop a long-term high frequency PLC measurement tool.

High frequency measurement tool

The tool measures signals over the electricity network on site, at high frequencies in the CENELEC A-band, and over a period of one to two weeks. It can be used to perform preliminary studies, to choose the best PLC bandwidth, and to help identify PLC disturbances.



The measurement tool visualizes the PLC potential on any given electricity grid.

LABORELEC GRID AND TELECOMMUNICATION EXPERTS COMBINED THEIR SKILLS TO DEVELOP THE PLC MEASUREMENT TOOL

Test bench for investigating PLC performance

In addition to on-site measurements, our experts can perform laboratory tests in our in-house, state-of-the-art test bench. It enables them to simulate different working conditions, temperatures, and channel characteristics to establish the effect of various types of loads (transformers, cables, et cetera) on PLC performance.



The Laborelec test bench is able to simulate various working conditions on electricity grids.



COMPREHENSIVE EXPERIENCE

Laborelec has conducted long-term high frequency measurement campaigns on the Eandis, ORES, and Sibelga networks. These are Belgium's principal distribution network operators. Tasks included:

- > Troubleshooting PLC on meshed and non-meshed networks, including underground as well as overhead lines
- > Advice on the optimal frequency band for noise-free and stable PLC
- > Troubleshooting interference between the PLC signals of electricity meters and those of other systems such as street light management
- > Verifying the effectiveness of network modifications to improve PLC

Laborelec is a widely recognized centre of expertise for power system related high frequency phenomena. We can assist distribution network operators and equipment manufacturers in tackling PLC issues based on the measurements recorded by our in-house developed measurement tool.

Optimize power line communication

Thanks to the PLC measurement tool, Laborelec experts can determine the optimal frequency band for PLC. It identifies noise, determines the stability of the communication channel, identifies sensitive network segments, et cetera.

Characterize loads and select appropriate equipment

Laborelec is able to perform characterization tests. Our tool measures the impedance, transfer function, and noise propagation of all types of network loads, including transformers and cables.

Based on our measurements, we give advice on the technical communication specifications for PLC-based smart meters and other PLC devices so that they best fit your specific electricity network.



Our experts have the expertise and the experience to interpret measurement data and provide advice regarding the best frequency band to support PLC.

PILOT TESTS, TECHNICAL SPECIFICATIONS, AND TROUBLESHOOTING ARE ALL BASED ON PLC MEASUREMENTS

Troubleshooting problems, maximizing PLC reliability

Are you experiencing PLC problems? Our measurement tool enables us to quickly determine the possible root cause(s). We can also offer advice to remedy the underlying problems of the physical channel. For this, we can rely on our long record of successful research and services for various distribution network operators.



With our accurate measurements, Laborelec experts can define the technical specifications for electricity meters and other PLC devices so that they best fit a specific electricity network.



FIVE REASONS FOR YOU TO CHOOSE LABORELEC

- > One-stop shopping for your energy related services
- > 50 years of experience
- > Increased profitability of your installations
- > Independent and confidential advice
- > Recognized and certified laboratory

The Technical **Competence Centre**
In **energy processes** and **energy use**
From **innovation** to **operational assistance**

Contact

Rafaël Jahn

rafael.jahn@laborelec.com

T. +32 2 382 05 42

Hans Bastings

hans.bastings@laborelec.com

T. +31 638 82 60 22

Laborelec Belgium

Rodestraat 125
1630 Linkebeek

T. +32 2 382 02 11

F. +32 2 382 02 41

RPR/RPM Brussels 0400.902.582

BTW/TVA BE 0400 902 582

www.laborelec.com

info@laborelec.com

Laborelec The Netherlands

Amerikalaan 35
6199 AE Maastricht-Airport

T. +31 43 36 75 203

Laborelec Germany

Bromberger Strasse 39-41
42281 Wuppertal

T. +49 202 250 27 13



LABORELEC
GDF SUEZ