



by people for people



Let's invent a new  
world of energy  
together



**€100 million:**  
current investment budget  
of ENGIE New Ventures.

A network of over  
**50** innovation  
managers throughout  
the Group.

ENGIE develops its businesses (power, natural gas, energy services) around a model based on responsible growth to take on the major challenges of energy's transition to a low-carbon economy: access to sustainable energy, climate-change mitigation and adaptation, security of supply and the rational use of resources.

The Group provides individuals, cities and businesses with highly efficient and innovative solutions largely based on its expertise in four key sectors: renewable energy, energy efficiency, liquefied natural gas and digital technology.

Over **8,000**  
employees, members of  
Innov@ENGIE, the internal social  
network for innovation.

**8** employee projects  
currently incubated in  
**5** of the Group's partner  
incubators around  
Europe.

**7** calls for projects  
launched and  
**5** startups incubated  
since 2014.

**1.5** million inhabitants  
in France covered by Terr'Innove,  
a comprehensive business  
proposal for jointly building  
energy projects with local  
authorities.

ENGIE employs **152,900** people  
worldwide and achieved revenues of  
**€74.7 billion** in 2014.

Key figures on May 31, 2015.

Let's invent a new world of energy together

# Towards a new world of energy

For over 150 years, ENGIE has provided the resources and services that are essential to the development of modern urban civilization.

Today - as the world heads towards global urbanization, as fossil fuel reserves begin to run out and as climate change endangers the balance of the planet - we are inventing creative solutions for and with our customers in order to produce renewable, resilient and storable energy, to better save energy, and to transform urban mobility.

In this context, technological, commercial and managerial innovation is essential. ENGIE employees are fully aware of the needs of our clients, and contribute to fulfilling them on a daily basis.

We want to go even further, however, by forging links with the project leaders, entrepreneurs and scientists who contribute to transforming our sector. We have defined several priority areas in which to do so: smart energy, the city and mobility of tomorrow, and energy efficiency and home comfort. These connections will be collaborations among equals, where each partner appreciates the expertise of the others.

Join us in this adventure of lasting importance for our times: the invention of a new world of energy.

Gérard Mestrallet  
Chairman & Chief Executive Officer

# A world in movement

## Energy efficiency

Data Centers accounted for 1% of world power consumption in 2010. In the United States, this consumption is likely to soar by 49 billion kWh between 2013 and 2020. Energy efficiency measures could reduce this power consumption by 40%.

Sources: Jonathan Koomey, National Resources Defense Council.

## Data

Customers are now generating as much data on the grid as they are on social media. As of 2013, 40 percent of U.S. households had smart meters. In the European Union, the devices are expected to be installed in 60 percent of homes by 2019.

Source: Boston Consulting Group.

## Urbanization

By 2050, the urban population is set to reach 6.3 billion worldwide. Almost 90% of urban growth will be concentrated in Africa and Asia.

Source: United Nations.

## Renewable energy

In 2011, fossil fuels represented 70% of world power production compared with 20% for renewables. In 2050, the sun could be our most important source of power and could provide 27% of power generation worldwide.

Source: International Energy Agency.

# Climate

The concentration of CO<sub>2</sub>, methane and nitrous oxide in the atmosphere is higher than at any time in the last 800,000 years. In the Arctic, the ice cap could disappear almost completely in summer by the middle of this century.

Sources: US Environmental Protection Agency, Intergovernmental Panel on Climate Change.

# Internet of things

**4.9 billion objects** throughout the world are connected.

This figure could rise to 25 billion by 2020.

Source: Gartner.

# Environment

The European Union has set itself the following targets for 2030: **40% reduction in greenhouse gas emissions, 27% increase in the share of renewable energy and 27% increase in energy savings.**

Source: European Commission.

# Smart cities

By 2025, there should be 26 global smart cities throughout the world, half of them in Europe and North America, which could represent a market worth USD1.5 trillion.

Source: Forbes.

# How can we improve the way we consume and manage energy?

Renewable energy and local control of production and consumption are the new frontiers in energy. Solutions like micro-production, smart grids, storage and load management will be essential if we are to meet these new challenges.





# Let's invent solutions for tomorrow together

## Industrial smart grid

The Smart ZAE project developed by Cofely Ineo in Toulouse (France) is the first project to test a large-scale industrial Smart Grid. This smart grid combines renewable energy, storage and electric vehicles to achieve optimum power consumption.

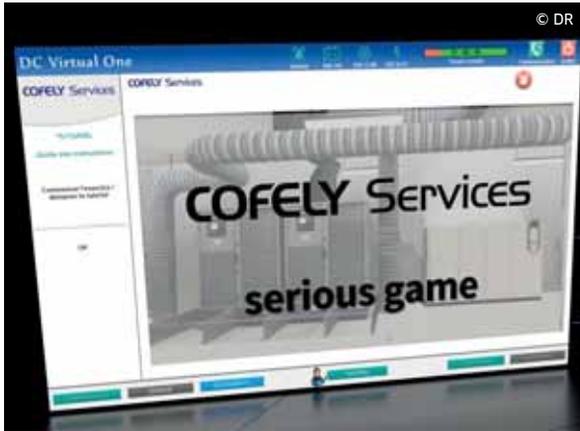


## Fast chargint for electric cars

Developed in Belgium, CarPlug is a safe and fast solution for recharging electric vehicles, using a specially adapted universal plug. Charging is up to 60% faster than with a traditional cable. It can be controlled remotely via a smart-phone or on internet, and helps make electric mobility easier.



© ENGIE / Leimendorfer Gilles / Interlinks Image



## Simulator for data centers

DC Virtual One is a serious game developed by Cofely Services to train Data Center technicians using seven power and climate incident scenarios. These scenarios simulate possible stressful situations for the technicians to handle. Specific data are introduced about each facility, to ensure appropriate training yet without shutting down the real equipment.

## Generation of green and local gas

The biomethane plant in Mortagne-sur-Sèvre (France) opened in June 2014. It should be able to process 21,000 metric tons of livestock manure substrates which, after being treated, will be transformed into biomethane. Production should reach 1 million cubic meters per year, which will be injected into the national grid by ENGIE.



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© Emmanuel Cairo

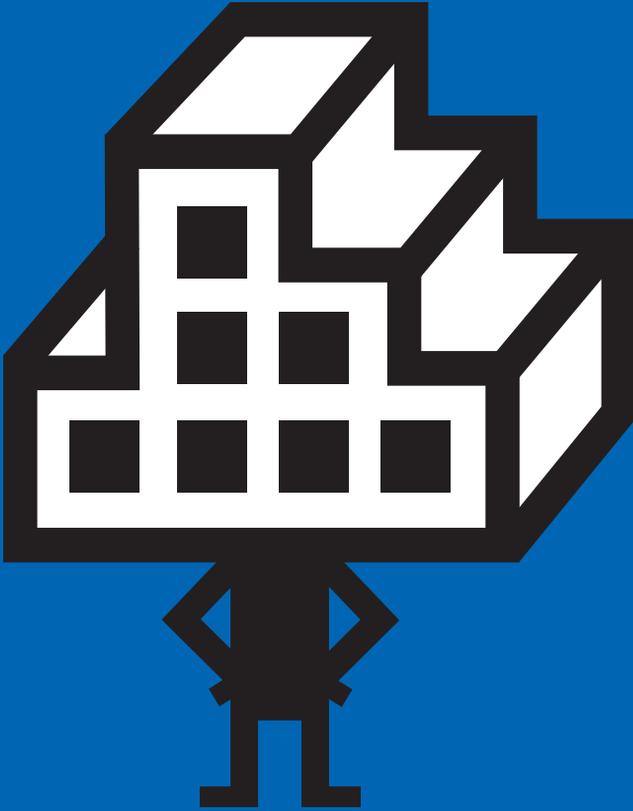
## Communicating meters

With Gazpar, the new ENGIE smart meter, reading the meter will become much easier for 11 million customers in France who will also be able to make savings by optimizing their consumption of natural gas. This is the first step towards the emergence of smart networks that can communicate with each other and which will cover entire districts or cities.

Find more innovation news at  
**openinnovation-engie.com**

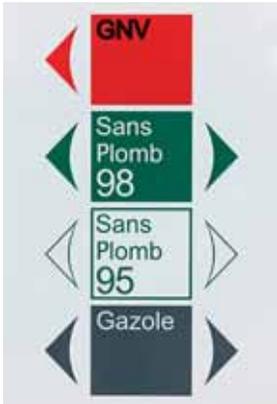
# How do we meet the needs of the cities of tomorrow?

In a world that is growing and becoming more urbanized, managing megacities is a key concern. It can be addressed by the eco-design of buildings, prudent energy use by local authorities, smooth-flowing transport networks, safety of citizens, sharing urban space, managing connected cities in real time.





# Let's invent solutions for tomorrow together



© ENGIE / Hautemaniere Noel

## 800 buses to be powered by NGV

Clean public transport represents the backbone of new urban mobility. Under the terms of a mobility partnership between the RATP Group and ENGIE, 20% of its fleet of 4,000 buses will become natural gas vehicles (NGV) by the end of 2015. This low CO<sub>2</sub> and particle emission fuel is a real asset in densely populated urban areas. It could pave the way for bioNGV, which has the added advantage of being 100% renewable and generally produced locally, as close as possible to the area of consumption.

## Reducing Milan's energy's bill

Cofely Italy has taken over management of energy services for 557 municipal buildings in Milan to help the city reduce its energy bill by 42% and its CO<sub>2</sub> emissions by 5,500 metric tons over the next seven years. Cofely will invest about €10 million, mainly in installing Wi-Fi temperature sensors for public spaces and remote monitoring systems.



© ENGIE / Baujard Jean-Louis



© ENGIE / Sipa Press / Fournier benoit

## Overseeing safety in Rio de Janeiro

After serious flooding in 2010, the Rio de Janeiro authorities looked for a unique decision-making support tool to help assess the situation better and react in case of emergency. Cofely Ineo has worked with them to devise the UBICus exploitation system, combining robustness, flexibility and adaptability.

## Exploiting the energy of local authorities

Terr'Innové is an offering that places the expertise of ENGIE at the service of local authorities to build an energy strategy jointly with the elected representatives. Terr'Innové takes the form of a road map, which aims to reduce energy expenditure while promoting local renewal energy generation.

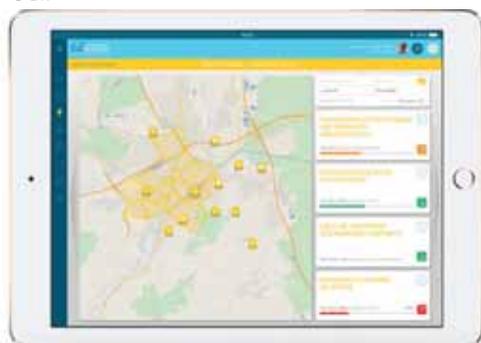


© ENGIE / Ketchup Mayonnaise / Nussli Cedric

## Cit'Ease™: data serving the city

This is the first 100% digital service offering by ENGIE and SUEZ Environnement for the city of tomorrow. Its aim: to collect and analyze local data in order to facilitate running the city, while enhancing interaction with inhabitants.

© DR



Offer your expertise on  
**openinnovation-engie.com**

# How to reconcile domestic comfort and the pace of modern life?

Consumers are looking for greater autonomy and expect more efficiency and flexibility from their energy providers. In the future, we will have simple and efficient tools to put clients in charge of their own comfort, helped along with fast developing technologies.





## Let's invent solutions for tomorrow together



### Remote temperature control for the home

If you go away on holiday, or if you want to program the temperature settings to a daily schedule, Electrabel's Smart Thermostat lets you control your boiler from your Smartphone so you can adapt the temperature in your home to suit your lifestyle.

### A robot to improve indoor air

Cofely Services has joined forces with Partnering Robotics, a French startup that has developed a smart robot, Diya One. Initially, this multitask robot will be used in museums, public areas and in tertiary sector buildings such as offices. The robot will collect data on different parameters such as humidity, light, and the quality of the indoor air in general.

## Managing your own energy consumption

In February 2015, ENGIE became a stakeholder in Tendril, a provider of Energy Service Management solutions, with the aim of offering these solutions in Europe and North America. The advantage of the Tendril solution, which is already marketed in the United States, lies in the fact that it is highly personalized and so individual customers can receive specific reports on consumption in their home (or they can contact specialists). The Group already acquired Ecova in 2014, another American stakeholder in energy efficiency services, which deals with B2B customers.



© ENGIE / Abaca / De Laurens Camille

## Comparing to save energy

The DolceVita ZenBox monitors electricity and natural gas consumption in new homes and sends an alert message in the event of over-consumption. Using the “monitor consumption” feature, users can consult their consumption in real time, compare it over different periods and also get advice on saving energy.



© Cofely Services

Submit your patents to  
**openinnovation-[engie.com](http://engie.com)**

# Strength in numbers

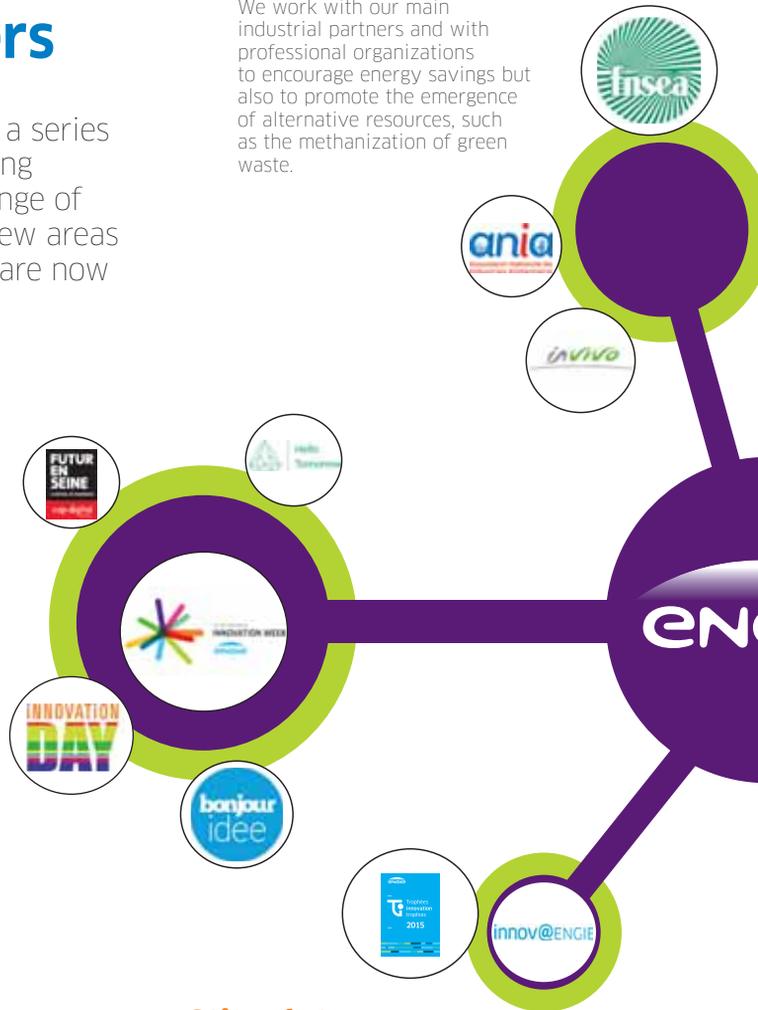
We have launched a series of initiatives to bring together a wide range of skills around the new areas of energy that we are now exploring.

## Identify

We organize events (innovation week, hackathons, innovation days) and attend shows to present our projects and also to contact innovators who can help transform the way we do our business.

## Collaborate

We work with our main industrial partners and with professional organizations to encourage energy savings but also to promote the emergence of alternative resources, such as the methanization of green waste.



 @innovbyENGIE

 ENGIE

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## Stimulate

For more than 15 years, the Group's employees have taken part in the "Innovation Trophies", an internal competition to reward the best innovations. With around 500 entries in 2015, there is clearly still great enthusiasm for this competition. Another tool is Innov@ENGIE, our internal social media network for innovation. It was started in 2014 and already has over 8,000 members. It is mainly for employees to put forward innovative ideas, which are then examined and may earn incubation support.



## Incubate

We work with external incubators who provide the premises, an ecosystem and coaching both for startups and for our own project owners.

## Invest

Our €100 million ENGIE New Ventures fund is dedicated to investing in businesses, developing innovative solutions that will transform our activities.

## Anticipate

We are attentive to what is going on in the world; we work with town planners, architects, scientists and philosophers to anticipate what the future will bring to our sector. We have a network of experts and 800 researchers available to us and we collaborate with more than 100 universities and with competitiveness clusters. We also rely on Think Tanks like our own Urban Strategy and Innovation Council (CSIU).

Respond to our calls for projects on  
**[openinnovation-engie.com](http://openinnovation-engie.com)**

# My definition of innovation

An elected official, an industrialist and a writer give us their definitions of innovation and speak of the transformations that it can bring about in our daily lives.



© Jean Chiscano

**Innovation  
is not  
necessarily  
a technological  
race**

## **BÉATRICE FOUCHER**

Head of the electric vehicles program at Renault

“Innovation means knowing how best to meet customers’ present needs and their needs in the future. It is not necessarily a technological race. At Renault, we have concentrated on three priorities: enjoying mobility, reducing the impact on the environment and offering innovations that are affordable. The electric vehicle is very innovative because of its technology, but also because it requires a radical change in our relationship with the client. On a daily basis, we are constantly trying to achieve a balance between creative drive and respect for the processes that are inherent to any large company. Of course we must always be reviewing this balance to ensure that such an innovative business as ours can progress.”

*group.renault.com*



## Innovation starts with very simple things

**ROB WALSH**  
Chief Executive of North East Lincolnshire Council



The unusual aspect of our era is that so many innovations are occurring at once

**ERIK ORSENNA**  
Economist and writer

“Innovation is about transforming good ideas into action. We must strive to develop innovative methods of cooperation with our partners to ensure that our local economy grows and our communities are successful and prosperous. We encourage our employees to propose ideas to improve working practices, cut red tape and focus on making a positive difference for the citizens we serve. For me, change is the only constant.”  
*nelincs.gov.uk*

“Innovation is the dynamism that gives rise to something unknown. For centuries, innovation was slow. Then in the 18<sup>th</sup> century, the planet began to awaken. Tremendous progress then followed. What is unusual about our own era is that so many innovations have occurred at once. Major upheavals are happening at the same time. We are constantly bombarded by one revolution after another, like the digital revolution and the biological revolution. Identifying innovations, then learning to use them, this is the only way to find one’s place in this new world that is being created.”  
*erik-orsenna.com*

# Innovation Quiz

Answer these questions to discover what type of innovator you are.

## ① As a child, what was your favorite game?

- ▲ You loved playing in the woods, you were an adventurer!
- You used to build huts, each one more complicated than the last ; you were a real perfectionist.
- You were a dreamer, you would invent imaginary worlds.

## ② What technological innovation do you most admire?

- ▲ The drone, fast and autonomous.
- The latest Smartphone, cutting edge technology serving mankind.
- The innovation of my dreams hasn't been invented yet.

## ③ Concerning sport, are you:

- ▲ Involved in a sport that you have played assiduously for years.
- A fan of major competitions with a weakness for extreme sports.
- Someone who tries a different sport every year: you like to try everything.

## ④ In your opinion, which of your qualities do your colleagues appreciate most about you?

- ▲ Your kindness: you are always attentive to the well-being of others.
- Your energy: you always know how to motivate staff.
- Your reliability: you always complete your projects, no matter how big a task is involved.

## ⑤ What is your favorite expression?

- ▲ The end justifies the means.
- There's strength in numbers.
- Imagination rules the world.

## ⑥ What kind of teenager were you?

- ▲ You were the leader of the gang.
- You were the friend that could always be counted on.
- You were never short of ideas to keep everyone amused.

## ⑦ What compliment pleases you most?

- ▲ "You always have original ideas".
- "You're a go-getter".
- "You are as demanding of yourself as you are of others".

FIND THE SYMBOL THAT MATCHES MOST ANSWERS THEN SCAN THIS QR CODE TO DISCOVER YOUR INNOVATOR PROFILE.



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