January 26th, 2017

Press Kit

Kick Off Event

Enedis Press Department

InterFlex

Interactions between automated energy systems and Flexibilities brought by energy market players

Five European distribution system operators (DSOs) join their forces to foster the energy transition

Selected by the European Commission among 28 other candidates, in the framework of the biggest EU Research and Innovation programme, Horizon 2020, the smart grid project **InterFlex** has officially been launched on January 1st, 2017.

During three years, 20 project partners will explore new ways to use various forms of flexibilities in the aim of optimizing the electric power system on a local scale.

InterFlex investigates the INTERactions between FLEXibilities provided by energy market players and the distribution grid, with a particularly focus on energy storage, smart charging of electric vehicles, demand response, islanding, grid automation and the integration of different energy carriers (gas, heat, electricity).

Furthermore, aspects related to the interoperability of systems, replicability of solutions and the identification of relevant business models constitute major objectives.

The project associates electricity retailers, power component manufacturers and smart grid experts with the 5 European distribution companies ČEZ Distribuce (Czech Republic), Enedis (France), E.ON (Sweden), Enexis (The Netherlands) and Avacon (Germany).

The kick-off ceremony of this ambitious project took place at the Allianz Riviera stadium in Nice (France) on January 26th, 2017 and was chaired by Philippe Monloubou, CEO of Enedis, in the presence of Philippe Pradal, Mayor of Nice, as well as Anna Colucci, Head of the Retail Market Unit; Directorate General for Energy at the European Commission.

InterFlex in figures:

- 20 project partners from 6 European countries working together
- 6 real-scale demonstrators in 5 different European countries
- 3-year project duration
- 22.8 M€ total budget

The context

An electric system which integrates a local vision

The European electric power systems have undergone dramatic changes within the last two decades. Distributed renewable energy sources such as wind or solar power have reached significant shares while new uses of electricity have emerged, and there is still much to come with the ongoing e-mobility development. Today, the vast majority of the renewable energy sources is connected to the distribution grid. On that same grid, millions of electric vehicle charging stations all over Europe are likely to be deployed within the upcoming years. The distribution grid will need to adapt to rapidly changing energy flows. In the aim of minimizing the corresponding grid investments the distributed system operators will play a major role, within a more local approach, exploring the various means of managing temporarily the exchanged energy with the grid: a customer reducing his consumption at peak time, a storage system charging when renewable energy is available, etc.

The InterFlex project

InterFlex is a response to the Horizon 2020 Call for proposals LCE-02-2016 of the European Commission ("Demonstration of smart grid, storage and system integration technologies with increasing share of renewables: distribution system"). The project receives funding from the European

Union's Horizon 2020 research and innovation programme under Grant Agreement No 731289 — InterFlex — H2020-LCE-2016-2017.

InterFlex explores pathways to adapt and modernize the electric distribution system in line with the objectives of the 2020 and 2030 climate-energy packages of the European Commission. Therein the Member States have committed to lower significantly the greenhouse gas emissions (20% by 2020 and 40% by 2030, with respect to 1990), and to increase the share of renewables (20% by 2020 and ≥27% by 2030, 40-60% by 2050).

InterFlex is built upon a twofold approach. Six demonstration projects are conducted in five EU Member States (Czech Republic, France, Germany, The Netherlands and Sweden) in order to provide deep insights into the market and development potential of the orientations that were given by the call for proposals, i.e., demand-response, smart grid, storage and energy system integration.

In the long run, InterFlex prepares the deployment of the validated solutions where:

- business model options have been identified
- policy recommendations are built thanks to the BRIDGE process initiated by the EC-DGENER and now continued operationally by four working groups (business modelling, data management, consumer engagement and regulations) which will be nourished by the demonstration results
- Replication rules will be proposed based on the studied use cases

InterFlex aims at improving the global performance of electricity networks at a local or regional scale, while dealing with new challenges, such as the steadily increasing complexity of power flows and growing interactions between the market players. The InterFlex project translates the aim of its consortium members to explore the local optimization potential that can be addressed through grid automation and the use of flexibilities for the electricity system. InterFlex designs the way towards an energy system approach dealing with multiple interactions between power generation (renewables), multi-energy consumers (electricity, heat, gas) in the context of newly appearing customer needs (e-mobility) and behaviours. The DSO, as an enabler, may emit market signals to power producers, consumers, prosumers, their aggregators, or even to third parties such as municipalities which will in return stimulate the market players to offer generation and/or consumption flexibilities.

The project Consortium

20 industrial partners (utilities, manufacturers and research centers) from 6 different European countries are engaged within this 23 M€ project in order to deploy smart grid technologies at an industrial scale, in the context of high renewable energy penetration.

InterFlex project Partners

InterFlex combines among its consortium members the key competences along the value chain of the distribution grid and electricity retail markets:

- 5 major European electric power DSOs (Avacon, CEZ Distribuce, Enexis, E.ON, Enedis) and one gas DSO (GrDF)
- 2 large-scale European retailers (EDF, ENGIE),
- 2 major IT solution providers (GE and Siemens)
- 4 suppliers of smart inverters and solutions for smart grids (Schneider Electric, Siemens, Fronius, Socomec)
- 3 research centres (AIT, TNO, RWTH) with key competences in smart grids and computer science
- A knowledge and innovation centre (ElaadNL) in the field of EV charging infrastructures
- A consulting company involved in the smart energy system development (Accenture)
- 2 SMEs (Trialog, Socomec) with expertise for innovative technologies in embedded and industrial systems

The technical focus of the project

With Enedis as the global coordinator and ČEZ Distribuce as the technical director, InterFlex relies on a set of innovative use cases. Six industry-scale demonstrators are being set up in the participating European countries:

- The French demonstrator of Enedis, located in Nice and its surroundings, investigates flexibilities to support the grid, storage systems and islanding operation.
- The Czech demonstrator led by ČEZ Distribuce uses grid automation and energy storage to integrate decentralized renewable energy within the distribution grid and smart functions of charging stations for electric vehicles as a source of flexibility, in different areas of the country.
- The German demonstrator of Avacon, located in a rural area between Helmstedt and Salzgitter (central Germany) manages a centralized platform of flexibilities and distributed energy resources to use energy where it is generated in order to relieve the distribution grid.
- A 1st Swedish demonstrator of E.ON, located in Malmö investigates the energy carrier integration using heat inertia of buildings as a flexibility measure in order to attain a more optimized and environmental friendly production in a distributed energy system.

- A 2nd Swedish demonstrator of E.ON, located in the Skåne region (Southern Sweden), is exploring means to island a portion of the distribution grid, supported by the client through a “peer to peer” approach, while assessing the benefit of advanced control of Local Energy Systems for the DSO.
- The demonstrator in Eindhoven with Enexis proposes a multi-service approach to unleash all available local flexibilities such as stationary storage and electric vehicle batteries, by using

interactions between the distribution system operators, balance responsible parties and the charge point operators for electric vehicles.

Through the different demonstration projects, InterFlex will assess how the integration of the new solutions can lead to a local energy optimisation. Technically speaking, the success of these demonstrations requires that some of the new solutions, which are today at TRLs 5-7, are further developed reaching TRLs 7-9 to be deployed in real-life conditions.

This allows new business models and contractual relationships to be evaluated between the DSOs and the market players.

The following table shows the match between the technical focuses and flexibility levers explored within the 6 demonstrators:

The InterFlex demonstrators have been structured into different focus areas that represent the technical business innovation axes of the project.

Dissemination and replication

The InterFlex project is today in its starting phase. Beyond the general objective to bring the technical performance of the tested solutions to the highest level, the dissemination of the project's findings as well as the preparation of their industrial replication constitute major goals of the project.

RWTH Aachen University is in charge of the General Work Package 3 which focuses on the replication of the project's achievements. Together with Austrian Institute of Technology (AIT) and Trialog, the interoperability of the demos will be ensured and the interchangeability of flexibility devices will be demonstrated, which will lead to a framework that will allow the interoperability of the future European flexibility market. This work package will collect the experiences from the different field tests with the goal to identify common points and typical interactions among stakeholders. This internal activity of knowledge collection will then be reported at European Level supporting the European Commission in the cross-projects efforts aimed at defining common solutions for all the network operators.

The project partners aim at delivering the new knowledge gained in a packaged way suited to meet the multi stakeholder expectations. An Advisory Board is built to challenge the project findings each year.

The project findings shall conduct the consortium members to replicate the demonstrated solutions and the developed business models. The results shall be an incentive to other services providers or investors to test and replicate the developed business models in order to further develop advanced monitoring, local energy control and flexibility services at EU level.

RWTH Aachen University

RWTH Aachen University is among the leading European scientific and applied research institutions, comprising 260 institutes in nine faculties.

The E.ON Energy Research Centre, a public private partnership between E.ON SE and RWTH Aachen University funded in 2006, fosters innovative energy research with a strong link with industry in an interdisciplinary approach, with five institutes from four different faculties. Within this research centre, the Institute for Automation of Complex Power Systems (ACS) focuses on research for the automation, modernisation and restructuring of electrical energy distribution systems. This research area deals with solutions for monitoring, maintaining and developing complex power systems.

InterFlex' ambition and expected impacts

Beyond the technical and business innovation, the project expects to generate environmental, socio-economic and policy impacts:

Environmental impacts: Through the optimisation of the local energy system, the project generates benefits in terms of

- Increased energy efficiency (load shifts to off peak hours; optimized self-consumption in case of prosumers, increased awareness leading to active DSM and reduced electricity consumption),
- power generation optimization (peak shaving, avoiding electricity generation from carbonized peak load generation units),
- increased share of renewables (optimized integration of intermittent renewable energy sources),

resulting in the overall reduction of GHG emissions.

Socio-economic impacts: The project stimulates the development of new services for end-customers allowing for instance the development of demand response service packages for small and large consumers as well as prosumers. The provision of community storage solutions or the optimal use of multiple source flexibilities will help to decrease the electricity bill without any noticeable impact on the supply quality.

Policy framework: The Use cases of the project will help to

- formulate recommendations for micro grid operation (control schemes and observability),
- elaborate an appropriate regulatory framework for self- consumption and storage solutions (community or individual residential storage)
- provide guidelines on the participation of distributed resources in DSO operations (modifications of grid codes).

The active contribution of InterFlex to the BRIDGE process of the European Commission feeds in complementary regulatory recommendations.

Specificities of the six Demonstrators

The French demonstrator

The French demonstrator Demo1 is located in and around the city of Nice, a metropolis that is already heavily involved in the "smart city" innovation. Nice is ranked 4th "Smart City" on a global scale by the international firm Juniper Research, specializing in new technologies, behind Barcelona, London, New York and ahead of Singapore.

The demonstrator will be a continuation of the GRID4EU / NICE GRID experiment, a European project in the field of smart grids, renewable energies and energy transition which terminated in 2016. Demo1 will cover a wider geographical area, initially encompassing the western districts of Nice, the business parks of the Plaine du Var, the ski resort of Isola 2000 and the Mediterranean islands of Lérins.

Demo1 will follow an industrialization approach and will test different innovative approaches with respect to the management of the electrical system while taking into account the specific local environment (production of renewable energies, electric vehicle charging stations, changes in consumer behaviour, new uses etc.). Involving residential, commercial and industrial customers, Demo1 will offer several types of electrical flexibilities: "hybrid" flexibilities that will be interacting with both the electric and the natural gas network (cogeneration, hybrid boilers), modulation of electric vehicle charging, battery storage... Beyond technical developments, Demo1 also aims to set up business models of electrical flexibility.

Geographical area of DEMO1

Specification sheet

DEMO1

ENEDIS
L'ELECTRICITE EN RESEAU

Location	Several areas in "Alpes Martimes" Department, including ▪ City of Carros ▪ Western disctrict of Nice ▪ Several towns of the "Plaine du Var area" ▪ Isola 200 ski resort ▪ Nice international airport ▪ Lerins islands
Demographic density	Rural / Suburban / urban
Project scope	3 HV/MV primary substations
Climate	Warm and stormy (Mediterranean)
Specific conditions	▪ High share of distributed photovoltaic generation ▪ "Electric peninsula": electricity import-dependent region. Only 10% of its consumption is locally generated.
Project partners	Enedis, GE, Engie, GRDF, EDF, Socomec
Use Cases tested	▪ Automatic islanding ▪ Mutliservice approach for storage systems ▪ A local flexibility mechansim operated by the DSO
BUDGET	5,1 M€

Enedis

Enedis, is a 100% owned subsidiary of EDF (Electricité de France) since 1st January 2008. Enedis assumes electricity distribution activities of 95% of French communes. It's currently conducting an active investment policy to meet growing electric consumption (+9.6% investment each year)

Key Figures (2014):

Turnover	12,2 bn €	Number of primary substations	2,247
EBITDA	3,531 bn €	Number of secondary substations	769,294
Total staff	38,859	Length of the grid	1,332,942 km

The French distributed renewable power generation capacity rises constantly every year. The wind power generation capacity was about 9,8 GW in June 2015, whereof 89% connected to the medium- and low-voltage distribution grid, with an additional 4,9 GW of pending connections to the distribution grid. At the same time, the photovoltaic generation capacity was about 5,7 GW, resulting from 330,000 generation sites, while the pending connections were about 1,9 GW. 94% of this generation capacity is connected to the distribution grid. The initial government target of 5,4 GW for solar PV in 2020 was raised and set to 8 GW.

Enedis is conducting 18 smart grid projects on the French territory, covering different environments (urban, suburban, rural), technical challenges (wind and solar intermittency, e-mobility, cyber-security, energy conservation, big data) and innovations (smart meters, storage solutions, telecommunications...).

Enedis is chairing the French association "*Think Smart Grid*" promoting smart grid development.

The Czech demonstrator

The Czech demonstration project Demo2 will be located in several areas in Czech Republic where ČEZ Distribuce operates distribution networks. The demonstration is not concentrated to one region in order to prove replicability and interoperability of designed solutions.

The demonstration project will be partially built on the experience gained in the GRID4EU/ Smart Region Vrchlabí (a European project in the field of smart grids, renewable energies and energy transition which was finished in January 2016).

Demo2 is focused on the implementation of solutions which are not so far usual in distribution systems but which have a strong potential for future roll out. Tested solutions within Demo2 cover the most urgent challenges of DSOs (increasing DER hosting capacity, EV charging stations implementation and energy storage). Beyond the technical developments, Demo2 also aims to propose grid codes and standards updates in order to secure future smoother integration of selected smart grid solutions.

Specification sheet

DEMO2

DISTRIBUCE

Location	Different areas in Czech Republic ▪ 3 villages, each with different topology of LV distribution grid, (Central Bohemia region and East Bohemia region) where smart PV inverters or energy storage are tested ▪ Areas in Central Bohemia region, North Moravia region, East Bohemia region where volt-var control of different DER connected to the MV distribution network is tested ▪ Hradec Kralove (East Bohemia region) and Decin (North Bohemia region) where smart EV charging stations are tested
Demographic density	Rural / Suburban / urban
Project scope	▪ 3 different LV distribution networks ▪ 3 different DER connected to the MV distribution networks (Biogas, Wind, PV)
Climate	Cold (continental)
Specific conditions	▪ High integration of PV in LV distribution network ▪ Existing communication interface between DSO an DER connected to the MV distribution network
Project partners	ČEZ Distribuce, Siemens, ČEZ Solarní, Fronius, AIT, Schneider
Use Cases tested	▪ Increasing PV hosting capacity in the LV grid with smart PV inverters ▪ Increasing DER hosting capacity in the MV grid with the volt-var control ▪ Smart EV charging ▪ Smart energy storage
Budget	1,0M€

CEZ Distribuce

ČEZ Distribuce, a. s. is a member of CEZ Group, a power utility that operates in a number of countries of Central and Southeast Europe. The main mission of company ČEZ Distribuce is to distribute electricity to private individuals and legal entities and to continually improve the quality and reliability of supplies to all customers. The company administers the assets comprising the distribution grid, the

operation of which it controls through a technical dispatch (grid control centre). ČEZ Distribuce is the major DSO in Czech Republic with more than 3.6 mio of supply points. The main capital expenditures of the company focus on distribution system development, most importantly ensuring sufficient distribution system capacity and taking care of connection requests by customers and generating facilities. Main capital construction activities focus on renovating distribution system infrastructure with the aim of improving the quality of supplies and the reliability and safety of distribution system operation. The MV and LV development projects include, in particular, upgrades and renovations of medium and low-voltage underground cables and overhead power lines and construction of new MV/LV distribution transformer stations. Capital expenditures on HV projects consist mostly of HV/MV substations, overhead HV lines (rebuilds and new construction), and projects undertaken to meet customer demand. The company has in 1470 employees out of whom for the InterFlex activities contribute experts mainly from Strategy Section and Grid Control.

ČEZ Distribuce is involved in the EDSO for Smart Grids and chairs its Project Committee. Via the EDSO association ČEZ Distribuce has been participating in GRID+ and GRID+Storage projects. ČEZ Distribuce led the demonstration project 5 (Smart Region) of the GRID4EU project.

CEZ Distribuce areas in Czech Republic (in orange colour)

Key Figures (2015):

Turnover	1,93 bn €	Number of primary substations	239
EBITDA	0,56 bn €	Number of secondary substations	45412
Total staff	1470	Length of the grid	163211 km

The German Demonstrator

The power system of the future will involve a very large number of decentralized active participants such as RES generators or flexibility providers of different scales and types. Complexity thus grows: the communication between these participants and the DSO to coordinate the services they provide for the system, the dynamic requirements which they have to fulfil, the requirements for themselves to align these with grid operation and grid restrictions. Guaranteeing the system's resilience and security requires developing tools which enable DSOs to efficiently, effectively and reliably control hundreds of thousands of distributed active units while adhering to high standards of data protection and IT security.

AVACON is developing a new technology – the *"Smart Grid Hub"* –which makes the communication and coordination tasks feasible, but also makes possible to optimize interactions between the various involved players. The Smart Grid Hub is a technology that is supposed to work with any smart meter infrastructure, provided that it complies with EU-recommendations. It therefore accelerates the automation of network operations while being adaptable to any flexibility situation.

The prototype is developed under AVACON specifications to be linked with the grid control system. Three use cases are studied during a 24 months demonstration involving more than 200 real customers in the low- and medium voltage regime:

- Feed-in management (Controlling small RES-units)
- Ancillary services provided by generation, consumption and storage devices
- Distributed sources of flexibility within the distribution grid

Specification sheet

DEMO3

avacon

Location	Area in Lower Saxony and Saxony-Anhalt located between the cities Luneburg, Salzgitter and Helmstedt
Demographic density	Rural
Project scope	▪ Develop the *Smart Grid Hub* (SGH) - an IT tool designed to make use of and enhance the capabilities of any existing smart metering, remote control and communication system within state-of the art security standards. ▪ Test and enhance the abilities of the system of SGH, grid control system and smart meter infrastructure by showing how it is applied to the use cases.
Climate	cold (continental)
Specific conditions	▪ Centralized control of interregional ancillary services provided by generation, consumption and storage devices. ▪ Optimizing growing needs for flexibilities within all electrical services covering low and medium voltage levels. ▪ Ensuring reliable and efficient power supply while putting the focus to clear processes communication to the customers especially in the scope of using intelligent metering systems. ▪ Effective flexibility management of RES units such as private photo voltaic, onshore wind farms and storage capacities in rural areas.

Project partners	▪ AVACON AG and its Affiliates: ▪ E.ON Business Services GmbH (EBS) ▪ e.kundenservice Netz GmbH (EKN)
Use Cases tested	Three use cases are studied during a 24 months demonstration involving more than 200 real customers: ▪ Feed-in management ▪ Ancillary services provision ▪ Demand response
Budget	3,7 M€

Avacon

AVACON's network area for electricity covers over 55,000 square kilometres and stretches from the North Sea coast to southern Hesse. With approximately 66,000 km of high, medium and low voltage cables and over 20,000 km of natural gas pipelines, AVACON provides a secure supply of energy to our customers. The energy needs of around 16 million people are met by their networks.

As a utility company with a rural emphasis, AVACON is at the heart of the energy revolution and bears a particular responsibility for connecting decentralized generating plants in a timely fashion and expanding the distribution networks to meet demand.

Today, AVACON is already receiving and transporting over 14 billion kilowatt hours of green energy from wind, sun, biogas and hydropower. With a share of green electricity of over 130%, AVACON is exceeding the German Federal average by four times. Successfully integrating these volumes into the system would not be possible without the ideas and the commitment of the employees. 1700 employees and 200 apprentices are working in 14 locations to ensure a reliable supply of electricity and gas. They are also developing solutions to help turn the challenges of the energy revolution into technical innovations.

AVACON is expanding what are currently one-way energy streets between power plants and households and turning them into high-performing, intelligent networks that distribute renewable energies in an efficient manner. To this end, in the next 15 years AVACON plans to invest 2.8 billion euros.

The AVACON Group owns the regional and local energy companies, SVO Holding Celle, LandE and WEVG, the high pressure gas network operator, AVACON Hochdrucknetz, the water company, Purena, and AVACON Natur.

AVACON is part of the E.ON Group, but at the same time has a strong regional focus. Over 80 municipal and district councils hold 38.5 percent of the shares in AVACON.

The 1st Swedish Demonstrator

The first Swedish demonstrator optimizes the small scale energy systems, e.g. local thermal grids for district heating by applying demand response to specific conditions. In one application we want to utilize a buildings thermal capacity and use the building as an energy carrier in order to shave off peak load production. Another application is to optimize power2heat production with heat pumps and optimize on the power production variations.

One of the most important steps in the demonstration is to commercialise the optimization and find new business models for shared responsibilities and benefits collection of the optimization.

By applying the technique we are able to lower emissions and reduce overall cost since we can even out peak hours. The essence is to adapt to demand flexibility in the short term (1-6 hours) by utilizing either thermal capacity already in the system or other energy carriers from other energy systems.

Specification sheet

DEMO4A

Location	Several areas in Sweden where E.ON owns thermal grids ▪ Malmö ▪ Sub-urban Stockholm ▪ Norrköping ▪ Etc.
Demographic density	Urban
Project scope	Real-estate and larger buildings, no private households
Climate	Hemi boreal climate with warm summers
Specific conditions	Thermal grid owned by E.ON
Project partners	▪ E.ON Sverige ▪ RWTH Aachen University
Use Cases tested	▪ Operation of distributed DSR using the building´s envelope thermal inertia and the district heating/cooling network´s thermal inertia as a source of flexibility for grid management purposes. ▪ Optimal use of a centralized Power to Heat unit (large heat pump) providing the district heating grid with heat and electricity flexibility for grid management purposes
Budget	4,0 M€

The 2nd Swedish Demonstrator

The demonstration aims at testing technical and commercial interactions with the E.ON's micro-grid site in Simris in Sweden. E.ON Elnät is deploying a first of a kind micro-grid project that can run with 100% renewable generation to be deployed and commissioned in 2017. It consists of wind power as main generation, supported by PV's and a battery system as well as a back-up generator used for some test periods in case there is not enough available power from renewables, when the system is run in an islanded mode. The micro-grid has about 150 B2C customers, today existing customers of E.ON Elnät. The demonstration is highly customer centric and seeks to leverage their increased participation within the context of the micro-grid to drive new insight, learning and solution development outcomes.

The demonstration validates the commercial implications surrounding the roles, responsibilities and relationships between the following electricity system players (drawing on ENTSO-E generic role model descriptions). Grid Access Provider, Grid Operator and Resource Provider are assumed in this pilot project to have a bundled role held by the micro-grid operator. (E.ON Elnät as micro-grid operator).

The use cases that will be executed as part of this demo are the three following:

1.-To provide passive customers (which only consume electricity and have no remote influence in their consumption) the possibility of becoming active customers by allowing them to install decentralized balancing technologies that will allow the DSO to perform Demand Side Response. These DSR technologies will be based on Power to Heat (e.g. hot tap water boilers and heat pumps) and Power to Power units (e.g. Battery Systems) to achieve an improved performance (e.g. increase renewable self-consumption and enhance power quality) of a micro grid when in islanded mode.

2.-To create a Local Energy Market for the customers in Simris. This platform will enable increased direct consumer participation in the balancing of the micro-grid (by delivering a 'peer to peer' market platform) in order to, incentivize deployment of distributed DSR technologies, increase LV network visibility and reduce system operation costs for balancing purposes.

3.-To develop advanced algorithms that will allow a high degree of automation, steer ability and response of the micro-grid. The goal of this use case is twofold. On the one hand, it aims at minimizing the need for behavioral change of the customers by including smart models and algorithms that will allow the system to maintain the customer´s comfort and in parallel enable their technologies to provide balancing support to the grid. On the other hand, advanced controls will be developed, which will increase the ability to observe and steer the operations of a micro-grid in response to distribution network constraints.

The micro-grid project will allow the distribution operator to explore and understand the technical challenges of the future energy world by operating a system with a high penetration of renewables, low rotating mass inertia and distributed balancing technologies.

Specification sheet

DEMO4B

Location	Simris (Skåne region, Southern Sweden)
Demographic density	Rural
Project scope	1 MV/MV and 6 MV/LV substations, 1 steerable Wind Turbine, 1 steerable PV farm, several distributed balancing technologies.
Climate	Hemi boreal climate with warm summers
Specific conditions	Isolated energy system
Project partners	RWTH Aachen
Use Cases tested	▪ Deployment of distributed balancing technologies at customer´s houses (Use case #3) ▪ Creation of a local energy market platform (Use case #4) ▪ Performance enhancement of the micro-grid operation by using advanced controls (Use case #5).
Budget	3,5M€

E.ON Sverige

E.ON in Sweden is engaged in Energy Networks, Customer Solutions and renewable power production in the Nordic region.. We generate heat and produce biomethane for use as a vehicle fuel. We operate regulated power and gas distribution systems serving a total of 1 million customers in Sweden. We sell power, heat, and gas to 850,000 customers, mainly in Sweden but also in Denmark. Across all these businesses, we focus on providing low-carbon energy solutions and on helping our customers and communities to become more sustainable and more energy efficient. Our flagship projects for sustainable urban development are the Western Harbor and Hyllie districts in Malmö, Sweden. We're committed to supplying 100 percent renewable or recycled energy to Hyllie by 2020.

E.ON Sverige AB as DSO and heat network operator optimizing the use of flexibility arising from local heat production (incl. power2heat) alternatives and consumption

E.ON Sverige AB as DSO providing merit orders for flexibility to rural micro-grid.

The Dutch Demonstrator

Dutch Silicon Valley

Eindhoven is a significant technical development region for Netherlands and Europe due to Philips and the Technical University. The Technical University produces many IT start-ups and a company in Eindhoven worked extensively on the next step in chip evolution with the development of photons semiconductors. With Business Park Strijp-S, where many start-ups work, and the High Tech Campus Eindhoven the Netherlands seems to have its own Silicon Valley. In 2011, Eindhoven is named the smartest region in the world by the international policy organization International Community Forum. The ICF praised Eindhoven to stay in competition with high-quality technology products in relation to producers in cheaper countries. Also Brainport, a collaboration of various tech-producers, government agencies and educational institutions, is seen as a driving factor of the region.

The Dutch demonstrator is located in a former industrial area from Philips called Strijp-S.

With the departure of Philips, the plan picked up at Strijp-S to develop into a breeding ground for the creative sector. Under the flag Old Buildings, New Ideas is activity attracted primarily on design and technology. Open studios in the old factory buildings arise where creative entrepreneurs find their workplace.

The scope of the project is to enable ancillary services, congestion management, and voltage support for PV integration using, grid connected storage systems which improve grid observability of prosumers, while promoting batteries in a multi-service approach.

We try to do this by enabling the optimal activation of all available local flexibilities, using interactions between the DSO and the Charge Point Operator, in the role of aggregator using local installed EVSE's for congestion management and voltage control.

Our goal is to validate technically, economically and contractually the usability of an integrated flex market based on a combination of static battery storage and EV

Specification sheet

DEMO5

ENEXIS GROEP

Location	Eindhoven
Demographic density	Urban
Project scope	Strijp_S
Climate	temperate climate
Specific conditions	Mix of habitation and creative companies
Project partners	▪ Enexis ▪ TNO ▪ ELAAD
Use Cases tested	▪ Multiservice approach for battery-based storage ▪ Flexible use of local resource for charging electrical vehicles ▪ Creation of an integrated flex market for local storage and electrical vehicles
Budget	2,7M€

Enexis

Enexis channels energy in the right direction. Enexis provides for the transmission of electricity to 2.7 million customers and of gas to over 2 million customers in the Dutch provinces Groningen, Drenthe, Overijssel, Noord-Brabant, Limburg and, through Endinet, in the Eindhoven region.

Vision & Mission

Everybody wants to be able to make use of energy always and everywhere. That is why we transport energy in a safe, reliable, affordable and customer-oriented manner. The Netherlands is on its way towards a sustainable energy supply. This requires efficient consumption of energy from more and more sustainable sources. Enexis works together with other organizations on a sustainable and responsible energy supply, for today and tomorrow.

TNO

TNO is the Netherlands Organisation for Applied Scientific Research, is the largest independent not-for profit research organization in the Netherlands. TNO has about 3000 employees working in various research areas; energy is one of the five innovation themes.

Elaad

ElaadNL is the knowledge and innovation centre in the field of (smart) charging infrastructure and is owned by the Dutch DSOs. ElaadNL coordinates the connections of public charging stations to the electricity grid and has been working from the beginning to adapt the grid connection demands to make these more fitting to charge points. The existing charging stations are managed by EVnetNL to provide an innovative charge network, a living lab for ElaadNL and the Netherlands. ElaadNL developed e-clearing.net and the de-facto standard for connecting different charge stations, the Open Charge Point Protocol (OCPP).

The emergence of electric mobility and sustainable charging is a significant development for the electricity grid. Through their mutual involvement via ElaadNL, the DSOs acquire an overview of the measures to be taken to ensure that the network remains reliable and affordable, whilst enabling the development of E-mobility. Innovative solutions are explored that will generate great benefits for society.

Smart Charging market standard

Based on the results of the living lab, ElaadNL is coordinating and developing, in co-creation with partners, a comprehensive international market standard for Smart Charging. This (set of) standard(s) is targeted to be ready for large scale roll-out in 2020, together with massive market adoption. Before ElaadNL has developed the leading standard for managing Charge Points, which has been adopted and implemented worldwide. ElaadNL is passionate to do repeat this for Smart Charging! We want to build a Smart Charging Ecosystem – together with European leading countries, cities and companies. The Netherlands prepare for mass market, we are looking for partners to prepare Europe.