THINK SMARTGRIDS

Developing smart grids in France and worldwide for a successful energy transition

think SMARTGRIDS

SUMMARY

THINK SMARTGRIDS:
an association to bring together French smart grids stakeholders

Think Smartgrids federates and represents the French smart grid ecosystem, with a hundred members, from startups to large groups, research laboratories, universities, professional associations and clusters, covering the entire smart grid value chain: electronic engineering, utilities, automation, telecommunication equipment and information systems, business models, training, and regulation.

Created in 2015 as part of the government's Smart Grid Plan, the association is chaired by Olivier Grabette, member of the board of RTE (French TSO); the French Ministry of Energy and the Energy Regulation Commission (CRE) are observing members.

OVER 100 ACTIVE MEMBERS:

17 large groups
(electric utilities, equipment manufacturer, IT, consulting, etc.)

49 SMEs
(electrical engineering, IT, energy consulting firm, etc.)

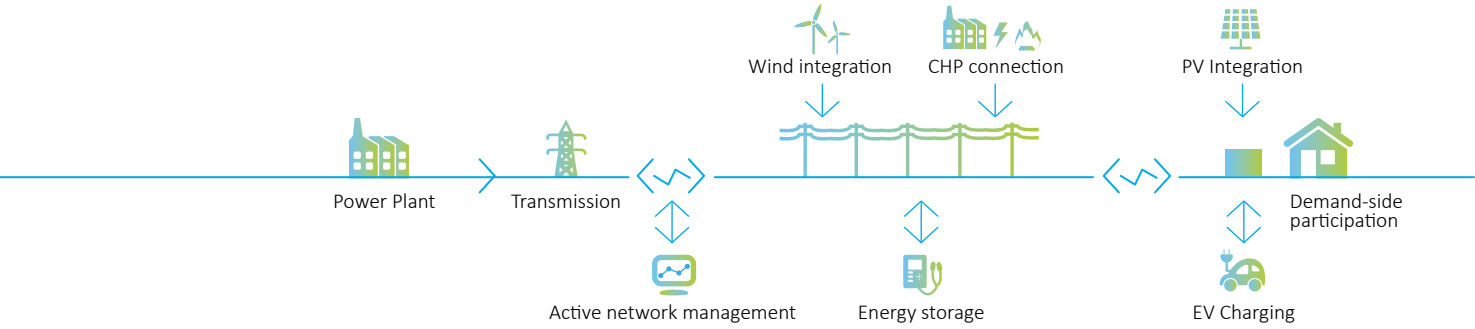
11 schools
research centers and labs

12 startups
(blockchain, AI, etc.)

8 clusters

5 associations

SMART GRIDS:
meeting the challenges of the energy transition



In order to meet the ambitious goals set by the European Union 2030 Climate & Energy framework, as well as the commitments made by the EU through the Paris Agreement, it is essential to quickly find a way to reduce our carbon footprint.

Smart grids have a key role to play, by allowing the massive integration of distributed and intermittent renewable energy sources into the grid, and supporting the development of electric vehicles, multi-energy networks, smart buildings and smart cities. Through microgrids, smart grids also enable quality access to energy everywhere.

The electric grid is becoming increasingly decentralized and complex, which requires better understanding and increased control of energy networks, along with the development of tools for forecasting electricity production and consumption. From smart meters and sensors to smart substations and virtual power plants, smart grids rely on digital solutions to become more flexible, more scalable and more efficient. The development of smart meters and self-consumption has also led to the emergence of “prosumers”, consumers who can actively participate in improving grid flexibility and contribute to the management and economic optimization of the global system.

Finally, for local communities, smart grids could be an opportunity to develop new business models around sustainable mobility, microgrids, energy storage, energy communities, smart lightning or data valuation, among others, thus helping to balance the costs of the energy transition.

FRANCE,

an electric system which is already smart and three large scale deployments

35 million
smart meters by 2021

€200 million
invested in large scale deployment
(Smile, Flexgrid, You & Grid)

50
interconnections with 7 European countries
(UK, Lux., Belgium, Germany, Italy, Spain and Switzerland)

+120
demo-projects
in the past 10 years

3 industrial projects

€130 million
in **R&D**/year

€7.5Bn
generated in revenue in 2020

THREE INDUSTRIAL PROJECTS
at a regional scale

The large-scale deployment of smart grids is a major challenge. FLEXGRID, SMILE and, YOU & GRID, are three French projects deployed at a regional scale, initiated as part of the government's smart grid plan in 2014, with several sources of both private and public funding and investments.

A project supported by the South Region, includes 40 completed or ongoing projects, for a budget of €150 million. The project focuses on the self-consumption of photovoltaic energy, smart territories, and the synergies between renewable energies, smart mobility, smart industry/ airports/ ports and energy optimization.

In the west of France, covers two regions (Brittany and Pays-de-la-Loire), several islands, and has the highest potential for marine renewable energy in France. The aim is to massively integrate and store renewable energies, to improve flexibility and demand management, to develop electric mobility, and to secure networks and the supply of electricity. 44 projects, nearly 200 stakeholders and 100 companies are involved, with a budget of €65 million. Two showrooms opened in 2019 in Rennes and Nantes to give an overview of all the projects deployed.

Aims to develop piloting tools to experiment with new uses in 15 cities of Lille Metropole, testing models for communities, distributors and end-users from already proven digital solutions. The projects focus on the self-consumption of photovoltaic energy in areas that include businesses, administrations and communities, controlling electricity terminals and optimizing flexibility management by optimizing consumption.

FOCUS ON A FEW PROJECTS

IssyGrid, smart grid use-cases scaled up to an entire urban district (Enedis - Paris)

IssyGrid is a demo-project led by Enedis and some 10 industrial partners for a large range of smart grid use-cases that have been scaled up to a whole urban district: flexibility, storage, integration of local solar power, smart electric vehicle charging, smart lighting, as well as applications for power consumption optimization in households and office buildings.

Nice Smart Valley, new forms of flexibility for local power systems (South Region)

Nice Smart Valley is part of the European project Interflex, in the framework of Horizon 2020 program, involving 20 partners across Europe to experiment with new forms of flexibility.

In France, the project tests smart grids solutions in order to integrate renewable energy sources and electric vehicle charging stations into the grid. Experiments include collective self-consumption with storage systems in a residential district, the complementarity of the gas and electric grid, and temporary islanding on the scale of a neighborhood. Finally, the project provides the Nice Côte d'Azur metropolis with a wide variety of data concerning the electricity distribution grid and the flexibilities enabling to control its energy consumption and to make savings.

FOCUS ON A FEW PROJECTS

E-busway, a high-capacity and full-service electric bus (Smile Pays-de-la-Loire)

In Nantes, the existing Busway route has reached saturation point. Starting in autumn 2019, the E-busway is the first project worldwide to go fully electric with 24m long buses , on a very busy route.

Essential for the development of sustainable mobility in large cities, the E-busway will be recharged during traffic and at the terminus using a telescopic arm, allowing unlimited autonomy for full service without changing vehicles or adding waiting time for passengers. The fast charging is fully automated and guarantees a complete autonomy of the system.

OSMOSE, optimal system of flexibility (RTE, H2020 program)

Led by the French TSO RTE, the Osmose project is a H2020 EU founded project answering the call for a 'Demonstration of system integration with smart transmission grid and storage technologies with increasing share of renewables'.

The project is global as it considers at the same time, the increased need of flexibilities in the system (mainly improved balance of supply and demand in electricity markets, provision of existing and future system services and allowance of a dynamic control of electricity flows) and the sources of flexibilities (RES, demand-response, grid and new storages).

FOCUS ON A FEW PROJECTS

Rennes Grid, a global territorial energy transition (Smile Brittany)

Located in a tertiary activity area (many companies and universities), RennesGrid is a territorial energy transition project focused on collective self-consumption through a local energy source (photovoltaics), storage devices and energy data collection (via Linky smart meters). All these actions are coupled with an active policy of reducing user consumption by 15%.

Therefore, the RennesGrid project combines the sale of locally produced electricity with a collective approach to controlling energy demand through consumption management, according to the type of customer and its potential for energy savings.

Ushant, 100% renewable energy network for island territories (Smile Brittany)

On island territories such as Ushant, which are not connected to the continental electricity grid, electricity is produced by oil-fired power plants that emit high levels of CO_2 and are costly to maintain. Ushant aims to achieve 100% of renewable energy production by 2030.

A 3-year action program started in 2017 to reduce energy consumption (building insulation, LED public lightning, awareness program, etc.), locally produce renewable energy, and develop electric mobility with charging stations powered by solar energy. In parallel, the «ICE» Project (Intelligent Community Energy), a French-English cooperation, aims to develop the production, storage and consumption of low-carbon energy in isolated territories, through the use of smart grids technologies.

INTERNATIONAL PARTNERSHIPS
to promote smart grids around the world

Think Smartgrids is a member of the Global Smart Grid Federation and is also dedicated to developing international partnerships on behalf of its members. The association signed several partnerships with India, Senegal, Singapore and Indonesia.

Think Smartgrids is closely working with the India Smart Grid Forum (ISGF) to organize a student exchange program, regular meetings and workshops with Indian utilities on topics such as electric mobility, energy storage, smart meters and grid digitalization.

In May 2018, Think Smartgrids signed a MoU (Memorandum of Understanding) with the Senelec (electricity utility of Senegal) to share experience and develop a smart grids alliance in Senegal.

A partnership with Nanyang Technological University (NTU) of Singapore led to the successful development of a microgrid led by EDF and Enedis: MASERA (Microgrid for Affordable and Sustainable Electricity in Remote Areas) was launched on October 31 on Semakau Island. This demo-project combines various innovative technologies to supply non-interconnected areas with renewable energy: two-sided photovoltaic panels, lithium-ion and zinc-air batteries, Vehicle-to-Grid bidirectional charging station, Linky smart meters... The microgrid is now monitored remotely from France by Enedis, via the Nîmes Regional Driving Agency.

INTERNATIONAL PARTNERSHIPS
to promote smart grids around the world

Following this successful collaboration, NTU has offered Think Smartgrids the opportunity to join the recently created Smart Grid and Power Electronics Consortium Singapore (SPECS) for further collaboration on microgrids. Microgrids are a central issue to enable areas with low or no connection to electricity grids to rely on non-fossil and decarbonized energy.

In April 2019, Think Smartgrids also renewed its MoU with Perusahaan Listrik Negara (PLN), the Indonesian state-owned electricity generation, transmission and distribution company. This two-year partnership addresses PLN's need to develop and integrate renewable energy in Indonesia, in order to achieve the target of 23% renewable energies in the country's energy mix by 2025. With the support of Think Smartgrids, Accenture and Artelys received a grant from the French Private Sector Study and Assistance Fund to lead a feasibility study on the development of a smart grid.

THINK SMARTGRIDS

Scientific Council and committees

To meet the needs of the sector, Think Smartgrids relies on a Scientific Council and several Commissions and Working Groups, chaired by well-known personalities in the French smart grids ecosystem.

Scientific Council

Chaired by Professor Nouredine Hadjsaid (Grenoble Institute of Technology), the Scientific Council advises the French industry on its R&D priorities and technological choices, references all the existing theses on smart grids and awards the Think smartgrids thesis prize.

International Committee

Chaired by Julien Pelcot (GE Grid Solutions), the International Committee coordinates the interactions with foreign delegations interested in French smart grids know-how. It also draws up strategic action plans for specific geographical areas and organizes the representation of the French smart grid sector at international events and exhibitions.

Training Committee

Chaired by Professor Andrea Michiorri (Mines ParisTech School), the Training Committee inventories existing academic training on smart grids in France and identifies recruitment and HR needs to develop new training. It also examines the implementation of student exchange programs abroad.

Territories and innovation Committee

Chaired by Philippe Vié (Capgemini), the committee has two priorities:

1) show how smart grids are a means to development for territories;

2) develop innovative solutions and business models that enhance the contribution of smart grids.

Its purpose is to support territories that wish to develop projects around issues such as multi-energy grids, electric mobility, smart buildings, the environment, etc.

Public Affairs Working group

Led by Christophe Gros (Enedis), the Public Affairs working group defines the association's positions on French and European legislation concerning smart grids, establishes the subjects on which the association will be called upon to express its views and addresses the sector's requests to the institutions.

Data & Digital Transformation Working group

Led by Benjamin de Buttet (DCbrain) and Thomas Lacroix (Cosmo Tech), the working group studies the digital transformation of utilities and the major associated issues (industrialization of data projects, cybersecurity, data and ethics, etc.). A study based on some twenty interviews with key European players was published in November 2018.

BOARD

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GRABETTE

Chairman
Member of the RTE
Executive Board

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MONLOUBOU

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Chairman of
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Hugues
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Valérie Anne
LENCZNAR

Managing Director
of Think Smartgrids,
vice-president of
the Global Smart grids
Federation (GSGF)

Antoine
DE FLEURIEU

Treasurer
Managing Director
of Gimélec

THINK SMARTGRIDS BRINGS TOGETHER A FULL ECOSYSTEM

OBSERVING MEMBERS

DGE

COMMISSION DE RÉGULATION DE L'ÉNERGIE

ASSOCIATE MEMBERS

ABB

accenture consulting

Atos Worldgrid

Capgemini

CEA tech

EDF

ENEDIS

EY

GE GRID SOLUTIONS

GIMELEC

UGA

NOKIA

OMEXOM

RTE

Sagemcom

Schneider Electric

SIEMENS

PARTNER MEMBERS

3M

ACTIA

ALTANA

amiens cluster

PcVue Solutions

Artelys

socomec

stations-e

smile

B2020

BearingPoint

BlueSolutions

CAHORS

CAC International Technologies

Colombus

SNCF

SnG Consulting

Yélé

COSMOTECH

DCbrain

efficacity

efluid

eLum

EMBIX

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TRIALOG

UFE

enea

ENSTO

EPI

es

ice

idex

VOLTALIS

WAVESTONE

Itron

KLEE GROUP

Keynergie

Landis+Gyr

METAL DEPLOYE RESISTOR

Nexans

SenX

setec

SIQpartners

Odit-e

OFATE DFBEW

orange Business Services

pwc

roseau

SAFT

RIGAME

smartside

naelis

Schools, research centers and laboratories

CentraleSupélec

École des Ponts ParisTech

LNE

L2EP

École Polytechnique

Promotelec

SEE

SNCF

SOLUTIONS OF OUR MEMBERS

RESEARCH AND EXPERTISE

- Multi-criteria cost-benefit analysis,
- Audit of the electric system
- Advice on new markets and business models
- Training of users and decision-makers

GRID MANAGEMENT AND OPERATION

- Observability, remote operations, dispatching, supervision, flexibility, etc.
- Economic performance, maintenance and modernization of infrastructures
- Microgrid solutions
- Reduction of technical losses

INTEGRATION OF RENEWABLE RESOURCES

- Integration of renewable energies
- Implementation of smart connections
- Cost-effective energy transition

USE OF DATA

- System operation (data and open data)
- Predictive and prescriptive analysis…
- Valuation of smart meter data
- Cyber security

NEW USES

- Smart Buildings / Smart Factories / Smart cities / etc.
- Electric mobility: charging stations, V2G, smart charging, batteries...

ROLE OF THE PROSUMER

- Flexibility, demand response, self-consumption, storage…
- Smart metering and multi-metering systems
- Reduction of non-technical losses

FRENCH SOLUTIONS FOR SMARTGRIDS

Tél. : 01 42 06 52 50 - **www.thinksmartgrids.fr**

contact@thinksmartgrids.fr - Twitter : @ThinkSmartgrids