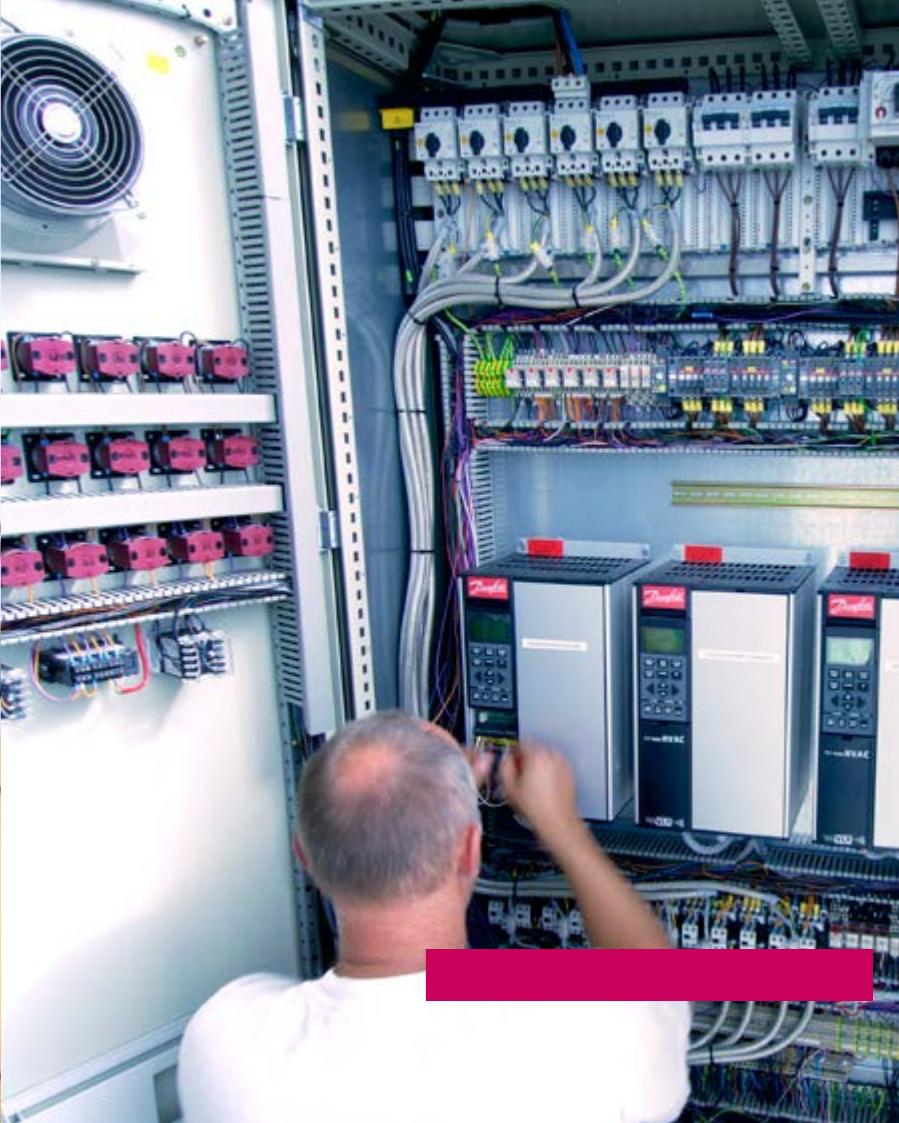




NL Agency
Ministry of Economic Affairs

Who is who guide

Players in the Dutch smart-grid sector



Who is who?

70 projects



The energy landscape is changing. We are increasingly using sustainable sources of energy. In addition, the generation of energy is increasingly decentralised. In the mean time, the energy consumption and especially the consumption of electricity continue to increase worldwide. Smart energy networks are needed in order to balance supply and demand in a reliable and affordable manner, even in these changing circumstances: smart grids.

POWERFUL BOOST FROM THE DUTCH GOVERNMENT

The development of smart energy networks in the Netherlands is in full swing. The Dutch government is accelerating the collaboration concerning smart grids with its Intelligent Grids Innovation Programme (Innovatieprogramma Intelligent Netten). In order to provide a powerful boost to large-scale application, this programme is supporting pilot projects in residential districts, city centres, office parks, industrial estates, and agricultural areas. There, front-runners are experimenting in realistic circumstances.

DIVERS PRODUCTS AND SERVICES

Dutch companies now offer diverse innovative products and services with respect to smart grids. For instance, new business models, back-office systems, and smart energy meters. These companies include engineers, IT and energy companies, grid operators, and consultancy firms. They are start-ups as well as established companies operating worldwide. They develop the building blocks of a smart energy supply, actively involving the end-users on a large scale.

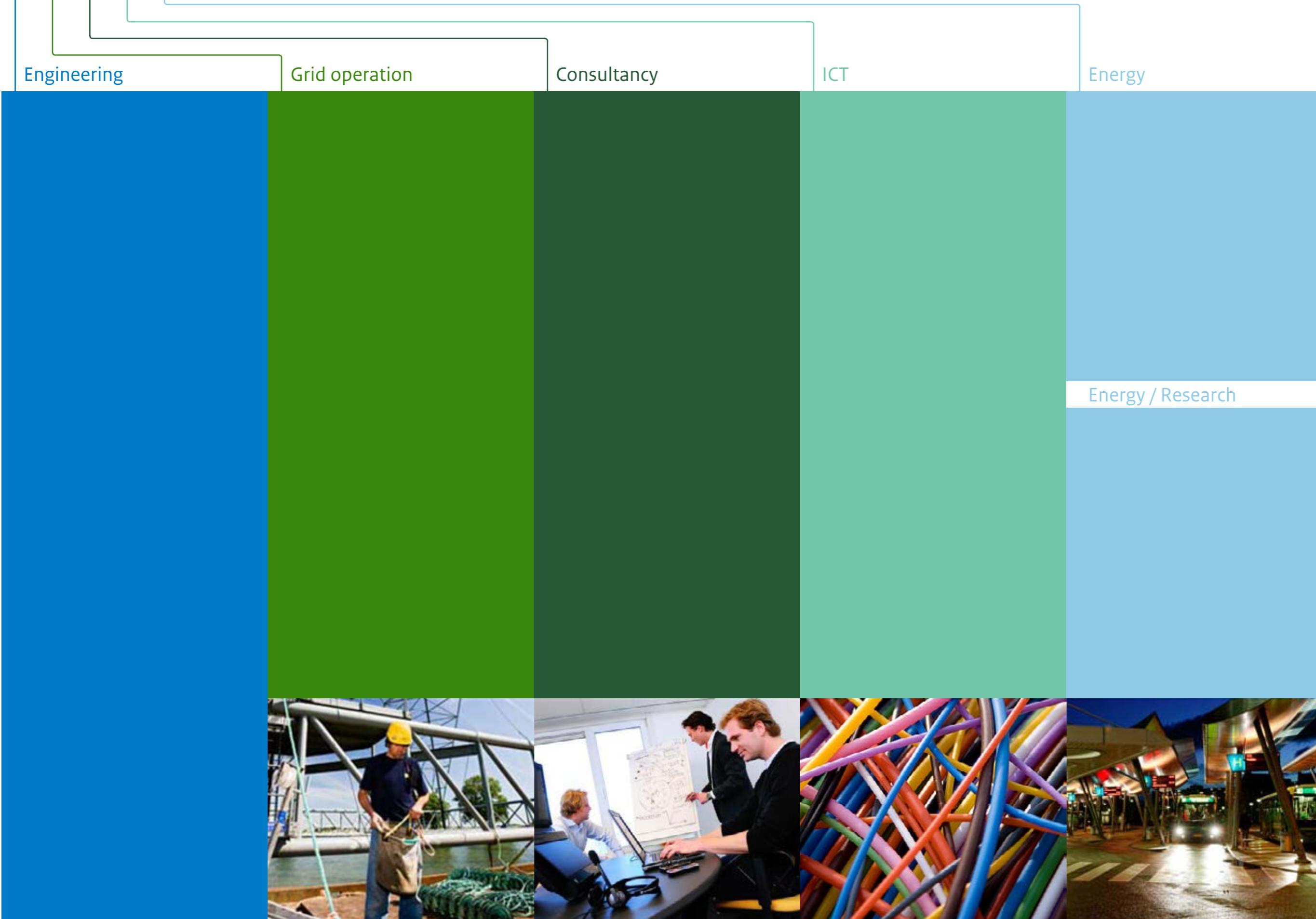
WHO'S WHO IN THE SMART GRID SECTOR?

This list of who's who helps you to navigate through the Dutch smart-grid sector. It shows the important players. It lists the contact information for each company, as well as which products and services they provide with respect to smart grids. The companies are classified according to their expertise:

- Smart-grid technology engineering
- Grid operation
- Consultancy related to smart grids
- IT solutions concerning smart grids

To give an insight in the world of Smart Grids, Agentschap NL created a short [animation movie](#). Take a look, get inspired and share it with your network.

Smart grid sector players, classified according expertise



ABB

COMPANY

ABB Group is a leader in power and automation technologies that enable utility and industry customers to improve performance while lowering environmental impact. The European leader in deploying and managing nationwide electric vehicle charging networks, ABB Electric Vehicle Charging Infrastructure (EVCI) has the world's largest web-connected installed base of DC fast charging stations and is best known for the uptime and reliability demonstrated by its charging solutions and for the companies long-standing leadership and 'commitment to excellence' within the EV charging industry www.abb/evcharging.com.

The ABB Group of companies operates in around 100 countries and employs about 145,000 people.

PRODUCTS

ABB's EVCI product group offers a diverse portfolio of charging solutions to meet the needs of all EV drivers and business models and includes a number of EV charging stations and network management tools. Every ABB charger comes complete with a package of connectivity-based services, including remote maintenance and diagnostics as well as interfaces to service providers to enable subscriber management applications, all protected via the highest data

Address Delftweg 65
Zip code 2289 BA
Town/city Rijswijk, the Netherlands
Website www.abb.com

Contact Daan Nap
Telephone +31 (0) 70 30 76 228
E-mail daan.nap@nl.abb.com



security standard (ISO 27001). This combination enables charge station operators and infrastructure providers to easily and efficiently manage a commercial business with functions such as billing, support and charge station authorization.

NETWORKS

ABB EVCI is the industry leader in installing and deploying nationwide EV charging infrastructure. To date, the product group has supported the creation of nationwide networks in Estonia, Belgium and Denmark. Active in the U.S. and Asia as well, ABB EVCI works closely with OEMs, EV charging infrastructure providers, utilities, and local governments and municipalities to support the mass adoption of electric vehicles.

Address Postbus 1042
Zip code 1300 BA
Town/city Almere, The Netherlands
Website www.alfen.com

Contact Marco Roeleveld
Telephone +31 (0) 36 54 93 415
E-mail m.roeleveld@alfen.com

Alfen BV

COMPANY

For 75 years, ALFEN has been a trusted and recognized developer, manufacturer and supplier of high, middle and low voltage grid equipment in the Netherlands. The company is an international and innovative powerhouse as a turnkey supplier of substations including transformers, middle voltage (MV) systems and MV switchgears. ALFEN is also active in design, production, installation, monitoring and maintenance activities.

Transformer substations have been ALFEN's specialty for a long time for individual deliveries as well as integration within complete projects. Apart from the products, the professional project organisation enables ALFEN to provide customised solutions for a wide variety of situations. Thanks to the long-time experience with middle voltage systems, ALFEN is able to act as a solution-focussed knowledge centre when it comes to electrical networks for finding the best and most efficient solution for customers.

PRODUCTS

ALFEN's product portfolio can be divided into five categories: transformer substations, projects, special products, service and substation automation. The company is highly active in the field of smart grids with products, services, and innovations that contribute to ALFEN's goal to



optimise the medium voltage grid and work towards durable solutions.

Under the brand name of ICU, ALFEN started developing and manufacturing charging stations in 2008. Since then the company has developed a complete range of charging solutions for public and private locations. ICU has become one of the most important international producers of charging stations with more than 1,500 charging locations throughout Europe.

NETWORKS

ALFEN is a well-known player within the Dutch energy and infrastructure market and is one of the initiators of foundation Dutch Power. ALFEN also participates in various projects with regards to Smart Grids and other solutions for the electrical grid.

PROJECTS

- Sustainable off Grid Power Station for Rural Applications (SOPRA)
- Smart Storage Unit
- Remote Fault Passage Indicators

Alliander NV

COMPANY

Alliander is a grid company that transports electricity and gas. The company manages 40% of the Dutch regional grids and is responsible for the construction, maintenance, and updating of these electricity and gas grids. Alliander supports the deregulated energy market and encourages economic and social growth in the regions in which the company is active. All of Alliander's shares are owned by provinces and municipalities.

Alliander prepares the grids for new forms of energy generation, such as solar panels and wind turbines. Alliander is also devising solutions for charging electric vehicles. Sustainable energy should be affordable and reliable. Therefore, Alliander is developing high-quality technological innovations, which provide customers with better insight in their energy consumption. Alliander attaches great value to knowledge and research in the field of innovation and seeks to cooperate with other parties in order to achieve the best results.

PRODUCTS

As a grid company, Alliander has decennia of experience in construction, maintenance, and operation of energy grids. The company fulfilled a pioneering role in the development of smart meters. At the moment, Alliander is implementing a broad programme for the digitalisation of existing grids.

Address Postbus 50
Zip code 6920 AB
Town/city Arnhem, the Netherlands
Website www.alliander.nl

Contact Martijn Bongaerts
Telephone +31(0)6 27 02 45 13
E-mail martijn.bongaerts@alliander.com



NETWORKS

- Active in Netbeheer Nederland (such as chair of Smart Grids project group):
www.netbeheernederland.nl
- Co-founder of e-Decentraal foundation:
www.e-decentraal.com
- Participant in Smart Energy Collective:
www.smartenergycollective.com
- Global Intelligent Utility Network Coalition:
www.ibm.com/smarterplanet/us/en/smart_grid/ideas/

PROJECTS

- Realisation of micro-grid (autonomous district) in Zutphen;
www.alliander.com/nl/alliander/projecten/smartgrid.htm
www.microgrids.eu
- SASensor technology development;
www.locamation.nl/solutions
- Smart Power City Apeldoorn (district with 170μ CHPs, equipped with a smart transformer house);
www.agentschapnl.nl/content/factsheet-smart-power-city-apeldoorn-spca-en-intelligent-distributiestation-intds

Address Westerstraat 50
Zip code 3016 DJ
Town/city Rotterdam, the Netherlands
Website www.almende.com

Almende BV

COMPANY

Almende is a SME (B.V.) for R&D, formed in 2000 and a part of the Almende group. The company is focusing on implementing principles of self-organisation by means of IT solutions. Its core business is performing subsidised application-oriented R&D activities and contract research in the field of self-organisation. With the results of its research, spin-offs are formed that market the acquired knowledge anchored in prototypes and thereby realise innovative products and services. Spin-offs formed in the past revolve around improving human communication (ASK Community Systems B.V.), context awareness (Sense Observation Systems B.V.), logistics (Deal Services B.V.), and swarm robotics (Distributed Organisms B.V.).

PRODUCTS

Almende's primary product is knowledge. Knowledge of self-organisation, agent technology, artificial intelligence, and distributed network solutions. Almende applies this knowledge in contract research, also in the fields of energy efficiency and smart grid solutions. In addition, Almende develops open-source agent technology (CHAP, Common Hybrid Agent Platform, <http://chap.almende.com>), which proves itself in the concrete software products of the spin-offs (subsidiaries).



NETWORKS

- R&D contacts with all Dutch universities
- Participant in the DevLab technology cooperation (Eindhoven)
- Participant in three large European grant projects in the field of energy
- Previous activities in the context of smart grids, undertaken together with Betronic, Essent, and Energieonderzoek Centrum Nederland (ECN)

PROJECTS

Almende has established a track record in the sphere of European projects concerning energy efficiency, in which knowledge of direct relevance to the development of smart grids is being acquired. Almende is participating in the Fit4Green FP7 projects (energy-aware data centres), All4Green (energy-aware networks of data centres), Seam4Us (energy-aware public buildings), en Adapt4EE (energy-aware architectural processes).

Atos

COMPANY

Atos is an international IT-service provider with an annual turnover of 8.7 billion euros and 74,000 staff across 42 countries. Worldwide Atos provides high-tech transaction services, advice and technology, system integration, and management services. Atos offers business technology which helps clients, and enables them to create their enterprise of the future. Atos is the global IT partner for the Olympic Games, and is quoted on the Paris Eurolist Market. Atos operates under the names of Atos, Atos Consulting and Technology Services, Atos Worldline, and Atos Worldgrid.

PRODUCTS

Energy suppliers are seeing an unprecedented, permanent change in their dealings with clients with direct effect on production, transport, storage, and delivery of energy or water. Atos Worldgrid provides turnkey solutions to optimise a company's critical processes. These support management on the demand side, optimise transport and distribution networks (with a reduction in costs as a result), and provide real-time control of assets. All software, hardware, network and communication elements are brought together for maximum optimisation within the entire value chain in electricity, gas, oil, as well as water. For the optimisation of processes and achievements Atos Worldgrid realises the (international) integration of individual systems,

Address Papendorpseweg 93
Zip code 3528 BJ
Town/city Utrecht
Website nl.atos.net/utilities
nl.atos.net/worldgrid
Scenarioplanning Netwerkbedrijven 2020
Contact Willem Vlasblom / Frank Hop
Telephone +31(0)88 265 88 88
E-mail willem.vlasblom@atos.net
frank.hop@atos.net

such as smart meter management, invoicing, communication, maintenance, geolocation, and CRM. At Atos, more than a thousand Utilities consultants provide clients with state-of-the-art business and IT solutions. Many of them are expert in their profession and regularly publish vision statements, white papers, and articles.

NETWORKS

- Green IT Amsterdam: www.greenitamsterdam.nl
- ICT Road Map: <http://www.ictoffice.nl/?id=11219&src=RSS>
- ACQUEAU: www.acqueau.eu

PROJECTS

- Smart Meters-roll-out for ErDF
- BigData for Energy
- Utility Grid.

Address Ter Gouwstraat 3
Zip code 1093 JX
Town/city Amsterdam, The Netherlands
Website www.ihome.eu

Contact Bert Huiberts
Telephone +31 (0) 20 46 50 105
E-mail bert@benext.eu

BeNext

COMPANY

BeNext is an independent innovation organization which is specialized in intelligent homes. All disciplines are combined into one system, the house will become a true intelligent home. BeNext is SUCCESS: a Service Union for Climate, Control, Energy, Safety and Security. The company develops, produces and offers a variety of products and services (several websites in the Cloud and Apps).

- Climate Services

The Climate Services control the climate in a home. By using BeNext's Climate Products (like radiator controller and boiler controller) customers are able to set the ideal temperature for each room.

- Control Services

With the Control Services customers regulate their control devices automatically, like closing the curtains at sunset or turning on the lights on and off.

- Energy Services

The Energy Services give a full overview of energy usage(s). iHome saves data to provide historical information and to save energy. The service also gives advice based on personal situations.

- Safety Services

The Safety Services provide help whenever needed. For instance, iHome and the Panic Watch warn neighbors or relatives.



- Security Services

With the Security Products customers have a complete security system. With the Tag and the Tag Reader, arming and disarming the alarm system is very easy. No need to remember security codes.

NETWORKS

- Involved in FP7 projects
- P1 (DSMR) working group for Netbeheer Nederland
- Active member of the Z-Wave Alliance
- Member of Smart Homes

PROJECTS

- Green Village at TNO

Betronic

COMPANY

Betronic Solutions is part of TETRA-E Solutions and is one of the cleantech companies in Amsterdam. Betronic Solutions designs and manufactures complete electronic-based products. Most of these products are part of solutions for challenges formulated by Urban Mobility & Smart Cities and involve energy, mobility and connectivity. These three elements become more and more inter-related: 'The ever connected last mile transport powered by sustainable energy'.

For every business (B2B2C) that looks for smart, application-oriented electronics, Betronic takes care of the complete process from concept to production. From integrated product development and engineering throughout the implementation of the Supply Chain Management (SCM) worldwide. Betronic's objective is to develop products that are economical and efficient and to find a good balance between functionality and product price for their partners.

PRODUCTS

The customers of Betronic are active in cleantech, energy, mobility and industrial businesses. Betronic designs and produces Battery Management Systems for high power batteries (10kW), 2.4kW wind and PV grid-connected inverters, PFC systems, E-charging point support systems, motor control BLDC and PMAC up to 5kW. Additionally, Betronic provides energy monitoring services that can be fully customized.

Address Pedro de Medinaan 11
Zip code 1086 KX
Town/City Amsterdam, The Netherlands
Website www.betronic.nl

Contact Johan Vonk
Telephone +31 (0) 20 59 22 300
E-mail johanvonk@betronic.nl



- DC/DC converters AC/DC/AC inverters for sustainable energy sources
- Energy storage systems, charge point management for smart grid
- Full customizable (energy) monitoring services portal and back office
- Light Electric Vehicles: E-bikes, E-Scooter, E-step

NETWORKS

- CleanTech; research program of Amsterdam University of Applied Sciences
- International cooperation (IPC, FP7)
- Domotica platform The Netherlands
- Green Campus Delft
- NEC5701

PROJECTS

- MSR locator
- E-mobility projects
- Electric foldable scooter for Leev
- Esteem
- Femtogrid Solar System
- Battery Management Systems
- Ecothermo
- Shenzi, office buildings; tomorrow's 'gas stations'
- PV-Monitoring for schools, Province of North Holland

Address Postbus 2575
Zip code 3500 CN
Town/city Utrecht, the Netherlands
Website www.nl.capgemini.com

Contact Yvonne Brzesowsky-Ruys
Telephone +31 (0) 30 68 96 725
E-mail yvonne.brzesowsky.ruys@capgemini.com

Capgemini

COMPANY

With more than 120,000 people in 40 countries, Capgemini is one of the world's foremost providers of consulting, technology and outsourcing services. The Group reported 2011 global revenues of EUR 9.7 billion. Together with its clients, Capgemini creates and delivers business and technology solutions that fit their needs and drive the results they want. A deeply multicultural organization, Capgemini has developed its own way of working, the Collaborative Business ExperienceTM, and draws on Rightshore ®, its worldwide delivery model.



PROJECTS

More on industry specific solutions is available at www.capgemini.com/utilities.

Capgemini's Global Utilities Sector serves the top Utilities worldwide and draws on a network of more than 8,400 dedicated sector consultants. As a leader in smart grid and advanced metering infrastructure solutions, Capgemini's Smart Energy Services is helping Utility customers throughout the world. Our integrated Digital Utilities Transformation framework empowers utilities to drastically improve their customer experience, operating and business models through disruptive technologies.

CE Delft BV

COMPANY

CE Delft has been in existence since 1978. The company is a not-for-profit organisation. All shares are held by a foundation with the same name. CE Delft is primarily involved in government policy (domestic and international) to realise sustainable energy options and it performs sustainability analyses of products throughout the entire chain. CE Delft's expertise resides in knowledge of policy, technology, economy, the behaviour of energy users, and chain analyses in the sphere of energy supply, transport, and raw materials. As an independent party, CE Delft not only performs projects for authorities, but also for energy companies and civil-society organisations.

SERVICES

- Policy analyses of regulation relevant for encouragement or removing obstacles for smart grids
- Social cost-benefit analyses
- (Technical) analysis of the interaction between local production and consumption (electricity, gas, heat)
- (Technical) analysis of industrial energy users
- Energy analyses of SMEs
- Advices for incentives for energy users (consumers, SMEs) to change their behaviour



PROJECTS

- Social cost-benefit analysis of smart grids - Ministry of Economic Affairs (2012)
- Grid for the Future - vision written for grid operators in the Netherlands (2010)
- Energy-saving behaviour - Algemene Energie Raad (AER) (2006)
- Behavioural climate change mitigation options – DG Clima (2011/12)

Address Oude Delft 180
Zip code 2611 HH
Town/city Delft, the Netherlands
Website www.ce.nl

Contact Frans Rooijers
Telephone +31(0)15 215 01 50
E-mail rooijers@ce.nl

Address Postbus 3196
Zip code 4800 DD
Town/city Breda, the Netherlands
Website www.cimpro.com

Contact Marcel Laes
Telephone +31 (0) 76 53 17 788 / +31 (0) 65 32 35 770
E-mail mlaes@cimpro.com

CimPro

COMPANY

With its products and services, CimPro wants to contribute to a more sustainable society. By using the newest technologies in the fields of telemetry, remote control and smart software, the company contributes to a more efficient use of energy. In this manner, reductions in energy consumption and CO₂ emissions and cost savings go hand in hand.



CimPro exclusively provides state-of-the-art technologies, manufactured by world-wide companies. With respect to smart grids, CimPro has two markets: network providers and industries. For the network providers CimPro supplies hardware and software for the automation of distribution cabinets. These are the substations in the districts where MS changes to LS. CimPro supplies high-consumption meters up to 5,000 A for measuring electric power, short-circuit indicators, actuators for remote-controlling switches, and comprehensive control and data communication to management systems (IEC 104 standards). For the industrial market CimPro supplies energy management systems, which provides detailed information about the energy consumption of several production lines. The management system provides benchmarks and clear reports.

- Short-circuit indicators
- Local control and data storage
- Alert systems
- Data communication based on IP technology
- Energy management software

CimPro supplies only open systems, which can be further maintained by the final client as well as the integrator. This concerns systems assembled from standard products based on international standards that can easily be integrated. An increasing number of suppliers of industrial control systems are conforming to these standards. As a result, more and more products of different manufacturers are interchangeable.

PRODUCTS

Products related to smart grids:

- High-consumption energy meters up to 5,000 A
- Quality meters

NETWORKS

CimPro is a member of DutchPower, the network organization of the Dutch energy transport companies: www.dutchpower.net.

Cisco Systems Nederland



COMPANY

Cisco (NASDAQ: CSCO) is the worldwide leader in networking technology that transforms how people connect, communicate and collaborate. Cisco was founded in 1986 and has just celebrated its 25-year anniversary.

Cisco is delivering an end-to-end smart grid architecture that provides utilities with highly reliable and secure communications networks based on IP standards. Cisco's architecture provides a roadmap from legacy purpose-built operational networks and provides a framework for interoperable expert applications from an ecosystem of partners. Cisco has a portfolio of and roadmap for secure, reliable, and resilient networking products designed specifically for application in utility substations, distribution automation, automated metering infrastructure and business energy management.

Address Haarlerbergweg 13-19
Zip code 1101 CH
Town/city Amsterdam, the Netherlands
Website www.cisco.com

Contact Eduard van Mierlo
Telephone +31(0)20 357 19 83
E-mail evanmier@cisco.com

PRODUCTS

- Primary and Transmission Substation Automation
- Cisco solutions include ruggedized routers and switches to handle the most demanding substation environments. Examples:
 - Cisco 2520 connected grid switch and Cisco 2010 connected grid router.
 - Grid Security: Cisco solutions include physical and cyber security technology and services to address regulatory compliance and threat mitigation.
 - Data centre and control centre: Cisco solutions provide highly secure, scalable data management and storage options for grid operations.
 - Customer premise: Cisco solutions and services help businesses reduce their costs and carbon footprint.

NETWORKS

Cisco is participating and a driving force in a number of industry initiatives as well as standard bodies relevant for the utility industry. Those industry bodies include:

- Standard bodies: IEC TC57, IEEE, IETF, ZigBee etc.
- Industry Associations : IPSO alliance, Esmig, HomePlug, G3-PLC Alliance, Homeplug, Gridwise etc.

PROJECTS

Among others: First Wind, Duke in US and Egorlyskaya in Russia

Address Postbus 67
Zip code 1520 AB
Town/city Wormerveer, the Netherlands
Website www.cofely-gdfsuez.nl

Contact Leon Straathof / Wouter Persoon
Telephone +31(0)6 51 08 28 16 / +31(0)75 646 74 00
E-mail leon.straathof@cofely-gdfsuez.nl
wouter.persoon@cofely-gdfsuez.nl

Cofely Smart Grid Solutions

COMPANY

Cofely is an extension of GTI, a company that had been active in the Netherlands for decennia until 2009. Cofely is the European market leader in the field of sustainable technological solutions for energy and the environment. The company designs and implements solutions with which companies and public-sector organisations can optimise systems performance and energy consumption in operating processes, and minimise the environmental impact. Cofely offers a unique combination of expertise in various domains. These range from design, installation, and management of local and renewable energy solutions to the delivery of integrated facilities and services. Cofely is the most important brand of GDF SUEZ Energy Services, one of the six business units of GDF SUEZ, which has 76,000 employees in total and achieved a

turnover of € 13.5 billion in 2010. In that same year, Cofely in the Netherlands employed approximately 7,000 people and achieved a turnover of more than € 1 billion.

With the formation of Cofely Smart Grid Solutions, Cofely is anticipating new trends in the energy market. Its most important ambition is to create a more efficient, more environment friendly, and less expensive energy grid. Cofely has all expertise required for the design, construction, maintenance, and management of smart grids. We have experts

for each phase of the process: from advice and design to realisation and multiyear maintenance. Cofely's added value consists of practical knowledge about energy flows at the clients ('behind the connection') and the flexibility that can be found therein.

PRODUCTS

- Practical advice
- Project management, engineering, execution, start up, and maintenance
- System integration
- Insight in decentralised generation and consumption profiles
- Automation solutions for energy management and load control
- Strategic asset management

NETWORKS

- Dutch Power
- e-Decentraal
- NWEA
- Large-company network (Grote Bedrijven Netwerk, GBN) of MVO Nederland

PROJECTS

- Ecofactorij Apeldoorn
- Windnet Oost-Flevoland
- Windnet Tholen
- Mahler IV Amsterdam
- A1 Deventer industrial park (IPIN pilot)

Datawatt

(also Engineering)

Address Woldmeentherand 5
P.O. Box 119
Zip code 8330 AC
Town/city Steenwijk, The Netherlands
Website www.datawatt.com

Contact Johan van der Veen
Telephone +31 (0) 88 0032900
E-mail marketing@datawatt.nl



COMPANY

Remote control, monitoring, supervision and automation are invaluable for processes to make sure the right information is available at the right place at the right time. Datawatt delivers technically advanced and innovative solutions for distribution infrastructures in the water, energy, oil and gas markets.

The reputation of Datawatt in the area of monitoring and remote control of geographically widespread processes is undisputed. Technically advanced and innovative solutions are applied in various smart grid networks. Datawatt develops RTU solutions (hardware), smart grid solutions (software), and uses this technology in turnkey solutions for grid operators.

Since Datawatt was founded in 1977, the company has been known for its reliable, knowledge-based developments and tailor-made or standard solutions for integrated process management. Our systems, expertise and experience are used to implement complex projects up to everyday facilities. Sustainovation, protecting the environment and energy management are an integral part of our solutions.

Datawatt stands for high quality, reliability and a remarkable price quality ratio. At least as important is our compact organization and our

short communication lines, which makes Datawatt an excellent partner when undertaking complex projects. To ensure our high level of service we are ISO9001:2008 and VCA** certified.

NETWORKS

- Dutch Power
- Standardization Commission NEC-IEC TC57 and TC5701
- NL Agency/Ministry of Economic Affairs (MS/LS instrumentation)
- Sensor Universe
- Energy force

PROJECTS

- Stedin; Tender for Remote fault passage indicators for MV network
- Eandis; D26 GPRS RTU's for tender Smart Grids
- Enexis; Distribution automation (DA) project
- Liandon; Supervision gas network project
- Tenergy; Meter reading and monitoring system
- Edmij; Emergency power pool project
- Cogas; Power quality Monitoring project
- Stedin; Local Data Acquisition System (LDAS) for gas stations

Address Postbus 44
Zip code 8000 AA
Town/city Zwolle, the Netherlands
Website www.d-cision.nl

Contact Rudi Hakvoort
Telephone +31(0)88 180 00 81
E-mail r.a.hakvoort@d-cision.nl

D-Cision BV

COMPANY

Consulting firm D-Cision was formed in 2007 and specialises in issues concerning energy supply: gas, electricity, and heat. Thanks to its technical, economic, and legal expertise, D-Cision offers an integrated approach to the development of smart grid projects.

SERVICES

D-Cision provides diverse consulting services to energy companies, grid operators, supervisory bodies, and national and local authorities. It provides technical, economic, and policy advice, such as on the development of a policy or strategy document or decision support in the context of policy or strategy development. In addition, D-Cision provides support for the development and assessment of specific project plans, as far as technical structure, the underlying business case, regulatory embedding, as well as the related risks are concerned. D-Cision has specific knowledge and experience in the area of smart grids and the integration of sustainable energy into the energy system. Terms such as strategy development, investment appraisal, laws and rules/regulations, grid development, asset management, and process support are crucial in the advices.



NETWORKS

D-Cision maintains contacts with various university research groups. Mr. Hakvoort is also a part-time associate professor at the TU Delft, specialising in the interaction between the energy system, market design, and command and control of infrastructures.

PROJECTS

- Support for the Intelligent Grids Taskforce (Taskforce Intelligente Netten) in the preparation of the Vision document on Intelligent Grids commissioned by the Ministry of Economic Affairs (2010).
- Support for Netbeheer Nederland in the preparation of the Roadmap Smart Grids (2010).
- Ministry of Economic Affairs, Agriculture and Innovation: 'Promoting the use of regional and local energy grids' (Sturen op het gebruik van regionale en lokale energienetten) (in collaboration with TNO).

Deerns Consulting Engineers

COMPANY

Deerns is a multi-disciplinary consulting engineering firm founded in 1928 to provide expert design services in the fields of Energy Supply, Sustainability, MEP systems and Master Planning. Deerns is a leading international player with branches in the Netherlands, Germany, Dubai, Spain, France, the United Kingdom, and the United States.

We excel in combining sustainable and innovative concepts with reliable and practical implementation to help our clients build comfortable, safe and sustainable working and living environments. While we serve a wide range of clients realising smaller projects, we are experts in assisting complex organisations in the resolution of complex technical challenges.

SERVICES

Deerns provides services in the conceptual development of smart grids. The development of energy visions for regions and their elaboration constitute activities in the sphere of smart grid development. In addition, Deerns is involved in the development of intelligent building systems and building systems that support the smart-grid system. Deerns designs and supports the realisation and takes care of monitoring.

Address Fleminglaan 10
Zip code 2289 CP
Town/city Rijswijk, the Netherlands
Website www.deerns.nl
www.deerns.com
Contact Ir. A. (Bert) J. Nagtegaal
Telephone +31(0)88 374 00 00
+31(0)6 22 90 44 66
E-mail b.nagtegaal@deerns.nl

PROJECTS

- Philips high-tech Campus energy supply
- Duindorp Scheveningen – Seawater heating smart grid
- New Kabul, Afghanistan, energy-neutral
- Sustainable energy scenario, Groningen, 2005
- Rotterdam Airport
- Intelligent heat network pilot project TU Delft (ongoing)

NETWORKS

- Dutch green building Council
- De Groene Zaak
- Duurzaam gebouwd.nl
- Building Brains

Address Stationspark 28
Zip code 4462 DZ
Town/city Goes, the Netherlands
Website www.dnwb.nl

Contact Arjen Jongepier / Eric Verbrugge
Telephone +31(0)113 74 15 90 / +31(0)6 13 34 64 59
+31(0)113 74 15 64 / +31(0)6 22 97 57 29
E-mail ajongepier@dnwb.nl /
everbrugge@dnwb.nl

Delta Netwerkbedrijf

COMPANY

Delta Netwerkbedrijf (DNWB) is the regional grid operator for electricity and gas in the province of Zeeland. The company stands for safe, reliable, and cost-efficient management of the gas and electricity grids, now and in the future. DNWB is responsible for the construction, maintenance, and development of these grids. It takes care of updating and modifying existing connections and makes available meters, transformers, and gas pressure control stations. DNMB is continuously researching new methods and techniques within this service. This knowledge is also used to enable the transition to sustainable energy solutions.

In addition, it is the task of DNWB to facilitate the deregulated market. For that purpose, the company has created a number of systems and registers, such as for switching, allocation, and customer information. Together with the other grid operators in the Netherlands, DNWB is active in the Netbeheer Nederland trade association and in the NEDU association.

PRODUCTS

DNWB is continuously working on updating the grid in order to apply the latest technologies more effectively and efficiently. Moreover, DNWB is using its knowledge, expertise, and data to support stakeholders and supply-chain partners in attaining their sustainability objectives. In that respect, Smart Grids offer interesting perspectives.

NETWORKS

- Netbeheer Nederland (Grid operators trade association)
- Smart Energy Collective

PROJECTS

- Tholen net optimisation pilot: installing resources on the electricity grid by optimising remote monitoring and control.
- Sustainable Marina of the Future (Duurzame Jachthaven van de Toekomst) / Schouwense-Duiveland energy optimisation: making the energy balance as sustainable as possible by influencing behaviour.
- Goese Schans project development: one of the pilot projects under the SEC banner.

Eaton Electric BV

Address Europalaan 202
Zip code 7559 SC
Town/city Hengelo, The Netherlands
Website www.eaton.eu

Contact Freddie Kuipers
Telephone +31 (0)74 246 4987
E-mail freddiekuipers@eaton.com

Address Postbus 1144
Zip code 1430 BC
Town/city Aalsmeer, the Netherlands
Website www.elspec.nl

Contact Dion Gigengack / Marco van Doorn
Telephone +31(0)297 33 03 00
E-mail dion.gigengack@elspec.nl
marco.vdoorn@elspec.nl

Elspec

COMPANY

Eaton Corporation plc is a diversified power management company providing energy-efficient solutions that help their customers effectively manage electrical, hydraulic and mechanical power. The company is a global leader in electrical products, systems and services for power quality, distribution and control, power transmission, lighting and wiring products, as well as in hydraulics components, systems and services.

Eaton acquired Cooper Industries in 2012. The new company, Eaton Corporation plc, has approximately 100,000 employees and sells products to customers in more than 150 countries.

PRODUCTS

Eaton has products and services available to offer safe, reliable and connectible solutions from Medium Voltage level to socket outlet level in homes. The company will develop its knowledge and experience of the future by participating in real life smart grid projects in at least three European countries. Based on the gained experiences and knowledge Eaton will further develop its products, solutions and services for smart grid applications.

PROJECTS

- Realization of a Fault Free, safe and efficient Intelligent Grid is a key project for the city of Lochem as a driver for sustainability in the Netherlands. It reflects the increasing number of decentralized renewable energy generation in the area; turning the residents into so-called prosumers (producer and consumer). It is one of 12 selected projects of the Innovation Program for Intelligent Networks (IPIN).
- Smart Energy Collective is the largest sector-transcending initiative in Europe for the concrete development of smart grids and services. Eaton is one of 26 partners, which makes the Smart Energy Collective (SEC) - the largest sector-transcending initiative in Europe for the development of smart grids and services.

COMPANY

Elspec, formed in 1967, is a wholly-owned subsidiary of the TKH Group NV. In the world of electrical engineering, things are developing faster than ever. A primary requirement is to anticipate new trends and technologies. Elspec always opts for proven quality, in order to guarantee future-proof investments and reliable process control for the client. Elspec is an expert in the combination of technology that ensures an optimal infrastructure for data communication or energy distribution.

PRODUCTS

Elspec supplies products and solutions of Kries Energietechniek for monitoring voltage (without voltage transformers), failure detection, remote monitoring and control of switchgear in distribution networks.

NETWORKS

- Member of FEDET, DutchPower
- Participant in Smart Grids innovation contract within the TOP sectors of the government



PROJECTS

For a large energy company, Elspec has realized a distribution automation (DA) pilot for six substations, set in a ring structure. Elspec has performed the entire installation of the pilot phase in close collaboration with Kries Energietechnik. The stations are categorised as a strategic and nonstrategic. Parameters such as voltage, current, and phase sequence are sent from the nonstrategic stations to the overlying Scada system, in accordance with the IEC 104 protocol and GPRS. Elspec has also equipped the strategic station with short-circuit and ground failure detection. Moreover, the cable fields of the system have been equipped with spring-charging motors, enabling remote switching of the cable fields. By working with a low-maintenance capacitive energy buffer, the motors of the cable fields can switch six times in the absence of station voltage.

Eneco

COMPANY

Eneco is an integrated energy company which specialises in the production, trading, transmission, and supply of gas, electricity, and heat, and related energy services. With about 7,000 employees, the company serves two million business and domestic clients. That makes Eneco one of the top three energy companies in the Netherlands. Its shares are held by 61 Dutch municipalities. The head office is located in Rotterdam.

PRODUCTS

Eneco wants to be the most future-oriented energy service provider in the North-West European market. Committed, outspoken, and proactive, it works towards a sustainable future with affordable and available clean energy for everybody.

Eneco wants to be an example and a source of inspiration to others by demonstrating that a swift transition from fossil-based to sustainable energy is technically possible and economically viable. Today and tomorrow.

Smart grids, or smart energy systems, are a crucial part of Eneco's strategy towards a fully sustainable energy supply. Smart energy systems are helping to integrate renewable electricity generation by

Address Marten Meesweg 5
Zip code 3068 AV
Town/city Rotterdam
Website www.eneco.nl

Contact Monique Blokpoel
Telephone +31(0) 88 8960013
E-mail monique.blokpoel@eneco.com



more actively incorporating the demand side, distributed generation, and energy storage into the power system operation. Eneco wants to acquire a leading role in the development of smart energy systems and related services.

PROJECTS

- Toon®: the smart thermostat with real time insight in energy consumption
- Smart Grid Couperus: pilot with demand steering
- Smart Grid Heijplaat
- Smart Energy Collective, with leading role in the 'Smart Offices' pilot
- Intraday Power: a service for the dispatch of distributed generation
- Haaglanden Experiments: pilot with Electric Vehicle charging

Address Postbus 856
Zip code 5201 AW
Town/city 's-Hertogenbosch, the Netherlands
Website www.enexis.nl

Contact Joris Knigge / Han Slootweg
Telephone +31(0)6 11 91 20 61 / +31(0)6 52 37 69 25
E-mail Joris.Knigge@enexis.nl
Han.Slootweg@enexis.nl

Enexis BV

COMPANY

Enexis manages energy grids in seven provinces in the north, east, and south of the Netherlands. The company is responsible for safe gas and electricity connections for approximately 2.6 million households, businesses, and authorities. Enexis is continuously working on a better, smarter, and more efficient grid that is ready for the future. Consequently, the Enexis energy grid is also one of the best in the Netherlands. Enexis is anticipating large-scale investments in the future, when the energy transition will be facilitated regularly and traditionally. In order to be ready for that future, Enexis is investing in acquiring knowledge and practical experience. For that purpose, Enexis is initiating large-scale demonstration projects focused on the interaction with the user of the grid.



NETWORKS

- Netbeheer Nederland
- Sustainability and Innovation Taskforce, Smart Grids project group (Taakgroep Duurzaamheid en Innovatie, projectgroep Smart Grids)
- Intelligent Grids Taskforce (Intelligente Netten)

PROJECTS

- Smart grid with the consumer in Breda: www.jouwenergiemoment.nl/Breda
- Smart grid with the consumer in Zwolle: www.jouwenergiemoment.nl/Zwolle
- PowerMatching City II Hoogkerk: www.powermatchingcity.nl

Energiemanager Online

Address P.O. Box 132
Zip code 8440 AC
Town/city Heerenveen, The Netherlands
Website www.energiemanageronline.nl

Contact Alexis Fischer
Telephone +31 (0) 6 295 66 448
E-mail alexis@energiemanageronline.nl



COMPANY

Energiemanager Online (EMO) translates data flows from smart meters into useful feedback on energy consumption at home and at work. EMO develops web-based software for this. Moreover, the company ensures - as independent provider - that smart meters automatically retrieve the data. As a result of more complex energy situations in houses (e.g. PV systems, heat pumps, high efficiency boilers), EMO extends its software with modules. A web-based tool is available for almost every situation. This way, users are provided with insight into their overall energy management.

PRODUCTS

Consumers use a free basic version. Optional features include a link with the smart meter. This basic version can be extended with a PV module (for the use of solar panels), a heat pump module and a cost module. EMO also builds this tool as private label for, among others, energy companies, PV panel suppliers and facilities service providers. Finally, EMO has various company solutions for multi-sites, in which smart meters retrieve data and provide feedback in a practical and user-friendly way.

PROJECTS

- Rendo Energyview; <http://www.rendo.nl/energyview/>
- Milieu Centraal; <http://www.milieucentraal.nl>
- Vereniging Eigen Huis; <http://www.eigenhuis.nl>

enerGQ BV

COMPANY

enerGQ develops and markets energy management systems that are used by both large and small consumers of energy from households to multinationals. The self-learning solutions are web-based and suitable for both single and multi-site applications in smart grids. They focus on behavioural change and improvement of equipment settings such as low hanging fruit for energy saving.

PRODUCTS

- i-CARE (Create Awareness. Reducing Energy) This is the Home Energy Management System (HEMS) of enerGQ for small consumers. HEMS reads and analyses the data from the P1 port of the smart meter. It also analyses electricity production from PV systems.
- enerGQ as ODA, reports energy consumption data from the P4 port of the smart meter.
- The enerGQ solutions for large customers are client specifically composed of hardware and software building blocks. Besides energy consumption, the real-time analysis includes many other factors to visualize both savings and excessive consumption.
- enerGQ's hardware is globally used in smart grids projects and is also sold independent of its software.

NETWORKS

- Energy Valley
- Energiebesparing Noord-Nederland
- Slim wonen met energie
- I-Balance / Hooghalen Duurzaam

PROJECTS

- weCARE
- Energy Challenges
- 1000 slimme huishoudens Groningen
- Slim en Snel

Essent

COMPANY

Essent is the largest producer of (renewable) energy in The Netherlands. The company delivers electricity, gas and heat to private and business customers. The Netherlands and Belgium are regarded as the home market. Essent is accounted for a fourth of all sustainably produced electricity in the Netherlands and employs 3,800 people (FTE). The coordination between all the sources and users of energy becomes increasingly important in the transition towards a sustainable, affordable and reliable energy supply. Therefore, Essent strives to be among the frontrunners in the development of smart energy systems and related services. With this, Essent supports energy users in their need to organize their energy use and production very simple and in the most optimal way according to their wishes.

PRODUCTS

Essent is working on the energy of tomorrow. This future will consist of large wind parks at sea, efficient power plants converting biomass into power and heat that is supplied to customers in the vicinity. Small local energy systems like solar panels, heat pumps and micro co-generation will provide energy to residential areas and individual houses. Plug in hybrid and full electric vehicles will be connected to the power grid to charge their batteries with clean electricity at times it is most convenient.

Address Willemsplein 4
Zip code 5211 AK
Town/city Den Bosch, The Netherlands
Website www.essent.nl

Contact Colin Willems
Telephone +31 (0) 20 59 22 300
E-mail colin.willems@essent.nl

PROJECTS

- PowerMatching City, with a leading role in propositions, customer research and electric vehicles.
- Smart Energy Collective: development of customer-oriented services.
- Demand Response in Industrial Processes.
- Green Deal Electric Transport: smart charging with solar energy.
- E-inzicht: the smart energy service for more insight into energy consumption of home appliance.
- E-thermostaat: the smart thermostat, which can be turned up or down remotely.

Address Pedro de Medinaan 11
Zip code 1086 XK
Town/city Amsterdam, the Netherlands
Website www.femtogrid.com

Contact Tom Engbers
Telephone +31205672140 / +31621718733
E-mail tomengbers@femtogrid.com

Femtogrid Energy Solutions BV

COMPANY

Femtogrid is a power management technology company and provides solutions for distributed DC systems that improve the performance, reliability and safety of renewable energy installations in the built environment. Femtogrid engineers smart electronics that together with its 400 Vdc parallel system approach generates up to 30 percent more energy harvest per installation. As a result, Femtogrid reduces the payback time of renewable energy installations and decreases the global carbon footprint.

The company's focus is on the market for residential and small commercial rooftop (up to 50 kWp) installations. The Femtogrid Solar System allows system integrators, installers and system owners/end users to benefit from constraint-free roof design, full roof utilization, reduced installation time and total cost of ownership, module-level monitoring, improved safety, theft prevention and more.

NETWORKS

- EMerge Alliance
- TC/NEC 82

PROJECTS

- SolaRoad)
- Smart Chain
- The Green Campus



PRODUCTS

The Femtogrid Solar System is the solution for residential and small commercial rooftops (up to 50 kWp) installations that improves the performance, reliability, safety of PV installations and the applicability of solar panels. The solution maximizes power generation for faster return on investment. The Femtogrid Solar System, is in itself a smart grid. It is a 400 Vdc bus system for solar panels with a parallel system architecture that optimizes every single DC source (the solar panel) individually that is connected to this bus. Smart electronics named 'Power Optimizers' are mounted behind every solar panel to perform Maximum Power Point Tracking for that single solar panel in order to optimize the energy produced by the solar panel. This enables to mix and mingle different DC sources in one system. For example, solar panels of different quality, watt peak power, and type can be used in the same 400 Vdc bus system. But also different renewable energy sources.

Fifthplay

COMPANY

Fifthplay is a major innovator and trendsetter in the field of smart energy. Fifthplay was founded in 2008 under the wings of the Niko Group with a clear mandate to devise and implement innovative solutions in the context of 'the smart building'. In addition to energy management hardware and software Fifthplay developed comprehensive solutions. Examples are remote monitoring of medical parameters of patients and convenience services within communities (smart cities).

NETWORKS

- Smart Grid Flanders
- Linear Smart Grid
- Agoria
- IFMA
- VOKA

PROJECTS

- Linear Smart Grid; <http://www.linear-smartgrid.be/>
- Electrabel Smart Energy Box B2C; <https://www.electrabel.com/nl/particulier/gas-elektriciteit-stroom-leverancier-prijs-energie/smартenergybox>
- Delta Lloyd B2B; http://www.youtube.com/watch?v=Ycj_eGLhUgc

Address Generaal Lemanstraat 47
Zip code 2018 Antwerp
Town/city Antwerp, Belgium
Website www.fifthplay.com

Contact Jasmin Hodzic
Telephone +31 (0) 6 10 99 42 30
E-mail jasmin.hodzic@fifthplay.com

Address Newtonstraat 27
Zip code 1704 SB
Town/city Heerhugowaard
Website www.flexicontrol.nl

Contact René Balvers
Telephone +31(0)72 576 25 50
E-mail rene.balvers@flexicontrol.nl

Flexicontrol

COMPANY

Flexicontrol emanates from an enterprise which since 1985 has applied itself to the development of electronic products for industry in general. Towards the end of the last century it began to focus on electronics being applied in buildings. Since the beginning of this century the company has been doing that under the name of Flexicontrol.

PRODUCTS

Flexicontrol brings to the market a standard range of products for immediate installation. These products are characterised by their integrated approach to the various disciplines within the building. This means that separate systems are no longer necessary for such things as air-conditioning, lighting and access provision, but instead only one system from Flexicontrol is needed with all its additional advantages.

With its many years of experience in the industry, it is only a small step for Flexicontrol to move from this base to smart energy use. Flexicontrol took a first step in 1996 with the development of its Energy Mirror for Ecofys, in partnership with NPK Industrial Design. The next step was the conception of the first integrated energy monitor for residential dwellings in the Netherlands: Marvin. With this monitor, Flexicontrol won the Building Holland Award in 2010. With this energy monitor, the lighting is controlled as well as the



boiler, and the intercom, security camera(s), email, and weather radar are also integrated. In short: Flexicontrol integrates the various functions in dwellings. The objective is: Energy, Comfort and Safety. And our motto is: We make the difference for the resident!

NETWORK

- TEG
- M-net

PROJECTS

- Ecofys Energy Mirror
- Marvin energy monitor
- Flexicontrol building automation
- Wendy Home Gateway
- IPIN-project "Your Energy Moment in Zwolle": <http://www.jouwenergiemoment.nl/muziekwijk-zwolle>

Greenchoice

COMPANY

Greenchoice is a gas and electricity supplier that provides 100 percent green energy for over 315,000 households and organisations. They encourage energy users to generate their own electricity by using the sun, the wind or ambient heat. In addition, Greenchoice offers its customers useful energy saving advice.

Greenchoice's main aim is to accelerate the accessibility and ease with which consumers can generate energy locally. As such, Greenchoice offers organisations and consumers certain administrative services that makes it easier for them to generate their own energy.

PRODUCTS

Greenchoice has been supplying, purchasing and invoicing sustainable energy for the last 10 years. During that time, Greenchoice gained a great deal of experience and insight into the generation of energy at a local level:

1. Greenchoice supplies customers with PV-installations, including financing and returned energy. For example: the ZonVast project, the ZonKoop & ZonLeen.
2. Greenchoice participates in various local generation projects (sun, wind, biomass and the fermentation of biodegradable materials).



3. Greenchoice participates in smart-grid pilots such as Breda Meulenspie, Breda Easy Street, EVANDER & ZeeNet.

NETWORKS

- Transitiearena Smart Grid
- Topsector Energie Innovatietafel Smartgrids

PROJECTS

- Greenchoice: ZonVast, ZonKoop & ZonLeen
- Smart Grid Breda: Meulenspie & Easystreet
- IPIN: Evander & Zeenet

Contact Abdullah Khan
Telephone +31 (0)10 478 23 26
E-mail Abdullah@greenchoice.nl

Address Pieter de Hoochweg 108
Zip code 3024 BH
Town/city Rotterdam
Website www.greenchoice.nl

GEN

COMPANY

Founded in 1997, GEN concentrates its expertise within the energy (utility) market on trade, distribution and supply processes. There is particular focus on energy data management processes (market and business) and energy demand forecasting. With its unique knowledge of the energy industry, GEN translates market processes into optimized business processes. With this knowledge, experience and dedicated software solutions, GEN provides competitive solutions for business changes in the entire energy value chain: gas, heat and electricity alike. The strength is the combination of experienced and motivated professionals, specialist market knowledge and dedicated technology. GEN's expertise covers the following areas: legislation and regulations, supply and demand, trade and business, theory and practice, business and IT.

PRODUCTS

- GEN Consultancy Services: experts on the energy market and in the field of energy data management.
- GEN Implementation Services: connects the consultancy services and the software solutions to optimize operational energy processes.

Address Ptolemaeuslaan 52
Zip code 3528 BP
Town/city Utrecht, The Netherlands
Website www.gen.nl

Contact Wessel Sluis
Telephone +31 (0)30 670 66 60
E-mail wessel.sluis@gen.nl



- GEN Utility Data Systems: specialist software solutions for the entire energy value chain.
- GEN Managed Services: outsourcing of day-to-day IT management responsibilities like application management and performance monitoring.

NETWORKS

- Eurelectric
- Nederlands-Duitse Handelskamer
- Lid van DVO

PROJECTS

- Smart Energy Collectivet

Heijmans N.V.

COMPANY

Heijmans is a listed company which combines real estate, residential development, industrial construction, installation techniques, roads, and civil engineering. By focussing on quality improvement, integrated projects, sustainability, and profitability Heijmans achieves added value for clients. It realises projects for residential consumers, companies and government authorities. It is also a pioneer in various initiatives for sustainability in the broadest sense. In this way, Heijmans creates a strong base and lays progressive sustainable foundations within the sector.

PRODUCTS

Heijmans is a strong promoter of the development of smart energy and smart grids, because the construction sector is pre-eminently able to drive energy reduction. Heijmans has knowledge of the design, construction and maintenance of energy systems. Examples are the Smart Energy Grid in Roosendaal where a hybrid heating network has been designed. Also, Veenendaal Urban Area where Heijmans realised the sustainable CHP energy house; this project generates heating and cooling for more than 1,200 dwellings. Another example is the construction of 1,000 charging points in Amsterdam in partnership with Nuon. By entering into new partnerships, Heijmans is going to develop new energy services and products for the built environment.



NETWORKS

- Smart Energy Collective (SEC):
www.smartenergycollective.nl
- Bossche Energieconvenant:
www.bosscheenergyconvenant.nl

PROJECTS

- SEC Projects List: high Dalem, Gorinchem (residential development/area development), Waterstad Goese Schans in Goes, The Grounds Schiphol and Sun City in Heerhugowaard
- Roosendaal, Smart Energy Grid experiment
- Solar Induction in Bois-le-Duc ('s-Hertogenbosch)
- Realisation of charging infrastructure for electric transport in Amsterdam in partnership with NUON.
- Veenendaal Urban Area, sustainable energy system for a housing estate.
- Leerpark sustainability factory in Dordrecht

Address Graafsebaan 65
Zip code 5240 BB
Town/city Rosmalen, the Netherlands
Website www.heijmans.nl

Contact Paul Appeldoorn
Telephone +31(0)73 543 51 11 / +31(0)6 15 90 53 44
E-mail pappeldoorn@heijmans.nl

Address De Donge 2
Zip code 5684 PX
Town/city Best, the Netherlands
Website www.heliox.nl

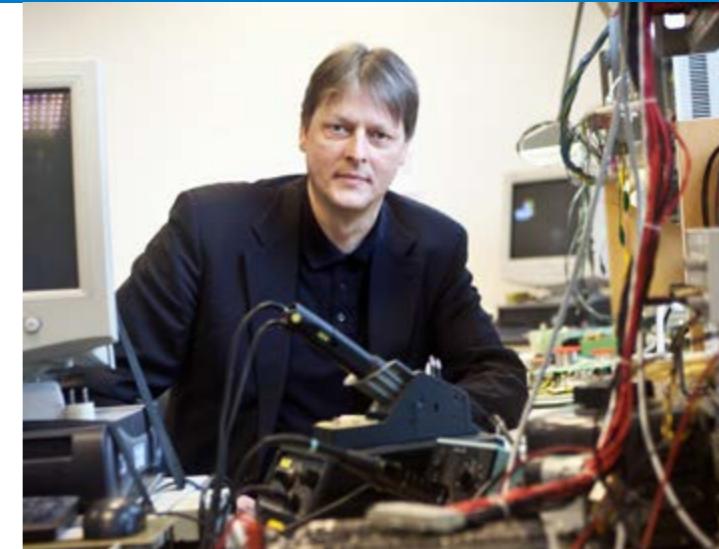
Contact Rudi Jonkman / Mark Smidt
Telephone +31(0)499 36 59 07 / +31(0)499 36 59 08
E-mail rudi.jonkman@heliox.nl/
mark.smidt@heliox.nl

Heliox BV

(also starter)

COMPANY

Heliox was formed in 2009. The core business of the company is the development and sale of high-performance power converters, for as well as to clients. These high-quality power convertors are relatively small and very energy-efficient. Moreover, the products can be made very compact and light by applying high-frequency electronic switching technology. This is not possible with more conventional techniques. The low weight and small dimensions of the product allow them to be used in e.g. chargers for electric vehicles, so that these vehicles can be charged via a smart coupling with the smart grid.



PRODUCTS

- Smart-grid compatible micro-inverter for solar PV applications
- Smart grid-compatible mobile charger for electric vehicles

NETWORKS

- Smart energy regions
www.smartenergyregions.com/
- Smart grids NL Agency
www.agentschapnl.nl/programmas-regelingen/intelligente-netten/

PROJECTS

- JU project Eniac: Energy 2 Smart Grid
www.eniac.eu/web/index.php

HOMA software BV

Address Hengelosestraat 705
Zip code 7521 PA
Town/city Enschede
Website www.homa-sw.com

Contact S. Kolin (directeur)
Telephone +31(0)53 483 66 80
E-mail sk@homa-sw.com

COMPANY

HOMA Software BV is een vooraanstaand technologiebedrijf, gespecialiseerd in de ontwikkeling van oplossingen voor geïntegreerde controle en management van kleine, decentrale energie-eenheden. Zoals windmolens, warmtepompen, warmteopslag, PV-panelen, slimme meters, micro-WKK's etc. Dergelijke oplossingen worden ingezet bij de inrichting van een zogenoemde Virtual Power Plants (VPP's) en spelen in het algemeen een sleutelrol bij smart grid-realisatie.

PRODUCTS

HOMA's belangrijkste product is een geavanceerde oplossing waarmee energiebedrijven grote parken van micro-WKK-eenheden kunnen beheren, en de data van de elektriciteit-, gas- en warmtemeters kunnen integreren en beheren. Ook kunnen ze hiermee aanvullende energie producerende of consumerende middelen zoals PV-panelen en warmtepompen beheren. De oplossing beschikt over een state-of-the-art Service-Oriented Architecture (SOA), waardoor het eenvoudig is om functionaliteit te veranderen en/of toe te voegen. E.ON en andere grote Europese energiebedrijven gebruiken deze oplossing al.

NETWORKS

HOMA werkt nauw samen met de Universiteit Twente en is daarmee onderdeel van een extensief onderzoeksnetwerk. HOMA is ook lid van de Technologie Kring Twente, een netwerk van high-tech bedrijven in Oost-Nederland. HOMA is verder lid van de IBM's PartnerWorld-programma en heeft toegang tot het netwerk van IBM's 'Innovation Centers' wereldwijd. Ten slotte is HOMA samenwerkingspartner van een aantal van de grootste energiebedrijven in Europa.

PROJECTS

HOMA is als Nederlandse partij betrokken bij een van de Europese Joint Technology Initiatives (JTI-project) samen met E.ON, Ideal Boilers en Ceramic Fuel Cells. Een omvangrijk Europees demonstratie-project rond de inzetbaarheid van brandstofcellen (SOFC). HOMA is ook samenwerkingspartner in een Nederlands-Duits project, gefinancierd vanuit het INTERREG-programma, waarbij de focus ligt op de installatie en gecoördineerde werking van micro-WKK toestellen. HOMA is verder partner in een onderzoeksprogramma van de Universiteit Twente, dat zich richt op de intelligente besturing van de energiestromen in huishoudens.

Address Postbus 12683
Zip code 1101 AR
Town/city Amsterdam, the Netherlands
Website www.honeywell.nl

Contact Bob Heil & John Brussel
Telephone +31(0)20 565 69 11 / +31(0)55 549 94 99
E-mail info@honeywell.nl

Honeywell BV

COMPANY

Honeywell is a diversified technology company. It started in 1885 with initial technology patents. Honeywell is an Inc. with a listing on the NYSE (New York Stock Exchange). Honeywell sells thousands of different technology products & solutions. More than 50 % of its current portfolio offers energy-efficiency benefits. We offer a product or solution for any energy-efficiency need that you might have. For example: by immediately and comprehensively adopting existing Honeywell products, the United States was able to reduce energy consumption by 20 to 25 percent.

The famous Honeywell 'Round' thermostat is a Honeywell icon. It is one of the most recognised designs of the world. Its first versions date back to 1953.

PRODUCTS

From in-home energy-control products to demand-respond control solutions.

NETWORKS

Honeywell is a member of and contributor to most relevant industry, control technology, communication, protocol & business associations.

PROJECTS

www.kijkvoelbeleef.nl
www.trendcontrols.com
www.centraline.nl
www.honeywell-buildingsolutions.nl

ICT Automatisering Nederland BV

COMPANY

The objective of ICT Automatisering, the parent company of HUMIQ, is to ease, simplify, and improve operating, production, and communication processes of its customers. It does this on the basis of high-quality technological knowledge. It presents this knowledge in the form of inventive and effective product/market combinations. Inventive, because every standard solution is enriched with state-of-the-art technology. Effective, because the company has in-depth knowledge of the industries in which it operates, so that it can provide proven and bespoke solutions. HUMIQ operates in six so-called Verticals: Automotive, Logistics, Machine & Systems, Industrial Automation, Energy & Utilities, and Healthcare.

PRODUCTS

HUMIQ provide software services for smart grids across the board. It is involved in control technology for CHP's, wind turbines, and other innovative energy systems, monitoring, administration and management of the energy grid, and development of devices for end-users such as micro-CHPs. On the basis of its involvement in the Smart grid pilot in PowerMatching City Hoogkerk), HUMIQ has developed a software product for smart grid applications in urban environments and automotive.



NETWORKS

- Dutch Power: www.dutchpower.net
- New Energy Business Community: www.nebc.nl

PROJECTS

- SmartProofS (EOS-IS) 2007- 2011: www.Smartproofs.nl
- PowerMatching City Hoogkerk (EU-KP6) 2007- 20011: www.powermatchingcity.nl
- Smart Energy Collective: www.smartenergycollective.nl

Address Rozenburglaan 1
Zip code 9727 DL
Town/city Groningen
Website www.humiq.nl / www.ict.nl

Contact Marten van der Laan
Telephone +31(0)50 800 72 00 / +31(0)6 27 08 73 85
E-mail marten.van.der.laan@humiq.nl
marten.van.der.laan@ict.nl

IBM Nederland BV

COMPANY

IBM, which has been in existence for more than 100 years, is one of the world's leaders in IT-services, hardware, software and research. Mission: the creation of a smarter world. Computer capacity is no longer reserved for computers in the traditional sense. There are chips in cars and cameras, and even our highways, medicines, as well as energy supply are becoming intelligent. In addition, everything is inter-connected via the internet. We also have at our disposal new, powerful systems and advanced analysis capabilities to convert mountains of data into knowledge, insight and meaningful information. IBM is helping energy companies by adding digital intelligence to their networks. These smart networks use sensors, meters, digital controllers and analysis tools for automating, monitoring, and controlling the two-way flow of energy – from power plant to power outlet. An energy company can optimise its network performance, prevent outage and restore outage more quickly, and ensure that clients are able to manage their energy use on the net right up to the individual appliance. 'Smart' networks are also able to include sustainable energy and react locally to distributed energy sources or electrical vehicles through the power outlet.

PRODUCTS

With its products and services, IBM is helping clients to make this smarter world a reality. IBM offers consultancy and system integration

Address Johan Huizingalaan 765
Zip code 1066 VH
Town/city Amsterdam, the Netherlands
Website www.ibm.com/energy

Contact Joep van Leersum
Telephone +31(0)20 513 64 72 / +31(0)6 53 31 55 11
E-mail joepvanleersum@nl.ibm.com



services, software for data management, integration, analysis, security, monitoring and management, hardware specialised in real-time processing of large quantities of data, and research services for developing smart algorithms.

NETWORKS

IBM is playing an important role in many international and national bodies for standardising and cooperating on smart grids. IBM is the co-founder of the Global Intelligent Utility Network Coalition, where more than ten large energy companies cooperate on smart grids.

PROJECTS

IBM is active in hundreds of smart grid projects worldwide from small pilots to large-scale research projects. Together with clients from all sections of the energy value chain, IBM is working towards the realisation, integration, exploitation, and management of smart grid systems.

Imtech

COMPANY

Imtech provides integrated technological solutions using a multidisciplinary approach. It combines the spheres of electrotechnology, ICT and mechanical engineering and offers intelligent solutions in the building and industry markets - from consultancy and design to realisation, management and maintenance.

SERVICES

In the short and medium term, decentralised electricity generation from sustainable energy sources such as waste, biomass, wind, sun and water is rapidly increasing. Individual dwellings, housing estates, companies and/or business parks are increasingly generating their own electricity and at the same time are purchasing electricity, heating or gas. This creates traffic in two or more directions in energy distribution between dwellings and/or companies among themselves and energy companies. Moreover, large and small scale wind parks, waste-to-energy plants, biomass and biogas plants, or combined heating and power plants have to be fully integrated into these energy grids. The result is a growing need for multi-energy distribution.

Imtech has the necessary disciplines in-house to design, realise, maintain, and manage smart grids. As a technical developer, Imtech puts to use its

Address Furkapas 1
Zip code NL-5605 JD
Town/city Eindhoven
Website www.imtech.nl

Contact Jaap Corvers (Manager Facility & CSR)
Telephone +31 (0)6 555 558 89 / +31 (0)88 988 3164
E-mail jaap.corvers@imtech.nl

Address Hetsmastraat 7
Zip code 9865 BL
Town/city Opende, the Netherlands
Website www.i-nrg.com

Contact Jeroen Jansen
Telephone +31(0)6 21 80 02 55
E-mail jeroen.jansen@i-nrg.com

iNRG | Living Energy

COMPANY

iNRG offers smart energy solutions to end-users (households and businesses) and energy suppliers. iNRG was formed in 2007 at the initiative of a number of persons with dozens of years of experience in the (decentralised) energy market. Together, they wanted to do something about the inefficient use of energy, pollution, and the considerable dependency of consumers on energy producers. Today, the number of persons employed by iNRG has considerably increased. This is the result of the cooperation with students from diverse disciplines, among other things.

iNRG in focus:
<http://www.youtube.com/watch?v=bNI61d1KbkM>



NETWORKS

iNRG wants to use its platform in diverse projects and circumstances. For that purpose, it is seeking collaboration with manufacturers of devices such as heat pumps, PV panels, driers, washing machines, and electric means of transportation. But it is also targeting providers of services, such as housing corporations, installation/service contractors, and (local) energy companies.

knowledge of energy infrastructures, ICT, energy management systems, and (decentralised) energy solutions in the area of (decentralised) generation, as well as in distribution, and delivery to buildings.

NETWORKS

- Smart Energy Collective: www.smartenergycollective.nl
- Energy Valley: www.energyvalley.nl

PROJECTS

- Power Matching City Hoogkerk
- IPIN Experiment - Intelligent Heating Network at the TU Delft campus
- IPIN Experiment – Schiphol GROUNDS (part of the SEC)
- ReloadIT: Smart Grids in the municipality of Zaanstad

PRODUCTS

iNRG offers an open and flexible platform (Energy Management System) for decentralised energy systems. This platform is installed in the meter box of the consumer and contains intelligent software with which users can verify and analyse their energy use via PC or Smartphone. It is even possible to remotely turn the heating or lighting on or off by means of an App, for instance. In addition, iNRG assists end-users in generating energy themselves, e.g. with solar panels or a fuel cell. iNRG assists in using this energy efficiently and distributing it to other users. In doing so, iNRG is supporting users in becoming independent from the large energy producers.

PROJECTS

iNRG is currently involved in twelve projects. In these projects, it fulfils various functions, from project leader and spearhead to subcontractor. Moreover, iNRG initiates pilots, in-service surveys, and scientific as well as applied research.

Interxion

COMPANY

Interxion (NYSE: INXN) is a leading provider of carrier-neutral colocation data centre services in Europe. The company serves a wide range of customers through more than 32 data centres in 11 European countries. Interxion's uniformly designed, energy-efficient data centres offer customers extensive security and uptime for their mission-critical applications. Interxion has created content and connectivity hubs that foster growing customer communities of interest. With connectivity provided by over 400 carriers and ISPs and 18 European internet exchanges across its footprint.

NETWORKS

- Stichting GreenICT
- Smart Energy Collective
- The Green Grid
- IIP Duurzame ICT
- Green IT Amsterdam
- Uptime Institute (Cofounder EMEA Chapter)
- EU code of conduct

PROJECTS

- LTA agreement with the Ministry of Economic Affairs on reducing energy in ICT sector

Address Tupolevlaan 101
Zip code 1119 PA
Town/city Schiphol-Rijk, The Netherlands
Website www.interxion.com

Contact Bob Zonneveld
Telephone +31 (0) 20 55 08 600
E-mail bobz@interxion.com

Address Kamerlingh Onnesweg 63
Zip code 3300 AA
Town/city Dordrecht
Website www.itron.com

Contact Joris Lampe
Telephone +31(0)78 654 54 18
E-mail info.dordrecht@itron.com

Itron

COMPANY

Itron is the leading provider of energy and water resource management solutions for nearly 8,000 utilities around the world. The company offers end-to-end solutions that include electricity, gas, water and thermal energy measurement and control technology, communications systems, software and professional services. With more than 9,000 employees doing business operating in 130 countries, Itron empowers utilities to manage energy and water resources responsibly and efficiently manage energy and water resources.



optimizing optimising costs, to connecting with and empowering consumers.

PRODUCTS

From measurement and network communication technologies to software and data analytics, Itron's innovative products, breadth of solutions, and value-added services have brought us to a position of global leadership.

Itron helps thousands of utilities worldwide to optimize optimise the delivery and use of energy and water by providing intelligent metering, communication and utility software solutions.

Itron delivers offers a broad array of integrated products and services to help your utility to meet key operational and strategic objectives and thrive amid the energy and water challenges we all face from- from improving operational efficiency and

NETWORKS

- Itron has strategic partnerships with leading security technology suppliers for key management infrastructure, security auditing and testing.
- Itron is as well contributing actively to the elaboration and improvement of security cipher suites.
- Itron contributes actively within ESMIG on the definition of end to end security requirements for Smart Metering components.
- Itron is involved with work for the DLMS COSEM protocol.
- Itron is deeply involved in security standardisation via OpenSG/AMISec and NIST Cybersecurity.

DNV KEMA

Address Utrechtseweg 310
Zip code 6812 AR
Town/city Arnhem
Website www.kema.com
www.smartgridsherpa.com

Contact Frits Bliek
Telephone +31 50 7009 707
E-mail Frits.Bliek@kema.com



COMPANY

KEMA, established in 1927, is an independent knowledge company which operates globally in the energy value chain and specialises in high quality services in the area of business and technical consultancy, operational support, measurements and inspections, and testing and certification. As an independent organisation, KEMA advises and supports government organisations as well as producers, suppliers and end users of electricity, gas and heating. KEMA also certifies products and systems for a broad range of clients.

PRODUCTS

KEMA offers a comprehensive range of strategic and technical solutions for smart grids and the provision of energy of the future. KEMA assists clients to meet the challenges involved in the integration of new measuring and communication techniques, automation systems and information systems.

KEMA's services include:

- strategy, planning, and implementation of intelligent networks and the energy company of the future.
- business modelling and business case analysis
- integration of information systems
- innovation in smart grid products and services
- infrastructure for advanced meters
- management systems for meter data

- automation of distribution
- management systems for distribution networks
- telecommunication and data communication and related (IEC) standards and models
- protection of information and infrastructure

NETWORKS

Smart Energy Collective:
www.smartergycollective.com

PROJECTS

- Power Matching City: www.powermatchingcity.nl
- Flex Power Grid Lab
- DerLab
- Intelligent Distribution Station
- ADDRESS (EU FP7 project)
- OPEN NODE
- OPEN METER
- Intelligent E-Transport Management (ITM)
- DC = DeCent

KPN

Address Maanplein 55
Zip code 2516 CK
Town/city The Hague, The Netherlands
Website www.kpn.com

Contact Alle Welling
Telephone +31-6-53219287
E-mail alle.welling@kpn.com

COMPANY

KPN is the leading telecommunications and IT service provider in The Netherlands, offering wired and wireless telephony, internet and TV to consumers. KPN offers business customers complete telecommunication and IT solutions. KPN Corporate Market offers IT services and is the Benelux market leader in the area of infrastructure and network-related IT solutions. In Germany and Belgium, KPN pursues a multi-brand strategy in its mobile operations and holds number three market positions through E-Plus and BASE. KPN provides wholesale network services to third parties and operates an efficient IP-based infrastructure with global scale in international wholesale through iBasis.

PRODUCTS

KPN provides several services to different parties within the Energy Industry, varying from hosting and workspace services to specific communication solutions for Smart Metering and Grids. In close cooperation with some Dutch DSOs, KPN is investigating if an Industry Specific Network Solution fits within the technical and business criteria of the business needs of DSOs. KPN, Alliander, DNV KEMA, TNO and Radboud University have set up a European cyber security knowledge centre, the European Network for Cyber Security (ENCS). ENCS will research, test, share knowledge and train personnel in the field

of cyber security for critical infrastructures such as energy, water and telecom networks. All with the objective of helping infrastructure owners to protect their assets against cybercrime.

CORE SOLUTIONS

- IT Integration Services
- Datacenter Services
- Workspace Services
- Connectivity Services
- Consulting Services

All these products and services come together in four core solutions: Any Device Management, Services Aggregation, Unified Communications and CloudNL.

NETWORKS

- Smart Energy Collective
- Global e-Sustainability Initiative (GeSI) / Smart 2020
- European Network for Cyber Security (ENCS)
- ICT Roadmap
- Entrance

PROJECTS

- Amsterdam Smart City
- Smart Energy Collective projects at Schiphol Airport, Heerhugowaard and Hoog Dalem

Laborelec NL

COMPANY

Laborelec was formed in 1962 to support the Belgian electricity producers in research, development, and special services. Over the past decennium, Laborelec has expanded its activities internationally. It is now also working for the GdF SUEZ group, of which it is a subsidiary, as well as for foreign grid operators and industrial clients. The Belgian grid operators are also shareholders, in addition to GdF Suez. For many years, Laborelec has been active in renewable energy production and distributed production, more specifically in the interaction with the electricity grid. Just think of the quality of electrical power supply, protection, assets, and control. Through these projects, Laborelec has accumulated a lot of expertise in decentralised energy generation, energy efficiency, SMART lighting, control of generators (PV, micro CHP, and wind) and loads (heat pumps, electric vehicles).

PRODUCTS

Laborelec's core product is the expertise of providing intelligence to existing electricity grids or electricity grids to be built. This intelligence ensures an optimal balance between various parameters from the technical-economic perspective of the concerned market parties. For instance, to prevent overloads or congestion, Laborelec can add asset-protective intelligence to the grids by means of algorithms. In addition, the optimal economic balancing of decentralised generation can be exploited by adding intelligence.

Address Amerikalaan 35
Zip code 6199 AE
Town/city Maastricht Airport, the Netherlands
Website www.laborelec.com

Contact Hans Bastings
Telephone +31(0)6 38 82 60 22
E-mail Hans.Bastings@Laborelec.com



NETWORKS

On its campus, Laborelec has its own smart grid that can run in island mode to provide the campus with sufficient electrical power. This smart grid serves as a test and research environment for various projects.

PROJECTS

- Modienet
- LINEAR: www.linear-smartgrid.be
- SLEM <http://www.laborelec.be/ENG/research-and-innovation/smart-local-energy-management-2/>
- Testing ground for electric vehicles: 75EVRO, monitoring, data treatment and related reports of 75 electric vehicles in Rotterdam and vicinity.
- Princes Elisabeth zero emission scientific station in Antarctica

Locamation

COMPANY

Locamation is a leading innovator, developer and supplier of proven, visionary substation automation solutions, with more than 20 years' experience. On the basis of an open software platform, it creates solutions for primary and secondary substations. Locamation started by developing industrial control and real-time software; many of those solutions are still being used and serviced today. In the early 90s it extended to the electricity transmission and distribution market with a solution for high-voltage substation automation, used in the Netherlands, UK, Thailand and others. In 2004, Locamation started the development of the SASensor solution and today there are a great number of primary substations equipped with this technology and system architecture.

PRODUCTEN

- SASensor HMV: primary substation automation solution based on an open software platform with management, metering, control and protection tools required for efficient grid operations and smart grid planning.
- SASensor MLV: scalable and flexible solution to digitize secondary substations.
- SASensor HV: migration path from the older SAS2000 system to the newer SASensor generation. Specifically for changing demands in high voltage transmission substations.

Address Beitelstraat 2
Zip code 7556 NB
Town/city Hengelo, the Netherlands
Website www.locamation.nl

Contact Bas Mooijman
Telephone +31 (0)6 54 96 03 53
E-mail Bas.mooijman@locamation.nl



NETWORKS

Dutch Power, CIGRE, SETS, TEG

PROJECTS

- **S.A. Liander:** roll out Substation automation in all 400 primary substations of Alliander.
- **Smart Cable Guard:** Together with Enexis, Alliander and KEMA Locamation provides the technology for on-line measurement of partial discharges in cables.
- **National Grid UK:** Automation of 26 stations in the transport Grid of UK's National Grid.
- **Lochem Energie:** Smart Grid integration in the city of Lochem. Enabling the technology to balance 1000 prosumers supplying photo voltaic energy, introducing a new concept for integrating electrical vehicles in the net and providing an integrated solution from prosumers to Network operator.

Logica

COMPANY

Logica offers corporate services, system integration, and outsourcing for clients across the world. The largest (utility) companies in Europe are among our clients. Logica has a proven track record in smart grids. It provides ICT solutions and consultancy services and develops back office systems, including one for electric transport. Worldwide, Logica numbers 41,000 staff.

PRODUCTS

For network operators, Logica is able to construct the business case for a smart grid investment. Logica designs and also delivers solutions which can integrate smart grids with existing (business) systems. For energy suppliers especially, an effective smart grid creates the physical infrastructure for dynamic and competitive retail markets.

NETWORKS

Smart Energy Collective:
www.smartenergycollective.com

PROJECTS

Logica is the partner par excellence in the development of the globally pre-eminent InovGrid project in Portugal. This project automates network management, improves service quality, reduces operational costs, promotes energy efficiency and increases the use of sustainable energy and electric transport.

Address Prof. W.H. Keesomlaan 14
Zip code 1183 DJ
Town/city Amstelveen
Website www.logica.com

Contact Jos Siemons
Telephone +31(0)88 56 40000
E-mail jos.siemons@logica.com



Address Snijdersbergweg 93
Zip code 1105 AN
Town/city Amsterdam, the Netherlands
Website www.mastervolt.com

Contact Arno van Zwam
Telephone +31(0)20 34 22 100
E-mail avanzwam@mastervolt.com

Mastervolt

COMPANY

Founded in 1991, Mastervolt is a world leader in the development and business-to-business supply of electrical power solutions. With its head office in Amsterdam (the Netherlands) and several branches worldwide, Mastervolt sells these solutions in more than sixty countries throughout the world via a network of distributors and dealers. In December 2010, Mastervolt was acquired by Actuant Corporation and became a member of its Electrical Segment. Actuant is a diversified industrial company with operations in more than thirty countries.

With its products and systems, Mastervolt offers the customer the 'power to be independent'. In order to guarantee that independence, Mastervolt has always opted for quality and the power of innovation which have led to Mastervolt becoming a leading worldwide A-brand with a clear focus and specialisation in three market sectors. For these market sectors, Mastervolt provides high-quality electro-technical systems for independent energy supply:

- Maritime energy
- Automotive energy
- Solar energy



PRODUCTS

- Autonomous electrical power systems with conditional grid connection (micro-grids)
- Lead Acid and Lithium-ion battery storage technology
- Grid-connected PV inverters with grid support functionality, single and three phase, both with and without galvanic isolation
- EOS KTO: PV HiPe
- EOS KTO: EVTC
- Energie & Innovatie: PV Sims
- Energie & Innovatie: MLP

NETWORKS

EMVT, association for innovation in electro-technical products, processes, and applications:
www.emvt.nl

Address Parallelweg 2
Zip code 7141 DC
Town/city Groenlo, the Netherlands
Website www.nedap.com

Contact Anne Pieter Haytema
Telephone +31(0)544 47 18 25
E-mail Annepieter.haytema@nedap.co

Nedap Energy Systems



COMPANY

The Nederlandsche Apparatenfabriek or 'Nedap' was formed in 1929 and has currently more than 650 employees worldwide. Nedap is a manufacturer of products that offer an intelligent technological solution to relevant issues, such as clean drinking water, adequate food, and sustainable nutrition. The focus is not on the technology itself, but on the way in which it is used. Nedap's solutions distinguish themselves by converting new technologies into elegant and user-friendly products in a creative and innovative manner.

PRODUCTS

The PowerRouter of Nedap Energy Systems, introduced in 2009, is a fully integrated energy management system for use at home. With this system, everyone can build their own network for sustainable energy, to which solar panels and batteries can be connected. The energy generated can be used directly or stored in batteries for later use or fed back into the net. See also:

www.powerrouter.com.

NETWORKS

- Smart Energy Collective (SEC);
www.smartenergycollective.nl
- Knowledge network for zero-energy buildings;
www.nulwoning.nl



PROJECTS

- Biezenakker Ulft project
- SEC Project "Proeftuin Heerhugowaard" (under development)
- Zero-Energy Building (Nulwoning)
- Flexinet project about congestion management with the HAN and Hanze University of Applied Sciences
- Powermatching City 2

Phase to Phase BV

Address Utrechtseweg 310-B14
Zip code 6812 AR
Town/city Arnhem
Website www.phasetophase.nl

Contact M.E. Dorgelo (Martin)
Telephone +31(0)26 352 37 02
E-mail m.e.dorgelo@phasetophase.nl



COMPANY

Phase to Phase BV specialises in software development for electric power networks. Since 1991, utilities, industry, and consulting companies have been relying on our products for planning, design and management. The company has thorough knowledge of modelling and simulating electrical networks, and has experience in the conversion of large amounts of measured data into recognisable information, using graphical and geographical presentation techniques.

PRODUCTS

The software products in the Vision Power range offer solutions for everything concerning electric network analysis: load flow, short-circuit currents, fault analysis, protection analysis, reliability evaluation, cable optimisation, protective grounding, and voltage optimisation. The clear software structure makes these equally suitable for both frequent and occasional users. The software products are used at all levels of the power system, from high voltage transmission to low voltage distribution, and in all types of industry. Fast three-dimensional presentation of power networks in a geographical plane facilitates a better understanding of the network, based on aerial photos and maps, down to street level. The software also supports network presentation in panoramic street views. The PQ application gives a clear interpretation of the measurements by

presenting them using a uniform classification system. This application supports voltage variations, voltage dips, frequency variations, harmonic distortion, and unbalance.

NETWORKS

- Dutch Power: www.dutchpower.net
- IOP EMVT

PROJECTS

- Automatic fault location in distribution networks
- Planning of dispersed generation systems (micro-CHP)
- Planning of electric energy storage systems
- Real-time signal analysis in distribution networks
- Mobile applications for distribution networks (iPad)

Address Wattstraat 54
Zip code 2171 TR
Town/city Sassenheim
Website www.plugwise.com

Contact Norbert Vroege
Telephone +31(0)252 433 070
E-mail info@plugwise.com

Plugwise

BEDRIJF

Plugwise designs, develops, and produces wireless energy management and control systems. With these systems, individuals and organisations receive a true understanding of their energy use, and as a result they can save between 10 and 40 percent on their energy account. The company conducted successful pilots with Alliander, Enexis, Essent, and others.

PRODUCTS

A basic Plugwise package consists of 2, 5, or 9 smart electricity meters and switches which form a wireless network, based on ZigBee technology. Using the software, the modules ('Circles') communicate energy use for each appliance connected and automatically switch appliances using smart time circuit diagrams or with additional, wireless motion and heat sensors. With extra Circles, the network can be extended. Plugwise also offers plug and play solutions for insight into energy production (solar panels), metering and submetering, and reading smart electricity, gas, and water meters - for companies as well as individuals. Historical and current use can also be viewed through the extended, protected web portal from any desired location, and through the tablet and smart phone apps within the Local Area Network, as well as through the standard software. These user friendly apps can also switch appliances within the network.



PROJECTS

- Real Smart Meter: clients of energy operator Enexis received a smart meter, a Plugwise smart meter reader, Circles to measure and switch individual appliances, and software which made the measurement data visible. Enexis was given a view into anonymous client data.
- Smart Wash: (for Enexis together with Electrolux), solar panels provided the energy for washing machines in 25 households. Plugwise hardware and software aligned the best times to begin the washing with information about maximum production time and weather forecasts.
- Watts app: staff at Alliander are receiving a smart meter, a Plugwise smart meter reader, Circles, and an app for viewing the measurement data. In a game setting, users are learning how they can save energy in their situation.

Priva BV

COMPANY

Priva is a privately owned company and key player in the field of automated climate and energy process control in the Horticultural and Building Intelligence markets. Priva's core competencies are hardware and software development, process management and energy monitoring and, through sister company Van Beek, consultancy services. Priva considers it to be its duty and responsibility to use and manage resources, nature, and the environment with the utmost care. That is why innovation with a sustainable dimension is a high priority. Priva is a knowledge-based organisation with 400 employees based in eight countries serving clients in more than 70 countries.

PRODUCTS

Priva's controls platform has been deployed for many years in connecting (renewable) energy systems in microgrid environments, including an interface for energy trading. This platform results in greater energy savings and in CO₂ emission reductions compared to less advanced systems, while comfort levels are optimised and demanding performance targets are met. Priva's expertise covers both know-how of the system components and broad experience in microgrid and smart building projects.



NETWORKS

Priva is a member of most relevant national and international business and technology associations.

PROJECTS

As a world market leader for horticulture and market leader in the Netherlands for building automation, Priva participates through her partners in many sustainability projects. See www.priva.nl for press releases.

Address Zijlweg 3
Zip code 2678 LC
Town/city De Lier
Website www.priva.nl

Contact Said Hafidoun
Telephone +31 (0)6 50 50 32 44
E-mail said.hafidoun@priva.nl

ProxEnergy

COMPANY

ProxEnergy is an innovative company providing smart grid solutions. It aims to make a difference as a frontrunner in the transition from non-renewable to sustainable energy and more efficient use of electricity. As a total solutions provider, ProxEnergy develops and integrates dedicated components that combine production, storage and consumption of photovoltaics energy. The smart management of energy flows result in energy and cost savings. ProxEnergy represents Solarcentury, a UK based EPC contractor in the area of solar photovoltaics. Solarcentury 'Netherlands' has over half a century of solar photovoltaics experience in total, comprised of former members of Scheuten Solar and ECN. The team delivers turn-key solar power plants as well as all components necessary to use solar energy as effectively as possible.

PRODUCTS

As an energy service company, ProxEnergy empowers consumers to produce and consume their energy in a more advanced way. ProxEnergy provides several services to accomplish this:

1. Solar photovoltaic systems for local energy generation will be sold under the brand of Solarcentury 'Netherlands'. Households and small SMEs (<15kWp) will be serviced indirectly through local installers while larger systems (>15kWp) will be offered by Solarcentury 'Netherlands' directly.

Address Binnen Parallelweg 10
Zip code 5701 PH
Town/city Helmond
Website www.proxenergy.com

Contact Paul de Jong (CTO)
Telephone +31(0)6 50 63 30 51 / +31 40 266 8644
E-mail pdjong@proxenergy.com



2. Energy awareness products providing insight into energy production and (self)consumption.
3. Engineering services to develop control systems in isolated and weak-grid situations with a focus on combinations of photovoltaics, (back-up) diesel generators and load control.

NETWORKS

- active in Netbeheer Nederland: www.netbeheernederland.nl
- R&D contacts with Delft University of Technology, New Energy Systems, Interuniversity Next Generation Energy Initiative (INGEI)
- ongoing activities in the context of smart grids, undertaken together with TNO, VITO (Belgium), the building industry, and others.

PROJECTS

ProxEnergy is an active player in the IPIN projects with EVANDER (Nieuwegein) and INZET (Zeewolde). Within these projects, ProxEnergy focuses on demand side management and dynamic pricing mechanisms.

Prysmian

(also Grid operation)

COMPANY

The Prysmian Group is the world's leading cable solutions provider. Over 130 years of aggregated history 22,000 people in 50 countries and almost 100 plants are the best possible platform for change and innovation. Prysmian connects with customers and helps them respond to their present and future challenges by operating through two of the industry's most respected global brands: Prysmian and Draka. These brands enable customers to bring their services to homes and businesses, cities and entire countries.

PRODUCTS

Prysmian is a leading developer, designer, manufacturer, supplier and installer of a broad array of cables for applications in the energy and telecommunications industries. In addition, Prysmian produces and supplies related network components and accessories and provides value-added services such as co-design, project management of cable systems, realization of turnkey projects, installation services and post-installation maintenance services, principally in the energy sector. For smart grids, where energy systems meet telecom systems, the Prysmian group is the logical choice.



NETWORKS

- Smart Energy Collective
- National committees, i.e.: NEC, Dutch Power,
- International committees, i.e.: IEC, CENELEC, CIGRE

PROJECTS

- Smart offices
- Industry (Schiphol Airport – The Grounds)
- All Electric (residential area Hoog Dalem)

Address Hamerstraat 2-4
Zip code 1021 JV
Town/city Amsterdam, The Netherlands
Website www.prysmiangroup.com

Contact Jos van Rossum
Telephone +31 (0)6 51 27 11 65
E-mail jos.vanrossum@prysmiangroup.com

Quby

COMPANY

Quby develops intuitive tools for energy management. The products provide consumers with insight and help to manage their energy usage. Quby believes that insight into energy usage creates awareness and eventually stimulate changes in behavior that contribute to a sustainable environment.

Quby intends to let consumers play their crucial role in the creation of smart grids, both as active player as well as investor. The company offers the proper choice in attractive products and services to keep current comfort levels, while consuming less natural resources. Quby was the winner of the 2011 IIR Smart Grids Innovation Award.

PRODUCTS

- TOON: Award winning smart thermostat providing insight into the consumer's energy consumption. <http://quby.nl/en/home-energy-management>
- TES: The Energy Stick. A low-cost energy display linking to the P1-port. <http://quby.nl/en/the-energy-stick>
- TIM: The Internet Module. For consumers who use a smartphone or tablet to gain insight in their energy consumption or production from their solar panels. <http://quby.nl/en/tim>

Address Joan Muyskenweg 22
Zip code 1096 CJ
Town/city Amsterdam, The Netherlands
Website www.quby.nl

Contact Joris Jonker
Telephone +31 020 462 1680 / +31 (0)6 54 74 00 00
E-mail joris.jonker@quby.nl



NETWORKS

- Alliance of P1-product manufacturers: Quby has been an active contributor in the specification of the P1-port, an essential element to offer consumers real benefit of the planned roll-out of smart meters. Quby remains an instrumental player in this domain, offering a platform for new generation smart meters to be tested against the P1-standard.
- Amsterdam Smart City has offered the challenging environment to field-test various versions of Quby's products.
- FIGARO: Together with Philips and TNO (PowerMatcher), Quby works on the architecture of a home gateway that strengthens energy management solutions in 'the Future Internet'.

Qurrent (also Energy)

COMPANY

Qurrent has been operating in decentralised sustainable energy since 2006. Our mission is: assisting consumers to deal more cleverly with sustainable energy on a large scale through both energy saving and energy generation. In 2007, Qurrent won the international Zip code Lottery Green Challenge with its technology.

PRODUCTS

As an energy service provider, Qurrent assists consumers in handling energy more cleverly. It provides two principal services to accomplish this:

1. Support and products for energy saving
2. Support and products for private local energy generation

Qurrent offers products which can be purchased in various combinations, such as:

- simple solar systems (pv) for large scale use
- clear insight into energy use and generation with the Qbox
- green energy from the Netherlands on a non-profit basis
- insulation
- energy saving advice

Our primary goal is the total absence of worry for the client; not the sale of individual products. Qurrent's earnings model is completely focussed on this objective. The delivery of green energy is a

Address Willem Fenengastraat 23
Zip code 1096 BL
Town/city Amsterdam
Website www.qurrent.nl

Contact Michel Muurmans
Telephone +31(0)88 777 1234
E-mail info@qurrent.nl



significant proof of this. Qurrent assists clients in saving energy and in generating energy. However, a consumer will still have to purchase energy externally at certain times. As a result of our 'worry-free service' philosophy, Qurrent will provide the consumer with green energy; in this way the consumer will receive just one easy to follow invoice. Qurrent provides this green energy 'for free' and does not profit from it. The less energy Qurrent delivers, the more it earns from other services and products. In this way, Qurrent's principal goal remains guaranteed: the reduction of energy use and the minimisation of the purchase of external energy.

NETWORKS

- De Groene Zaak [The Green Company] (co-founder)
- Energy Valley

PROJECTS

- Texel Energy
- Lochem Energy
- Elkien Leeuwarden
- Vestia The Hague

Address Graafsebaan 68
Zip code 5242 JN
Town/city Rosmalen, the Netherlands
Website www.schleifenbauer.eu

Contact Ronald Timmermans
Telephone +31(0)73 523 02 56
E-mail ronald.timmermans@schleifenbauer.eu



Schleifenbauer Products BV

COMPANY

Schleifenbauer Products produces intelligent current and energy meters for use in data centres. Data centres are very intensive energy users for whom the energy costs can amount to 75% of the operating costs. The Power Distribution Units (PDUs) of Schleifenbauer enable users to obtain detailed (down to the server level) insight in the energy consumption. This information enables them to increase the efficiency of energy consumption and to charge the costs on to the consumers.

PRODUCTS

Schleifenbauer supplies PDUs for installation in server cabinets. These are able to measure not only the total voltage in the PDU (16A, 32A, and 63A single-phase and three-phase), but also on every individual port of the PDU (up to a maximum of 45 ports per PDU). In addition, Schleifenbauer provides the DP Meter. A single DP meter can perform measurements on 27 feeder groups. Schleifenbauer also has a meter that can be installed in junction boxes of bus-bar systems (BB Meter). Schleifenbauer's meters measure current (I), voltage (V), power factor (%), apparent power (VA), active power (W), and energy (kWh). The products of Schleifenbauer are made exclusively to the specifications of the client. The entire R&D, production, and assembly take place in the Netherlands.

Almost all Dutch co-location data centres make use of Schleifenbauer measuring equipment.

The products of Schleifenbauer communicate with a serial data bus using standard patch cables. Contact with other networks and protocols on a TCP/IP basis is possible via Gateway.

NETWORKS

FHI, ECO (Germany), Code of Conduct on Data Centres Energy Efficiency, Groene ICT

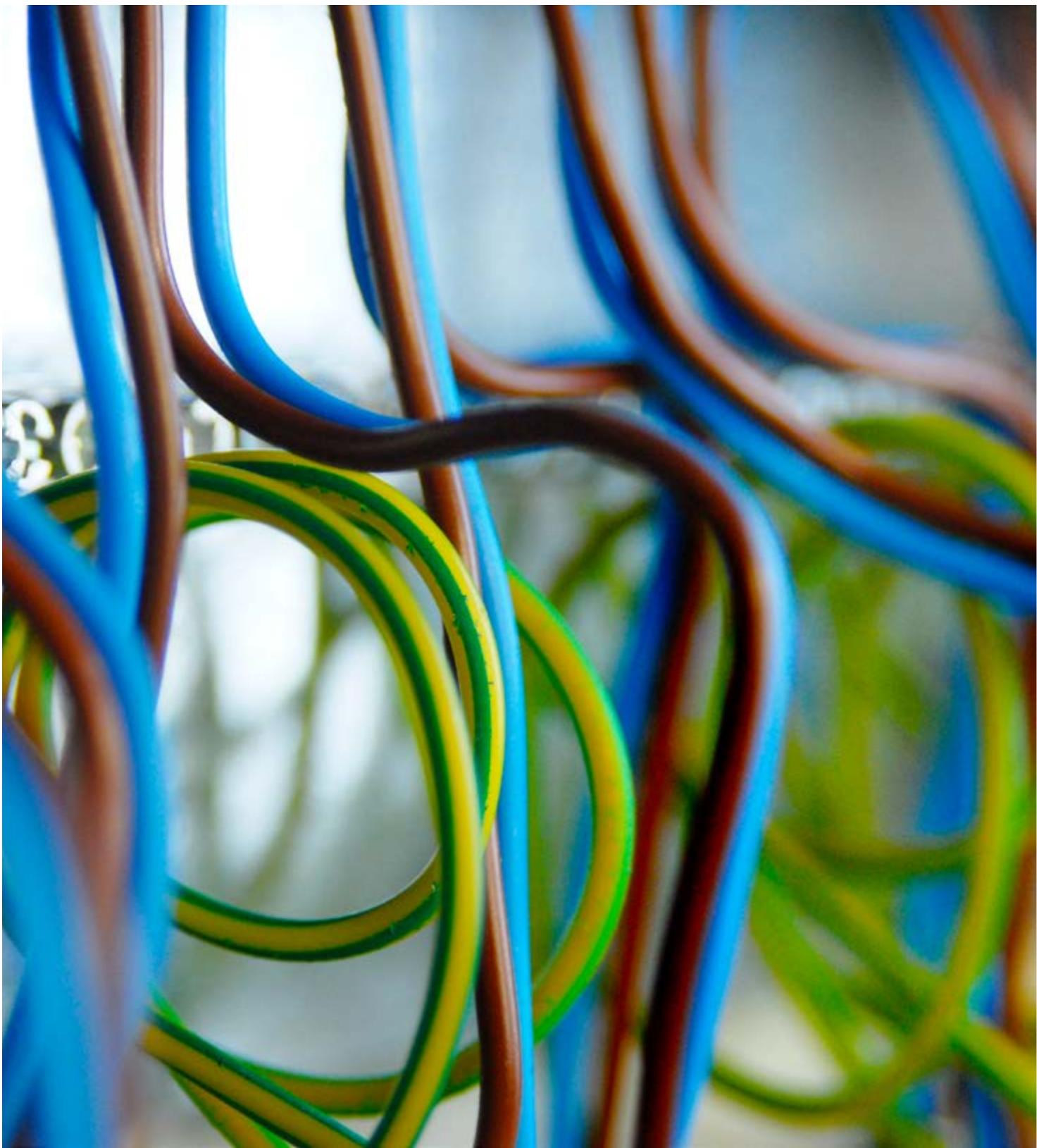
PROJECTS

- Telecitygroup, XS4ALL, BIT, BT, EUnetworks, R-iX, Parkpost, Leaseweb, Evoswitch, AMS-IX, Vancis, and Nikhef
- Various financial institutions, hospitals, and government agencies

Address Energieweg 17
Zip code 9743 AN
Town/city Groningen, the Netherlands
Website www.smartdutch.nl

Contact Gert van Kempen
Telephone +31(0)50 318 05 53 / +31(0)6 42 20 60 77
E-mail g.vankempen@smartdutch.com

Smart Dutch



COMPANY

Smart Dutch is specialized in wireless communication technologies for the utility branch. It focusses on development, marketing, standardisation and consultancy. Three successful smart meter pilots in the Netherlands (at Stedin, Delta and Enexis) are used as basis for European standardisation.

PRODUCTS

Smart Dutch communication modules are mostly based on 2,4 GHz (such as Wi-Fi) and sub GHz meshed RF technologies (868 MHz). Meshed RF is a wireless communication technology using large numbers of nodes to create a reliable and robust network. These networks ensure a continuous exchange of (real-time) data between devices and back office.

Meshed RF technology is very well suited for use in future proof smart energy grids. For instance, it is possible to deliver meter reading/commands/rates not just once a day, but every fifteen minutes. This enables the infrastructure to be used for real-time services, such as Real Time Pricing and Low Voltage Load Management. Pilots in existing neighbourhoods have revealed that this alternative smart meter technology is extremely reliable and fast.



In addition, Smart Dutch possesses product and market knowledge of smart energy meters in the Netherlands (such as NTA 8130+ and DSMR) and Europe, and knowledge of European standardisation channels and documents (such as CEN CENELEC, ETSI, CEPT/ECC, ESMIG, and M441 & M490).

PROJECTS

- EOS Short-Term Research grant (KTO-subsidie, April 2010 - October 2012)
- Smart Energy Collective: www.smartenergycollective.nl

Stedin Netbeheer BV

COMPANY

Stedin is a grid operator for gas and electricity. Its supply territory is mainly located in the conurbation (Randstad): in the provinces of Zuid-Holland and Utrecht. Here, Stedin serves almost two million private, business, and government clients. In addition, as a grid operator, Stedin is responsible for the construction, expansion, and maintenance of the transmission grid. The grid territory of Stedin also offers smart grid possibilities: in the urban environment and services sector as well as in large-scale industry and the port of Rotterdam.

PRODUCTS

Stedin recognises the importance of smart grid solutions and strives to actively facilitate sustainable applications. It does this by creating pilot projects for smart grids, which include controllable demand, sustainable generation, and sustainable applications, among other things. Stedin also tests modern technologies on the grids at various locations for the purpose of reducing the risk of failures and if failures do occur, reducing the recovery time.

Address Postbus 49
Zip code 3000 AA
Town/city Rotterdam, the Netherlands
Website www.stedin.net

Contact John Hodemaekers
Telephone +31(0)88 896 31 03
E-mail John.hodemaekers@stedin.net



NETWORKS

- Netbeheer Nederland
 - Utrecht Sustainable Institute
 - Smart Energy Collective

PROJECTS

- Participation in IPIN pilot projects:
 - Couperus
 - Hoog Dalem (Smart Energy Collective)
 - Heijplaat
 - Smart Grid. rendement voor iedereen

Tebodin

(also Engineering)

COMPANY

Tebodin is an independent, multidisciplinary consultancy and engineering firm with a turnover of 223 million euros (2011). Tebodin offers her clients worldwide the knowledge and experience of 4.000 experts in industry: health and nutrition, oil and gas, energy and environment, chemicals, infrastructure and property. The company has a network of offices in West, Central and Eastern Europe, the Middle East, Asia and Africa. Tebodin is part of Bilfinger Berger SE, an internationally active engineering and services company with a leading position in its markets.

PRODUCTS

Tebodin provides knowledge about smart grids in relation to energy production, energy distribution, energy supplies and the interfaces between them. Tebodin is able to switch quickly and practically between the level of concept and the level of detail. Tebodin combines years of experience and knowledge involving sustainable energy systems with knowledge about heating, electricity, natural gas, biogas, green gas networks, and measurement and control systems. Because of this Tebodin is able to supervise smart grid projects from idea to delivery as a system integrator.

Address Laan van Nieuw Oost-Indië 25
Zip code 2593 BJ
Town/city Den Haag
Website www.tebodin.nl

Contact Frans Tillemans
Telephone +31 (0) 70 34 80 205 / +31 (0) 62 61 46 923
E-mail f.tillemans@tebodin.com



SERVICES

- Determining aspirations and translating these into smart grid concepts drafting designs for sustainable energy production systems and delivery systems.
 - Preparing smart grid business cases basic as well as detailed design of energy production and distribution systems designing urban heating systems, electricity grids and gas networks.
 - Designing required measurement and control systems preparing specifications for the benefit of the procurement process project support (permit, project management, construction management).

PROJECTS

- As a system integrator, Tebodin is supporting the energy consortium in the development of the business case for a very large smart grid project in Leuven; <http://www.tweewaters.be>.

Technolusion BV

COMPANY

Technolusion is a project office in technical automation, an innovative SME company with 130 staff. It develops advanced electronics and software solutions for technical information systems and embedded systems. Technolusion operates mainly in the traffic and transport sector, high-tech industry, and the energy sector. The company's shares are owned by the staff through a participation scheme. Technolusion distinguishes itself in its capacity to realise integrated technological solutions for complex problems in demanding environments and in the right conditions, at a fixed price and by a fixed date.

PRODUCTS

As a project office, Technolusion develops (customised) products for clients. It also has at its disposal smart grid-related product concepts which it employs in projects. Examples of this are: SmartBoxx with different wired and wireless connectivity; ChargeBoxx for Type 2 Mode 3 loading and back office systems for monitoring, controlling, and influencing the behaviour of smart-grids.

NETWORKS

Technolusion represents the SME in Top Sector Energy, Smart Grids innovation table.

Address Postbus 2013
Zip code 2800 BD
Town/city Gouda, the Netherlands
Website www.technolusion.nl

Contact Marcel Dukker
Telephone +31(0)182 59 40 00 / +31(0)6 15 04 87 48
E-mail marcel.dukker@technolusion.nl



PROJECTS

- EV monitoring of the efficiency of an electrical car
- EV control of energy intake by an electrical car.
- Mobile smart grid: smart prioritising of energy demand by electrical cars based on requested transport need.
- Smart Storage: measurement and control system for solar energy storage at district level in batteries for the better utilisation of green energy and support of an isolated company.
- Local controller: a system which monitors the load on various electrical substations and predicts the load on the network, taking into account decentralised power generation and load as the result of charging electrical cars.
- Easystreet/Meulenspie: energy computer for more than 200 households whereby users are given choices through an interactive display in their actual energy use along with a dynamic energy price.

Address Hamsterpein 4
Zip code 9289 KC
Town/city Droegeham, the Netherlands
Website www.tenergy.nl

Contact Willem Bijlsma
Telephone +31(0)512 33 12 11 / +31(0)6 53 92 87 40
E-mail w.bijlsma@tenergy.nl

Tenergy Consult and Services

COMPANY

Tenergy Consult was formed in 1999. It is specialised in performing feasibility studies in the field of energy and designing energy systems and infrastructure for gas, electricity, heat, and CO₂. In addition, Tenergy manages these operations. Tenergy Services was added to the group in 2004. Overall, Tenergy serves approximately 600 clients in the Netherlands. On the basis of detailed knowledge of the processes in the energy market and of technology, Tenergy can demonstrate the feasibility of smart grids (supply and demand balancing) and design them. Since May 2010, Tenergy Services is also established in Canada for the Canadian and North American market.

SERVICES

Tenergy offers clients data presentation via an internet portal and automates the control of CHPs, lighting, and other controllable systems. This is done with market price positions taken on the OTC market (futures market), day-ahead market (APX), Intraday Power market, and balancing market. Tenergy offers a 24/7 service, which enables the client to achieve economically optimal operations at all times.

In addition, Tenergy advises the client on how the latter can optimally use his technical system on the basis of current market dynamics. Tenergy is a part of the metering message chain, through which it forwards the meter readings via the data centre

in Amsterdam to the metering company (metering code-qualified measurement data) on a near-time basis (five minutes). Tenergy has developed a method with which the trading risk in the Dutch energy market (TTF, OTC, APX, and balancing market) can be managed with the proper 'tools' and even converted into opportunities for the client.

The web portal (tooling), combined with the hardware (Tenergy box) in the field, ensures the market price-driven balancing of the supply and demand of electricity. This balancing constitutes the core of smart grids, resulting in Tenergy having operational proven technology. Tenergy can provide automation by means of small modifications on the basis of specific smart grid designs. This applies to Dutch as well as foreign clients.

NETWORKS

- Energie Bedrijf Overbuurtsche Polder BV (Bleiswijk) with its own gas grid and comprehensive Tenergy monitoring and largely control of set CHP-capacity.
- Nieuw-Prinseland (Dinteloord) article 2 gas grid/energy web with CHP and lighting control.

TNO

COMPANY

TNO is an independent innovation organisation. TNO connects people and knowledge to create innovations that sustainably boost the competitive strength of industry and the welfare of society. TNO's more than 4000 professionals work on practicable knowledge and solutions for the problems of global scarcity. TNO focuses its efforts on seven themes including Energy. Through innovations, TNO is working to ensure a sustainable, efficient and secure energy supply.

TNO has the largest smart grids research team in The Netherlands. One of its strength is the unique combination of technology expertise and experience in social innovations. TNO has a practical approach towards energy innovation combining ICT knowledge with knowledge of electricity markets and networks in numerous field pilots. Social innovations center around consumer behavior, multi-stakeholder business modeling and studies in legislation and governmental policy. This, together with TNO's expertise in consultancy on IT-processes such as billing and sensing, forms key expertise for the energy transition from a central and fossil fuels based to a decentralized and sustainable energy supply.

One of the key innovations of TNO is the PowerMatcher. With this innovation matching electricity supply and demand becomes more

Address Schoemakerstraat 97
Zip code 2628 VK
Town/city Delft
Website www.tno.nl

Contact Suzanne van Kooten
Telephone +31 (0) 88 86 67 359
E-mail Ginie.Roerdink@tno.nl



efficient. The PowerMatcher is currently being used in Smart Grids projects like PowerMatching City in Hoogkerk (Groningen), Couperus (The Hague) and EcoGrid (Denmark).

NETWORKS

- Actively involved in FP7 projects, and in EIT (KIC), NEN, CEN/CENELEC, ETSI & ISO.
- Member of the European Energy Research Alliance's joint program on Smart Grids.
- Cofounder of the Centrum voor Energievraagstukken (focus on legislation and governmental policy), together with the University of Amsterdam, Consumentenbond, Vereniging Eigen Huis

PROJECTS

- PowerMatching City: www.powermatchingcity.nl
- EcoGrid: <http://www.eu-ecogrid.net/>
- Couperus Smart Grid
- SolaRoad: www.solaroad.nl
- Sociale innovatie: Flexiquest (Increasing share of renewable energy by controlling the energy demand)

Address Hendrik Figeeweg 1P
Zip code 2031 BJ
Town/city Haarlem, The Netherlands
Website www.ucpartners.eu

Contact Theo Fens
Telephone +31 6 48 98 22 34
E-mail theo.fens@ucpartners.eu

UCPartners

COMPANY

Utility Consulting Partners (UCPartners) is an expert in consultancy, assisting clients and in dealing with fast changing energy markets. The company is active in research projects concerning the transition from a fossil based energy sector to a renewable based energy sector. From an operational perspective research projects primarily concern subjects that UCPartners sees fit to support clients. From a content perspective, research subjects encompass governance models concerning infrastructure asset management, smart grids, smart metering and home energy automation. UCPartners' research projects are carried out in close cooperation with TUD, faculty Technology Policy and Management, section Economics of Infrastructures.



NETWORKS

- Involved in NWO project MVJ-12-Eo2 Socio-technological aspects of smart grid platforms (running in 2013)
- Supervising PhD projects on:
 - smart meter acceptance
 - underground infrastructure
 - public private partnership in renewable energy projects
 - self-organised distribution energy resources
- Member of the Expert Group on Smart Metering

PROJECTS

- Energy balance NL trends (2008-2011, projection 80% green in 2050)
- Virtual Power plants, Super TSO, Renewables Intermittency, Storage systems, Smart Cities, Retail 2.0, Smart Metering info broker, Energy billing Prepaid
- Status and expected developments on Solar PV in NL (2012)

Unica

COMPANY

With seventeen branches, nine specialised business units, and more than 1,800 staff, Unica is the largest independent all-round system integrator and technical service provider in the Netherlands. Unica stands for a sustainable, comfortable, and safe work and living environment with the best communication applications.

PRODUCTS AND SERVICES

Unica has an extended product and services portfolio to provide (stacked) buildings with technical provisions, such as online universal building management systems, air-conditioning systems, building (terrain) protection, green ICT (cloud) solutions, and sustainable energy solutions. Unica offers technical sustainable concept solutions, such as Energy Management, Heating/Cooling Storage, local biomass (efficient wood-fired power plants – Be Green), solar panels (PV), and infrastructure solutions for electric transport. With the highest quality, Unica is able to analyse and manage these, and to have them seamlessly connected to smart grids. The specialised Unica business unit Ecopower guarantees this knowledge and experience, manages the sustainable energy solutions, and organises financing. With Greenstep BV (in partnership with Dura Vermeer) Unica is also a specialist in building renovation with sustainable energy solutions and energy performance contracts.

Address De Wel 15
Zip code 3871 MT
Town/city Hoevelaken
Website www.unica.nl

Contact Jan-Maarten Elias (Directeur Unica Ecopower)
Telephone +31(0)33 247 80 81
E-mail jelias@unica.nl

NETWORKS

- Dutch Green Building Council (DGBC);
- Uneto VNI
- ICT~Office
- FedEC, Federation of Energy Consultants
- The Green Company:
www.degrenzaak.com/nl/partners
- MVO Netherlands: www.mvoNetherlands.nl/partners/overzicht?l=u

PROJECTS

- Smart Energy Collective:
www.smartenergycollective.nl
- More than 200 WKO projects realised
- Financing and exploitation of more than twenty sustainable generation installations
- More than ten (wood-fired) power stations (www.begreenenergy.nl)
- Installation of charging stations for electric transport
- Several partnerships with Dura Vermeer (including GreenStep and UDV Energy)
- Installation of many large PV projects, including financing

Address Kabelweg 51
Zip code 1014 BA
Town/city Amsterdam
Website www.upcbusiness.nl/grootzakelijk

Contact Arnout Leefers
Telephone +31(0)6 27 06 80 77
E-mail aaleefers@upcbusiness.nl

UPC Business

COMPANY

UPC Business provides internet, television, telephone, and network solutions to the corporate market. It owns an intricate network of more than 11,000 kilometres of optic fibre, and uses that to provide a broad portfolio of services. By combining these, UPC Business is able to create and manage the best solution for every client. UPC Business is a subsidiary of UPC Netherlands.



PRODUCTS

UPC Business provides services to both small businesses (Fibre power) and organisations with several branches (smart VoIP solutions) - from collective television for hotels and housing corporations to wholesale services for resellers. Since 2003, UPC Business has also been a leader in Voice over IP (VoIP) and delivers IP TV to many clients (including the health care sector). UPC Business also delivers high-quality data services to companies in the energy sector for office automation and for the management of the energy network of electricity suppliers.

Through the Coax network, UPC is present in more than 2,8 million Dutch households. For this reason the Coax network is also extremely suitable for traditional as well as modern interactive media services. Smart grid solutions are high on the agenda. The launch of the next generation set-top box, the 'Horizon media box', provides a media

gateway which integrates apps, internet, and social media with television. This, combined with the second screen on which the viewer receives television content, makes it possible to reach clients via various social media channels. By connecting this Horizon Gateway to the smart meter it becomes possible to exchange consumption data interactively and cost efficiently. In this way, energy companies come to know more about the client's needs, and they can better respond to these.

Valstar Simonis B.V.

COMPANY

Valstar Simonis is an independent Dutch engineering firm in the area of sustainability, energy supply, comfort and safety in buildings. Over eighty staff members work from five branches in Rijswijk, Eindhoven, Apeldoorn, Amsterdam and Groningen. Valstar Simonis represents reduced energy consumption, effective and efficient use of water and materials, comfort, flexibility and installation design tailored to the use phase.

SERVICES

Valstar Simonis was originally an installation consultancy with a strong focus on sustainability, even when the concept was not yet called like that. The firm stands out because of its broad view, looking across borders. The engineers of Valstar Simonis do, for example, not only pay attention to the building, but also to the surrounding area and objects that demand or actually supply energy. That is why the company develops energy concepts as an integral part of a smart grid. They also support their clients with a broad view on both Total Cost of Ownership and investment costs. This gives clients a real picture of the total costs, including operation and maintenance.



NETWORKS

- Dutch Green Building Council
- Duurzaam Gebouwd
- Nationaal BIM-Platform
- Stichting kiEMT

PROJECTS

- Research into the use of a smart grid for Moorlodges in Erica.
- Vision for Heating Network in Hengelo- Enschede; together with New Urban Green, Valstar Simonis developed a vision for the expansion of and connection between heating networks. Energy supply for the new section of Dierenpark Emmen; Valstar Simonis gave a first indication of the energy needs (heating, cooling and electricity).
- See also: http://www.valstar-simonis.nl/diensten/energie_en_duurzaam.

Address P.O. Box 1935
Zip code 2280 DX
Town/city Rijswijk, the Netherlands
Website www.valstar-simonis.nl

Contact M. Langeveld
Telephone +31(0)70 307 22 81
E-mail m.langeveld@valstar-simonis.nl

Address New Energy Docks building,
Distelweg 113
Zip code 1031 HD
Town/city Amsterdam, The Netherlands
Website www.wattcher.nl

Contact Gernout Erens
Telephone +31 (0) 20 38 68 702
E-mail info@wattcher.nl

Wattcher BV

COMPANY

Wattcher is a product organization for development and marketing of energy monitoring displays, in-home energy systems and affiliated products. The mission of Wattcher is to increase the experience of energy. Experience that leads to involvement. Involvement that leads to energy savings and financial benefits for the users. Wattcher's strategy is to create products that are distinguished by design, durability and commitment towards our end users.



In developments Wattcher closely cooperates with utility companies, technology suppliers and market participants. For further information please contact info@wattcher.nl.

PRODUCTS

- Wattcher A1: design energy monitor to simply visualize the current energy consumption, daily consumption, average daily consumption and the realized savings in euros and in percentage. The Wattcher A1 in white, purple and yellow consists of a design energy display, a sending unit and an optical sensor, and works on analog meters, pulse meters and smart meters (not reading P1 but pulse LED).
- Wattcher A1 smart meter: Wattcher A1 with extra functions and accessible to the smart meter.

NETWORKS

- Technology partner in TKI Switch2SmartGrids

PROJECTS

- Cost neutral housing project in the Netherlands

Westland Infra

Address Nieuweweg 1 PO Box 1
Zip code 2685 AP 2685 ZG
Town/city Poeldijk Poeldijk
Website www.westlandinfra.nl

Contact Frank Binnekamp
Telephone +31(0)174 236 585
E-mail frank.binnekamp@westlandinfra.nl

BUSINESS

Westland Infra manages the technically high-quality energy networks which constitute the 'roots' of the Westland. It is for good reason that the Westland region is widely known outside the Netherlands as the garden of Europe. As an infrastructure company, as well as a company that provides measuring equipment, Westland Infra has a widespread network throughout the Netherlands, including a range of products and services geared to provide excellent support for companies. These include installation and management of infrastructures, usage measurements, monitoring and know-how for efficient energy consumption.

PRODUCTS

Westland Infra develops and delivers total solutions for managing smart networks. These bring into balance demand and supply of electricity and/or gas at a local level. The client's requirement predominates in this. Recently, Westland Infra converted a private network in a horticultural cluster into a smart grid under the name of E-web. The clients who are connected provide for balance on the network through mutual energy deals. Westland Infra developed the E-web ICT system for maintaining energy deals and for exchanges with nationwide networks. The system also monitors the physical load on the network and prevents overloading.

It has been designed as fail save. This prevents loss of connectivity caused by possible disruptions. The results of E-web are very promising. As a result of the maximum employment of cogeneration and fewer transmission losses, CO₂ emission is reducing. The local optimisation of demand and supply ensures less energy purchase from the national networks. Consequently, the payback time is very short. E-web is perfect for optimum utilisation of (sustainable) energy sources which involve variable production. It is also the best solution for hot water systems, which demand that the heat source operate for as long a period as possible.

NETWORKS

- Newconomy Green: www.newconomygreen.nl

PROJECTS

- Congestion management in the Westland region (December 2008 - May 2010)
- E-web: commercial smart grid solution for private network

This publication belongs to:

NL Agency
NL Energy and Climate
Croeselaan 15
PO Box 8242 | 3503 RE Utrecht
T +31 (0)88 602 92 00
IPIN@agentschapnl.nl
www.agentschapnl.nl/intelligentenetten

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The division NL Energy and Climate change strengthens society by working on energy and climate solutions for the future.