



## **BPL Broadband powerline**

- Smart Grids**
- Smart Metering**
- Smart Homes**

## Communication - paving the way for change

With the 20-20-20 energy targets and environmental objectives paving the way for a complete transformation of our energy supply, there comes an increasing focus on greater sustainability. Renewable energy, energy efficiency and energy storage all play a major role in this change.

Intermittent, renewable energy means that consumption has to be adjusted in order to balance the supply. This means that storage systems and decentralised load management become of ever growing importance in the energy system.

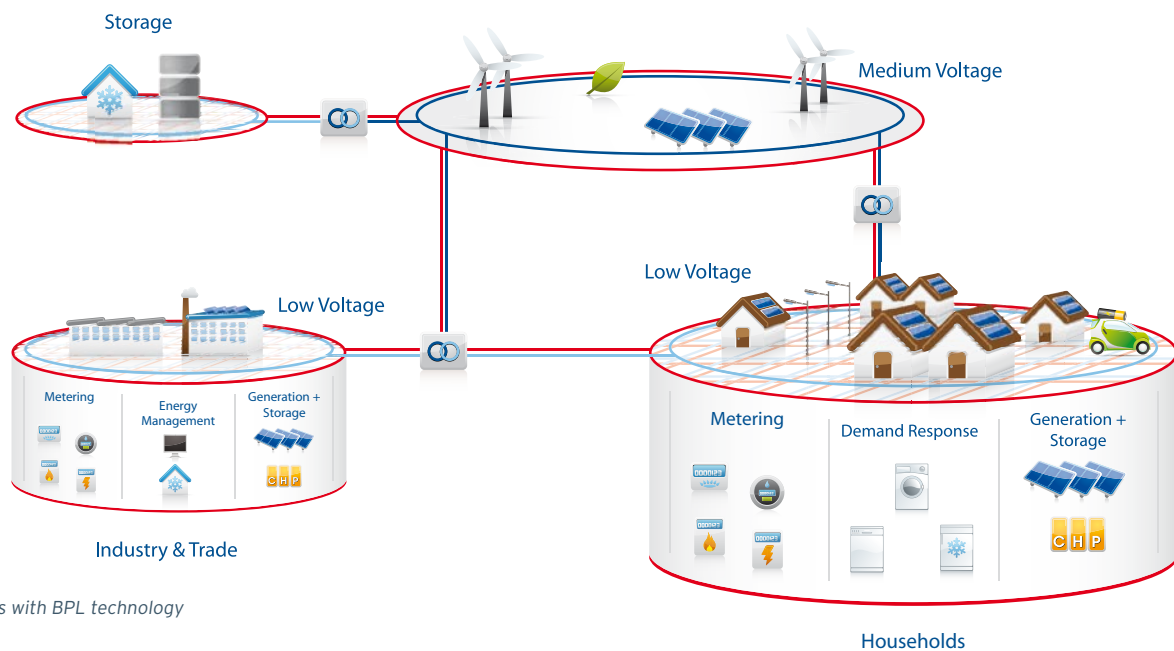
These challenges desperately need to be addressed and the key to this lies in developing the Smart Grid. This covers everything from energy production, to distribution, through to energy consumption. The Smart Grid provides new ways to optimally combine security, efficiency and environmental compatibility.

The change is already under way, with smart metering and dynamic tariffs, electric vehicles and intelligent secondary substations all being primary examples of our

progression towards an integrated Smart Grid. However, the power grids at present do not have a suitable communication platform that meets all of the necessary requirements: availability everywhere and cost efficient as well as being able to deliver sustainable performance.

With our award winning Broadband Powerline Communications technology (BPL), we at Power Plus Communications (PPC), have made it possible for utilities to take advantage of modern network concepts which have been tried and tested over the years within the field of telecommunications.

Broadband Powerline offers all of the advantages of a modern IP-based Broadband Communications technology which is available everywhere where the Smart Grid is needed. This is achievable thanks to its use of the power grid itself in order to transport the data. Furthermore, Broadband Powerline technology is a highly efficient, economic and future proof solution which can be used to address all existing and future challenges of the Smart Grid.



Smart Grids with BPL technology



## BPL - making the grid truly smart

Broadband Powerline Communications (BPL) technology uses the power grid itself to transmit data. BPL provides the optimal communications technology solution for utilities to overcome the challenges of the Smart Grid.

With this technology, tried and tested standards from the world of telecommunications such as Internet protocol can now be transferred to the world of energy supply. BPL effectively closes the gaps between the utilities' central IT systems and existing and new devices and applications within the Smart Grid.

Our BPL has been successfully implemented in Smart Grid projects covering over 300,000 households in

Europe and the Middle East and has also won several prestigious awards and technology prizes.

In addition to Smart Metering and Smart Grid applications, the modular concept behind our systems allows for the creation of a number of other solutions, ranging from OEM solutions to in-home gateways for the connection of Smart Home applications. Our modules can be combined to develop individual solutions which are tailored to meet our customers' or partners' specific needs.

### OEM Solution



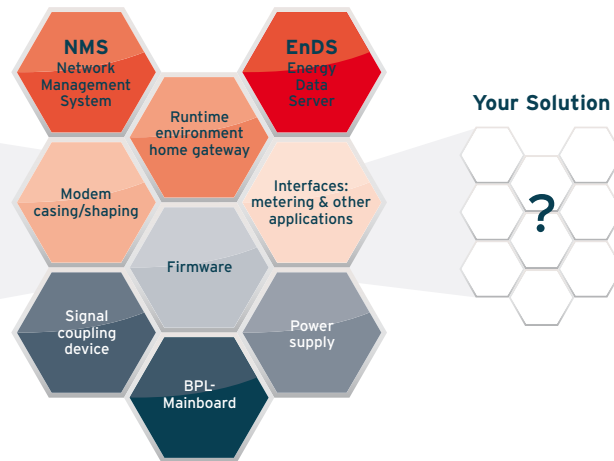
### Medium Voltage Solution



### Metering Solution



## BPL System Modules



### BPL - the optimal solution for broadband data transmission for Smart Grids:

- Using BPL, utilities can build and operate real-time communications platforms which are independent of third-parties
- Connection of central IT systems and applications in the distribution networks can be achieved efficiently
- The modularised concept enables the creation of multiple customer specific solutions and facilitates easy integration of upstream and downstream systems
- Broadband data transmission enables the parallel transfer of data from numerous applications
- Real-time data transfer, use of worldwide standard IP and open interfaces enable security and scalability in the future
- Data protection and security are guaranteed thanks to Internet protocol and the use of existing telecommunications standards
- The unique meshed network structure secures availability and flexibility of the system
- BPL adapts automatically to the different switching and operating conditions of the grid, without influencing its operation



## Experience - guaranteeing a secure future

Power Plus Communications has made many significant advancements in the development of Broadband Powerline Communications technology (BPL) for Smart Grids and has successfully established the largest BPL network worldwide to date. Over the past 10 years, we have led the development of BPL technology and today we have an outstanding array of BPL experience and competence at our disposal. This is reflected in our extensive portfolio of Smart Metering and Smart Grid projects, carried out in close partnership with some of the most renowned utilities.

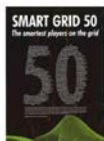
Today, our BPL systems can be found in operation in Smart Grids throughout Europe and the Middle East. At PPC, we are convinced that the best solutions are developed together with customers and partners. For this reason, we work in close collaboration with our clients to further develop and optimise our technology. This enables us to guarantee a customer-driven, future proof solution. At PPC, we use recognised standards and promote their use worldwide.

PPC is a mid-sized company located in Mannheim, Germany. This region of Germany is famous for its long standing tradition in innovation and is home to some of the world leaders in the automotive, software and energy industries. This thirst for innovation lives on in PPC. As technology leaders, our BPL technology was selected for both the German Smart Grids beacon project ,E-Energy' as well as the British Low Carbon Network Fund. In 2010 we were named as one of the top ten most innovative German companies by the German Chamber of Commerce as well as winning several other prestigious awards.



Managing Directors Eugen Mayer (l) & Ingo Schönberg (r)

Since November 2008, PPC has had the backing of Climate Change Capital Private Equity, one of the major Clean-Tech investment funds. We are also in a good position to attract a number of local and international companies as technology and sales partners. Together with our customers, this forms a highly supportive network. Our central location offers a direct connection to many European cities and our close proximity to Frankfurt airport provides easy access to the rest of the world meaning our customers and partners are only a stones throw away.



Technology endorsement through prestigious awards and prizes

## Innovation - providing continued growth

As a medium-sized company with flat hierarchies, we are able to react to challenges with the required flexibility, allowing us to respond quickly to our clients needs, thus significantly reducing development times. Cross-departmental teams with open lines of communication create a creative and innovative atmosphere, with every employee at PPC able to play an influential role on the company's success.

Experts from the fields of IT, communications technology and the energy sector make up a strong team, with each PPC team member sharing the same qualities: dedication, enthusiasm and the desire to always be one step ahead.

We stand for continuity, innovation and growth.

In addition to a well established client base, constant acquisition of new customers, markets, partners and employees makes for an exciting and vibrant working environment.

The very foundation of our success lies in a combination of experienced specialists and the drive and enthusiasm



*Continuity, innovation & growth*



*Open lines of communication encourage creativity and innovation*

of a young and dynamic team. This is coupled with the on-going ability to attract more Smart Grids experts as well as innovative people looking for an exciting career change.

Thanks to our continual growth, the number of staff at PPC has more than doubled in the last two years alone. At the same time, a large number of our team has been with the company for over ten years. This is true to say for the Managing Directors Ingo Schönberg and Eugen Mayer, who have been with the company since its foundation. As owners of the company, both the management and employees have a tight personal bond with PPC.

Today our team profits from an accumulated 200 years of experience of working in the field of data transmission over the power grid and it is this combined sum that has led to our success. We realise that solutions to the upcoming Smart Grid challenges are only achievable with the right people. This is why we believe that our team is our strongest asset: we live technology!

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