



100 INNOVATIONS FOR 2020



TROPHÉES
INNOVATION
TROPHIES 2020



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Shankar Krishnamoorthy

ENGIE Executive Vice President in charge of Strategy & Innovation, Industrial Development, Research & Technology, and Procurement; also supervising the Africa Business Unit. President of the Innovation Trophies Grand Jury.

THESE 100 INNOVATIONS ARE A MESSAGE FROM THE RECENT PAST THAT REMINDS US THAT A FUTURE IS POSSIBLE AND IN THE MAKING.

Collecting around 500 innovative projects each year is a lot... and yet not so much. Twenty-five Business Units (BU in ENGIE), including the Corporate and Research Centers, contribute with several of their best initiatives. 2,000 to 3,000 people get involved each year in the competition. They are the ones who innovate AND connect with others. They are passionate people who want to make their initiatives known in order to secure resources to take them further, because they are convinced that they will help improve the future.

Innovating today is about knowing how to connect with the world, being curious about technologies, trends; it also means being able to mobilize resources, communicate and reinvent oneself. This innovation dynamic is vital. In an uncertain world in transition, it is an imperative. At ENGIE, our businesses are at the heart of the energy transition. We need to invent innovative combinations to tailor solutions that tackle the complexities faced by our customers... as seamlessly as possible!

The art of combination is one of the driving forces behind our innovations, as well as our ability to share and transfer experiences in order to generate new sources of income.

There is no doubt that the distinctive characteristic of 2020 will be the disruption brought about by the COVID-19 crisis, which calls into question our usual patterns. Since business impacting occurrences have become frequent, we have created last year a new team, the Strategic Innovation and Disruption department, in charge notably of detecting and assessing the risks and opportunities of disruptions. It is also one of the topics covered here in terms of solutions by the new BU ENGIE Impact launched in 2019.

One should not forget that we have to be prepared to face another major crisis, the climate crisis, that could have more devastating impacts and certainly in the much longer term. We have reached the end of a model, innovation is more than ever key to reinventing our future.



Not to invest in innovation today is to doubt the possibility of a future. ”

Johann Boukhors
Managing Director of ENGIE New Ventures



WHAT IS THE PLACE FOR SOCIAL AND SOCIETAL INNOVATION?

It has long been the exception to reach the final stage of the Innovation Trophies with a CSR project... and yet, with the Foundation, and the collaborators' associations, ENGIE has been active with the development of many innovative actions over the years. In 2019, Power Corner, an *intrapreneurial* adventure supported by the ENGIE Energy Gatherers fund at its origin, received a consecration as a Success Story.

This year, the environmental, social, and societal character becomes a selection criterion for all files as it becomes an essential component of our projects and contracts.



When we launched the transformation program, we were far from having anticipated the current situation, but we had put forward the flexibility of the Cloud in our arguments. Today we measure the adequacy of our choices that allowed us to continue to work with all our employees, from Shanghai to Santiago. With this additional legitimacy, we will be able to continue the transformation. ”

Claude Pierre
Deputy Group Chief Information Officer,
IT Infrastructure & Cybersecurity





Research Centers transformed into ENGIE Labs is not just a re-naming action! They have become places where we test products, technologies, concepts, start-ups. They are open places that work with BUs on effective projects for customers. Beyond the ENGIE Labs, places of experimentation are developing throughout the Group, from Pop-up stores to the University Research Centers... It's essential for our transformation, along with our stakeholders' and customers'.



Michael Webber,
Chief Science & Technology Officer

WHAT HAPPENS AFTER THE INNOVATION TROPHIES?

Some years, the objective was mainly to win a Trophy, with a prize. An internal information with the winners was circulated internally, after the end of the Ceremony. It was also a moment of recognition (and of some disappointment for the losers). For the winners and finalists, it is a token of encouragement and of pride that they bring back and share with their management and colleagues. To increase sharing and re-use, we have set up a database to collect projects and share them. We have recently identified early stage categories to promote and grow innovations in incubation programs. Since last year, we conduct a survey, to have a precise overview of ways we can help them develop.

Since 2015, we have invited certain projects to events such as CES in Las Vegas or VivaTechnologies in Paris. And, since 2016, it is the project managers who present their projects to the Grand Jury, establishing direct contact with COMEX members, and the Group's decision-makers. With a stronger visibility within the Group, each project is strengthened in its development perspectives and replication possibilities, but the road ahead is not flattened out, for taking innovation to success remains an explorers' adventure.

4 SUCCESS STORIES

The “Success Story” category is a mainstay of the Innovation Trophies. It puts the spotlight back on evolutions made by innovations nominated in (recent) previous years. Emblems of innovation at ENGIE, our 4 success stories nominated in 2020 are about Research, Patents, Incubation, Business Model, start-ups, Big Data and Artificial Intelligence.

How to become leader in a complex market segment by combining innovations with Business?

Innovation, the cornerstone of development in the pool market

By leveraging research and technical innovation, ENGIE Solutions has been able to efficiently optimize pool management and take its leading position in the complex aquatic facilities market.

TI 2015, TI 2019, TI 2016, TI 2017, TI 2014

How did a research program benefit from incubation to become a commercial success?

LiLiBox: from the CRIGEN patent to the industrial application in Storengy (Azola)

LiLiBox is a solution to liquefy biomethane, store it and re-inject it into the gas network when it is available. The solution increases the revenues of biomethane producers. At the beginning of the LiLiBox adventure in 2014, there was no adequate solution.

TI 2014

How to develop a new business model and a new market segment with startups?

SOLARIMO brings solar energy to 50% of the European population who live in apartments

The ENGIE startup offers a “full-service-package” to apartment building owners and sells cheap green solar power to tenants. SOLARIMO started in 2017 as an incubation project and has become the market leader in Germany in 2019.

TI 2017

How can artificial intelligence accelerate innovation in operations?

Asset-Intelligence: Equipment Recognition performed through Deep Learning

GRDF had to collect the type and location information of several million regulators to enrich its asset database. Photos taken as part of the communicating meter deployment project are refused to identify different equipment and initiate necessary replacements, greatly optimizing costs in one year. A new project is underway.

TI 2019

THE 2020 TROPHY, THE MAKING-OF

By Florence Cariou,
Project Director, pilot of the Innovation Trophies

The lockdown came a fortnight before the Group selection seminar when 40 Innovation representatives were to meet in Paris for two days, to review the 165 best files chosen by the BUs. The seminar took place on schedule, but virtually, in MS Teams and Klaxoon. There were 63 of us involved, 27 of whom were actively involved in the organization and animation.

It was an invigorating experience, with the additional benefit of accelerating the adoption of Teams and other digital tools, since then replicated for other seminars.

Two major lessons learnt are related to the virtues of positive reinforcement:

- 1 • Co-construction with many participants is really a key factor of success.
- 2 • Preview: guided tour-training to allow all participants to visualize the agenda and learn to use the tools

After this selection, the 52 finalists were invited to be coached remotely on Teams, by external expert trainers, on the basis of self-organization and auto-regulation principles. All the teams joined in, involving over 100 actors in this stage, delivered creative materials, and produced sophisticated videos from their homes revealing their talent as actors or artists.

A third learning emerged from this experience: crowd-editing is made comfortable and effective by mastered collaboration tools and sharing a common goal. Thus, we have collected and organized this brochure, derived online publications, and the Grand Jury project presentations, involving over 150 people.

The Grand Jury also took place online, with a stage on Zoom and jury deliberations and voting privately on Teams. A complex set-up, but with the help of ENGIE IT and innovation back-office crew, the 20 internal and external members of the Grand Jury were quickly onboarded and enjoyed the experience.



Thanks to the unwavering commitment of all of our project owners to make outstanding pitches and the agile intervention of the invisible back office squad who solved every issue on the fly during the event, the Grand Jury had a truly rewarding and memorable experience. A truly professional team achievement !

Csilla Kohalmi-Monfils,
Director Innovation Ecosystems

106

innovations
presented
in this Book

35TH

edition of
the Innovation
Trophies

540

applications
from 42 countries

165

files selected
by the
Group's BUs

52

finalist projects

A photograph of two children running through a field of dry grass towards a large wind turbine in the background. The child on the left is wearing a light pink jacket and dark pants, while the child on the right is wearing a maroon jacket and light pink pants. The wind turbine is a large, three-bladed structure with a tall tower, set against a clear sky. The overall scene is bright and open, suggesting a natural, outdoor setting.

ACT WITH ENGIE

For a positive impact on people and the planet



powerHYDE

Solar solution to end homelessness and empower communities

BillionBricks (an ENGIE Investment) is building powerHYDE, a 125 solar home community of 2.5 MW rooftop solar product that integrates social housing at a MW scale. PowerHYDE generates 25 times more energy than its residential needs. Surplus energy is sold via PPAs to finance the home mortgages and lift its inhabitants out of poverty.

365 Asia-Pacific - The Philippines

Prasoon Kumar, Amanda Lim, Gunjan Lath, Robert Verrijt

New Technologies for Aquatic Biodiversity Conservation

A first of its kind combination of technologies to monitor and mitigate the presence of fish in hydropower plants turbines.

Innovative system including an electric barrier, an underwater sonar, computer vision and AI software to avoid fish to enter the turbines of hydropower plants in Brazil and reduce environmental impact.

194 Brazil

Rafael Dias, Grasiela Cardoso, Mariana Quadros, Arthur Munaretti, Christiano Pase



Innovation in the Resettlement of Communities : the São Salvador HPP

Use of technical and social assistance tools to enable families to remain in the countryside, creating conditions for them to progress in a sustainable manner.

468 Brazil

Adriano Diniz Baldissera, José Magno, Andreia Szortyka, Marcelo Oliveira, Marcos Castanheira, José Furlan



PEPS, DEAF PEOPLE HIRING PROJECT

PEPS is a project meant to open and adapt positions in climate engineering design offices for deaf people.

134 ENGIE Solutions - Axima

Raphaëlle Tupin



SOLARIMO

SOLARIMO brings solar power to 50% of Europe's population that live in apartments. The ENGIE startup offers a "full-service-package" to the owners of apartment buildings and sells cheap green solar power to the tenants. SOLARIMO started as an incubation project in 2017 and achieved market leadership position in Germany in 2019. It will offer its services across all of Europe as soon as the recent European renewable energy directive with the right for collective self-consumption is implemented.

345 NECST

Frank Hoepner, Daniel Fuerstenwerth, Malte Kuenzer

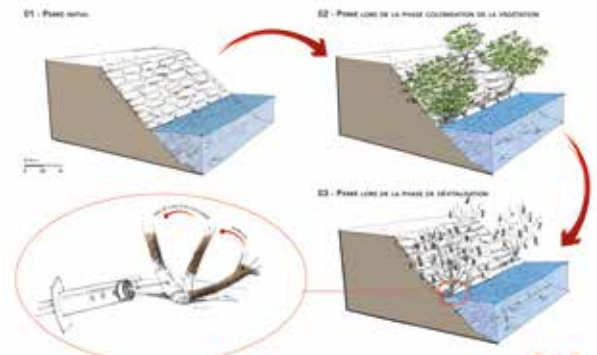


PEPA: 1€ Boiler for Low Income Families

PEPA stands for "Energy and purchasing power plan": turnkey boiler or heat pump with high performance, very low price left to pay for low income households (starting from 1€), no administrative hassle (ENGIE Home Services deals with all the paperwork for you).

323 France BtoC

Fabien Margueron, Isabelle Carcea, Daylena Barbot, Nicolas Lefebvre



Ecological Devitalization of Invasive Alien Species

This innovation has led to the development of an ecological solution, offering an alternative to chemical phytosanitary products to eliminate invasive woody vegetation such as false indigo-bush, which could, in turn, disrupt the durability of the hydraulic structures managed by CNR.

The principle is to intervene at the level of the plant's physiology, using mechanical and biochemical techniques. Early experiments showed a mortality rate of false indigos up to 90% in a growing season. In 2020-2021, experiments are continuing and will be deployed operationally on a larger scale.

304 France Renewable Energy - CNR

Romain Brusson, William Brasier, Gérald Coste



ENGIE’s “Energy for my profession”

Energie pentru meseria mea – “Energy for my profession” creates a pro-active sourcing solution for the critical needs of core competencies for the Infrastructure entity and Technical Services affiliate. Through a vast multimedia national campaign and by addressing directly 10,000 pupils & 7,000 parents, ENGIE Romania regained the trust of the young generation in learning a profession and is currently funding & training for a 3-year period 118 pupils in 2 major cities, planning to extend to a 3rd city and recruit 60 more pupils in 2020. The program built strong social bridges with communities, schools, townhalls & the Ministry of Education and helped ENGIE become a major trailblazer in education and a first-choice employer for the young generation.

185 NECST

Cezar Barladeanu, Sanda Anca, Andrea Tudorache, Alex Paun, Mariana Stavarache, Cosmin Burlacu, Carmen Nistor, Mihaela Botezatu, Alexandra Luca, Ramona Cucuteanu, Claudia Vasile, Cristiana Olaru, Cristina Zegheanu, Andreea Vasilescu, Anne Proscanu



Monitoring Biodiversity from the Sky

This new nest detection method enables to deliver on the obligation of results expected by the environmental authority regarding the protection of avifauna in wind farms. Using flying drones and artificial intelligence, the teams can easily geolocalise birds of prey nesting in the crops near the territories targeted for wind turbines installation. Thus, bird protection measures are improved without reducing the profitability of the installations during the operating phase.

503 France Renewable Energy - ENGIE Green

Pauline Millot, Erwin George

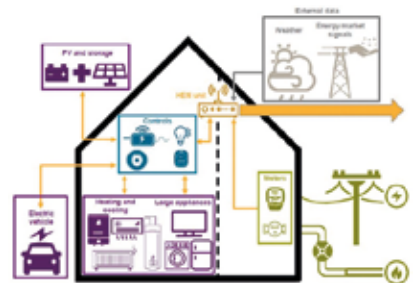


The Compagnons Bâisseurs Project by SHEM

Responding to the zero-carbon challenge involves not only the production of renewable energy, but also the fight against energy precariousness. It is in this context that SHEM, a local and regional player, launched the Compagnons Bâisseurs project, a social innovation initiative in the form of a self-help building site that makes it possible to rehabilitate housing through an action combining circular economy, training, solidarity and territorial equality.

352 France Renewable Energy

SHEM
Vincent Petillon

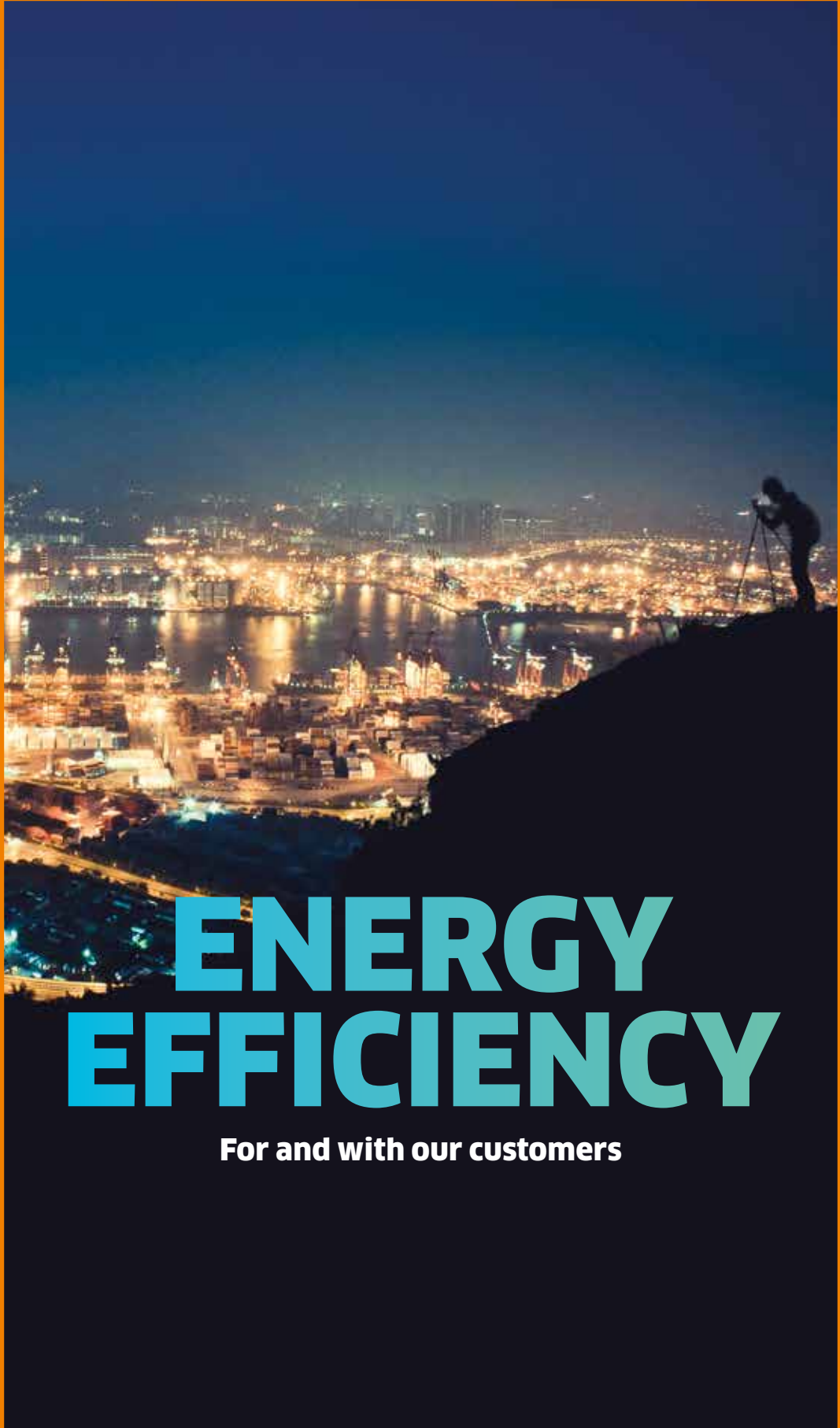


Residential Community Microgrids

A private residential microgrid, bringing decentralised energy to life, for a new zero-carbon community. The objective was to define a scalable, optimised local energy community solution and business model to maximise self-consumption of renewable energy at the community level, for United Kingdom residential developments, reducing commodity and system costs for end users, providing benefits for the local communities and the wider grid.

082 United Kingdom

Damien Kelly, Andrew Cowley, Christoph Mazur, Andrew Turner



ENERGY EFFICIENCY

For and with our customers



Don't let the Energy Escape the room!

A full consumer experience: an Escape Room, a Sales demo corner and Workshops about energy-related topics. In B2C, a first of a kind for ENGIE and for the energy sector!

012 Benelux

Sarah Van Keilegom, Gaetano Palermo, Daphné Cawet, Eva Vervaeet, Suzanne Mioulet, Steven Verlinde, Marie-Sophie Szawlowski, Gregory Scolas, Geert Jansen, Paul De Vylder



Hayward School District Partnership

ENGIE won the \$27M Hayward School District project by building into the project bid an innovative education program that is a first in the world approach to selling to schools.

The ENGIE energy project is a foundation for hands-on learning, teacher training, and community awareness at the Hayward School District. Through it, we deliver environmental, fiscal, and educational sustainability and have earned a customer's long-term business. This unique selling strategy captures \$65 Million in Energy Savings across 33 sites and builds a long-term customer relationship. It creates a template for selling to other educational customers across the globe who yearn for education and sustainability.

488 USA

John Paul Jewell, David Baldwin, Emily Douglas, Courtney Jenkins, Merna Nakhla, Shira Zingman-Daniels, Patrick Yost, Nathan Penn, Ashley Heaberlin, Shane Howry, Rylan Arimoto, Caren Perlmutter, Briana Lewis, Lani Wild, Linda Hangartner, Nichole Przybyla, Carrie Dixon



THE FUTURE OF HEAT STARTS IN THE GROUND!

Geothermal energy provides heat and cold in a decarbonized, non-intermittent and renewable way. The new ENGIE campus will be heated and air-conditioned partly by this technology. Targeo's goal is to provide territories access to the business potential of this green energy. As a solution fully integrated into our strategy, targeo makes the economic/technical sweet spots of residential ground sourced heat pump solutions actionable on building level (sales lead map) and provides co-investment as well as required services to realize installation campaigns under a contracting model.

203 Storengy - Germany

Volker Clauß, Franz Danyach, Vera Lüdtke, Louise Petit



Mon Programme pour Agir

Unlike usual loyalty programs that encourage to consume more and more, *Mon Programme pour Agir* is a first of a kind. Our clients are encouraged to consume less/better and are rewarded for their actions. They get the power to act in favor of energy transition. Everybody has the super-power to shift the lines!

1906 France BtoC

Mélodie Petit, Nicole Bellanger, Sandrine Morvan, Lucile Tellier, Guillaume Bourdet, Maureen Boumier



TablePointer

Intelligent Energy-Efficiency-as-a-Service for Decentralized Operations with initial focus on Food & Beverage Outlets

219 Asia-Pacific - Singapore

Jason Tang, Praveen Kumar, Suan Suk Lee

Performance & Energy Management for our customers

The Performance & Energy Management (PEM) solution is a building performance management solution to monitor key KPIs on energy, maintenance, comfort, and operating aspects with a single interface for different users: Performance Manager, Client, Operations Manager, Technician.

040 ENGIE Solutions - Axima

Mathieu Joly, Ahmed Maghrebi, Camille Dontenville, Damien Guillou, Marie-Perrine Durot



Wakefield Zero Carbon Partnership

The transformation of a services-led total facilities management (TFM) contract into a dynamic and innovative partnership drawing in expertise and capability from across the ENGIE United Kingdom business, supporting this customer on their "zero carbon" journey whilst adding significant value to ENGIE.

056 United Kingdom

Caroline Hopkins, Richard Carmichael, Chris Saunders, David Mellor, Matthew Hayes, Andy Spencer, Maryline Pineau



FLASH

Boosting Energy Transition

FLASH is a computer based tool that aims to reduce the Decentralized PV Non-Binding Offer process time from 6 hours to around 6 minutes, allowing Sales Team to design the PV plant, study financing solutions (as PPA or renting), and make an economic analysis from the clients perspective on an easy and simple way anywhere, anytime, generating a clear report that highlights the benefits of our proposal.

355 NECST

Manuel Allo Perez, Daniel Quesada Dopazo, Fuencisla Pita Barahona, Álvaro Rodríguez Martínez, Susana Fonseca, Carlos Martínez



Éco Énergie

Éco Énergie provides free and customized advice to help professionals reduce their energy bills. At the same time, ENGIE collects energy savings certificates at half the market price allowing to generate €10 million savings.

189 France BtoC

Géraldine Cadier-Miralles, Sarah Suranyi, Laura Saraga, Tamara Jullien, Laëtitia Alim, Édouard Dumas, Isabelle Drejza (Ext.), Mathieu Guenguen (Ext.), Ronald Omores (Ext.), Thierry Mulot, Loïc Lepellec, Marie-José Derobert-Masure



EEKO

A project combining monitoring of electrical heating system and DSM services for a smarter use of energy.

EEKO offers residential a remote electrical heating control solution that allows to optimize comfort and energy savings, and contribute to energy transition with “load shedding”.

366 France BtoC

Lynda Lamraoui, Frédéric Porquet, David Pires, Morgan Perani



GOOD DEALS

For greener, cheaper, ethical contracts



ENGIE & BNDDES Innovation in Financeability Evidence producing great results

The Financeability Evidence process implemented with BNDDES (Brazil National Bank) increases the return on projects in Brazil, reduces the need for equity and is beneficial to the environment. Thanks to a quicker release of funds, projects can be implemented at a lower cost resulting in cheaper energy for the population.

284 Brazil

Gustavo Alves, Peter Keller, Fabricius Assis, Evelyn Aguilera, Fernanda Souza

Customer Segmentation by Energy Consumption Pattern

The introduction of energy hourly price regulation in Brazilian market is announced for 2021. This implies the need to quantify hourly price risk to sales contracts once the customers are unwilling to be charged hourly from the start.

Instead of calculating the total portfolio hourly price risk as one, machine learning techniques are used to find and group different consumption patterns from current customers database. These patterns are compared to predicted hourly price curves patterns in order to calculate the cost to supply energy to the most frequent consumption patterns revealed. Correlating these patterns with other customers characteristics, it is possible to predict the consumption behavior of a new customer and offer the best customized product.

467 Brazil

André Garcia, Fabio Mendes, Fabrício Schlickmann, Josué Lopes, Pierre Chatain, Victor Fernandez, Thiago Guesser



Digital platform allowing ENGIE's clients to green their energy consumption by connecting to a renewable asset and becoming a producer themselves

204 GEM

Franck Cachero, Lilian Van-Belle, Ulysse Pierot, Florence Blanco, Pierre-Henri Pelletreau

ENIGMA PROJECT

Predicting power network behavior to capture maximum revenue by reverse engineering of the transmission system operator (TSO) bid mechanism.

176 Generation Europe

Andrea Lessi, Alessandro Perchiazzi, Vincenzo Parascandolo, Alessio Pervenanzi, Donatello Scarfiello

Big Data for Compliance for Suppliers, Stakeholders and Projects

The project aims to organize the BU Brazil's ethical analysis process in a structured and automated way, enabling the evaluation of more than 44 criteria contained in the Group's Due Diligence and Embargo policies with the minimum human intervention possible.

159 Brazil

Ernesto Vahl Neto, Ricardo Pereira, Christina Aguiar, Paulo Barbosa, Leticia Medeiros

BETTER BUILDINGS

Better energy, better air, better cold
for smart and efficient buildings



Robotics for BIM twins

The automated indoor and outdoor BIM modeling is coupled with visual and infrared asset mapping & inspection, assisted by artificial intelligence focused on FM needs. Drones and robots enable operational data interoperability in different contexts.

In a Global BIM market expected to reach \$15.06 billion in 2027, with a CAGR growth of 14.3% from 2020 to 2027, the Robotics for BIM twins offer enables ENGIE to secure a 15% margin on BIM services, vs. 3-5% with current practices and triple yearly revenues.

448 Corporate ENGIE LAB CRIGEN

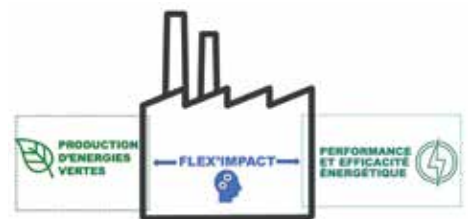
Victoria Bogdanova, Erwin George, Cristian Muresan, Joao-Carlos Pereira-Fialho, Denis-Pascal Carrere

Get an instant quote of your BIM model and order online!

BIM PRICE.COM is a real-time pricing application and online ordering tool for BIM modeling services and 3D scanning of buildings and infrastructures.

437 ENGIE Solutions - Axima

Cédric Brusselmans, André Delecourt, Christophe Dupont, David Gautier, Seemon Rajan



Flex'Impact

Flex'impact predicts solar production and controls energy uses of a building to optimize PV self-consumption.

432 ENGIE Solutions - Axima

Rémy Faure, Benoit Lechat, Vincent Castex, Xavier Coulange, Philippe Alexandre

A flexible, economical and sustainable cold supply

This offer proposes the outsourcing of the customer's cold production. Thus our customers benefit from a "pay per use" billing model and recent installations. It allows them to transform regulatory constraints relating to refrigerant gas into efficient and sustainable solutions.

052 ENGIE Solutions - Cofely

Pauline Raveau, Naxa Couso, Grégoire Debrie, Michael Jantel, Jérémie Fricker



engiesolutions.me

ENGIE Cofely's Integrated Centre for Engineering and Environment (iCEE) platform

In 2019, ENGIE Cofely completed and launched iCEE Technology platform to enhance the customer experience. It monitors and maintains the condition of both assets and environment by means of IoT sensor technology.

035 MESCAT - United Arab Emirates

Bart Holsters, Robert White,
Neil Dempster, Rohan Aaron

Breaking barriers with OPEN PIM & Virtual Reality

We opened the capabilities of the PIM (Plant Information Modelling). Since existing PIM software lack interoperability, TRACTEBEL developed a central platform allowing the exchange of data from and to all different "closed" or "open" 3D software: for Plant Modelling, Simulations, VR... We made our engineering software work seamlessly all together with smart coding. Our engineers keep the tools they know... with enhanced efficiency collaboration, model quality, up to date data, records...

1916 Tractebel BE Belgium

Arnaud Duchêne, Vincent Doré, Thibaut Helman,
Célestin Piette, Gildas Potin



Innovation, the cornerstone of the development of the Pools market

By relying on research and technical innovation ENGIE Solutions has been able to efficiently optimize the management of swimming pools and take its leading position in the complex market of aquatic facilities: a look back at the latest innovations at the heart of accelerating our development in this segment!

1897 ENGIE Solutions - Cofely

Manon Cottet-Providence, Maxence Bureau, Julien Gare, Stéphane Saintot

BREATHE Breathe cleaner air with ENGIE Solutions

BREATHE: a new global “as a service” offer to improve air quality for community and tertiary customers, based in particular on innovative large-scale air clean-up technologies.

156 ENGIE Solutions

Olivier Turc, Arnaud De Fremicourt, Arnaud Dauber-Natali, Jean-Marie Warnan (Cpcu), H el ene Buee (Crigen), Adrien Caurant (Crigen)

Visionn’air

Visionn’air is a technical solution enabling to combine air quality, hygiene and energy performance for hospitals’ operating rooms. It ensures the complete traceability of the “air” compliance parameters of the Controlled Dusting Zones in the hospital sector, combined with the optimization of the maintenance of air treatment equipment.

013 ENGIE Solutions - Cofely

Maxence Bureau, K evin Alavoine, Delphine Chailloux, Yannick Rongier, Christophe Tardy, St ephane Grout, Priscilla Petinga

A regenerative relocation

Regenerative move of Tractebel Latam headquarters, reusing our assets, with a zero-cost, zero-carbon and zero-waste ambition.

1919 Tractebel BE Latam - Brazil

Flavia Pereira, Kenia Moura, Alisson Oliveira, Weuler Albino, Quentin Dejean



DIGITAL DAY-TO-DAY

Everywhere, at all times,
and even in unexpected ways



mFundi the Uber for technicians

mFundi digitalizes the entire after-sales workflow and incentivizes the contractor to provide a better quality of service at no additional costs. The self-documentation feature reduces management and controlling efforts and thereby costs. Due to the availability of the app on low-level and affordable phones it is fully suitable for the Sub-Saharan environment. Its step-by-step approach reduces the training effort that is needed to train contractors.

505 Africa - Kenya, Rwanda, Tanzania

Stefan Zelazny, Niccolo Passolunghi, Oleh Sushko



Asset-Intelligence: Equipment recognition on photos performed through Deep Learning

The photos taken as part of the project to deploy communicating meters are reused to identify the different equipments thanks to an AI that we have created internally: Asset-Intelligence.

405 GRDF

Jean de La Fayette, Sophie Gabbay



LORIN

LORIN allows technicians to perform their inspection rounds digitally on a smart phone, tablet or voice-commanded and hands-free device clipped on their helmet.

303 Generation Europe

Matthieu Fedrigo, Natee Bunnag, Wouter Schoofs

Weighing the CO₂ equivalence of messages in Outlook

ENGIE IT provides a tool, integrated into Outlook, to measure the CO₂ equivalent of each sent email, to make the employees aware of the carbon footprint of their activity.

461 Global Business Support

Laurent Jehu, Cindy Ramirez, Olivier Servoise



Supply Meter Data Management and Analytics Platform

A cloud native platform that can ingest and manage huge volumes of time-series and meta data and provide a centralized view to understand and predict customer consumption patterns for better product and solution prototyping.

470 North America

Cengizhan Yenerim, Ekaterina Sokolova, Alex De La Rosa, Vasu Kolla, Gilbert Flores

AxiRelevé

AxiRelevé is an application, accessible to all ENGIE Solutions employees on Microsoft Power Apps, which makes it possible to read both energy meters and technical parameters in buildings.

249 ENGIE Solutions - Axima

Ahmed Maghrebi, Damien Guillou, Marie-Perrine Durot, Mathieu Joly

AFO Assisted Field Operations

Providing digitized, step-by-step safety and work instructions via a connected cloud-based application to field operations (technical interventions, maintenance, inspections, etc.), results in a safer, more compliant and better documented execution of our field activities.

Should the situation on site be different than foreseen by the instructions (safety or work instructions wise), remote assistance capabilities make it possible to “link-in” with the appropriate experts via “push-to-video”, saving a lot of traveling costs.

This results in a maximized safe & “first time right” operation, reducing significantly our operational carbon footprint.

151 Benelux

Ronny Stormezand, Jessica Vanclaire, Elke Tondeur, Peter Beuselincx, Tim Lemaître, Frank Portier, Alexis Genin



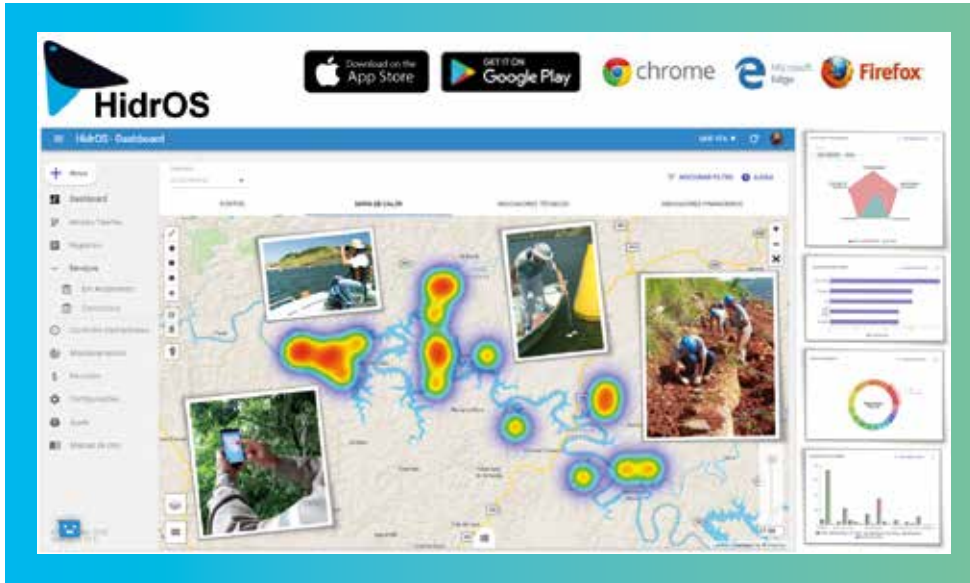
Eyetech remote assistance

Eyetech is a remote assistance platform developed to assist with knowledge sharing, solve problems quicker and improve quality of service we provide to clients.

With this technology, efficiency in services is achieved as support is readily available when needed, avoiding travel and labor costs. We use the same system to do building inspection on contracts to highlight issues before and after we sign a contract. Currently we are investigating in how we make best use of the technology for Health and Safety inspections.

071 Africa

Misheck Mutandwa



System for environmental event management and monitoring of activities and services

ENGIE Brasil Energia partnered with the startup RoadLabs to develop HidrOS, a platform to manage environmental activities. HidrOS was developed to be used by field teams, as a mobile application, and by managers and data analysts, who have access to a complete desktop version of the system.

To meet the demands of both field and office users, specific functionalities were developed on the platform, such as recording occurrences, monitoring and operational control. The solution also allows managing services, tasks and resources and has a dashboard with technical and financial indicators.

To facilitate and improve field analysis, the system was automated and integrated with information about heritage and hydrology, as well as mapping and cartography tools.

485 Brazil

Cid Ionceck, Felipe Costa, Davi Nishimura, Erlon Silva, Christiano Pase

Site cable management solution by RFID

RFID is an automatic identification technology that uses radio frequency radiation to identify objects carrying tags when they are scanned by an appropriate reader.

This solution allows good management, good monitoring of the cable stock at construction sites and control of cable cutting, which further reduces the production of cable falls.

409 Africa - Morocco

Mohammed Benhabda

ENGIE DMAN

ENGIE DMAN is a digital solution that allows connecting our company ENGIE Servicios Chile with clients and freelance technicians to comply with clients' requirements in terms of time, quality and safety for spot maintenance services.

276 LATAM - Chile

Paulo Alvear, Sergio Mendez, Victor Castillo, Ignacio Fernandez, Patricio Venegas, Arnaud Kronenberg, Victor Castillo, Felipe Gutierrez, Patricio Venegas, Roberto Zazzali

PREDICTIVE LOSS CONTROL

In Latin America, Electricity theft is a fairly common act that strikes distribution companies, reducing their revenues and increasing their expenses.

In Perú, ENGIE provides a service to discos that consists of verifying possible points of energy theft, the project breaks the traditional way to do the things by seeking to predict which are these points using machine learning.

453 LATAM

Junior Martinez, Victor Benattar, Juan Loo, Jorge Kanemoto, Katherine Bautista



WALK THE TALK

**Welcome the Future by learning,
adopting, transforming ourselves**



Welcome on Board or how to welcome a new hire

Simplify, standardize et digitize the whole process of hiring and welcoming a newcomer.

039 Global Business Support

Siou Y Chiem, Valéry Fournel, Laurence Lucadou, Stefanie Madou, Émilie Morel



An escape box to decode risks

The escape box is a perfect solution to revitalize our safety talks. No more top-down presentations, this fun animation completely involves collaborators in discussions and encourages them to work as a team to solve the puzzles.

335 ENGIE Solutions - Endel

Julien Carru, Alexandre Fellon, Jean-Michel Denhez, Jean-Pierre Laurent Mennesson



The School of Sustainability (SOS) is a 6-day internal education program focused on training employees on urgent sustainability issues and facilitating innovation towards new, profitable, and sustainable business models.

064 GEM

Madeleine Futterman, Razvan Dordea, Aude Dumoulin



LISA

Personalized Videos for Job Candidates

In order to convince them to join ENGIE, they are sent a personalized video after the first job interview. In the video, they are directly and personally addressed by a friendly young man who explains to them the Zero Carbon strategy of ENGIE and invites them to join our team of visionary experts who work on one of today's foremost challenges: how to transition to a carbon-neutral economy and society. Throughout the video, the candidate's name is featured on a button, is handwritten on a flyer, appears on the elevator's control panel and on a personalized key ring.

068 **NECST - Germany**

Astrid Grüter, Andrea Matussek, Bianca Mansoat, Frank Hoepner



The Kulturtisch is a forum of empowerment, a new framework to strengthen collaboration, accompany change and to foster a positive corporate culture.

211 **Storengy - Germany**

Philipp Hepp, Elena Hetzel, Franz Danyach

La Rue du Marquage

The Rue du Marquage is a fun course on preventing damage to the gas network. It concerns any service providers carrying out works on the street and GRDF employees. A street is reconstructed like a movie set so that participants can, in almost real conditions based on emotional experience, carry out all the actions to prevent any risk of accident involving the natural gas network.

1912 **GRDF**

Sonia Chuzeville, Éric Froidevaux, Xavier Fillias



FLYING Schools or how to speed up the transfer of technical skills

From an identified need for technical skills in one entity, a task force is set up with occasional in-house technical trainers from other entities to build and then to deliver a bespoke and ad hoc training: a FLYING School was born!

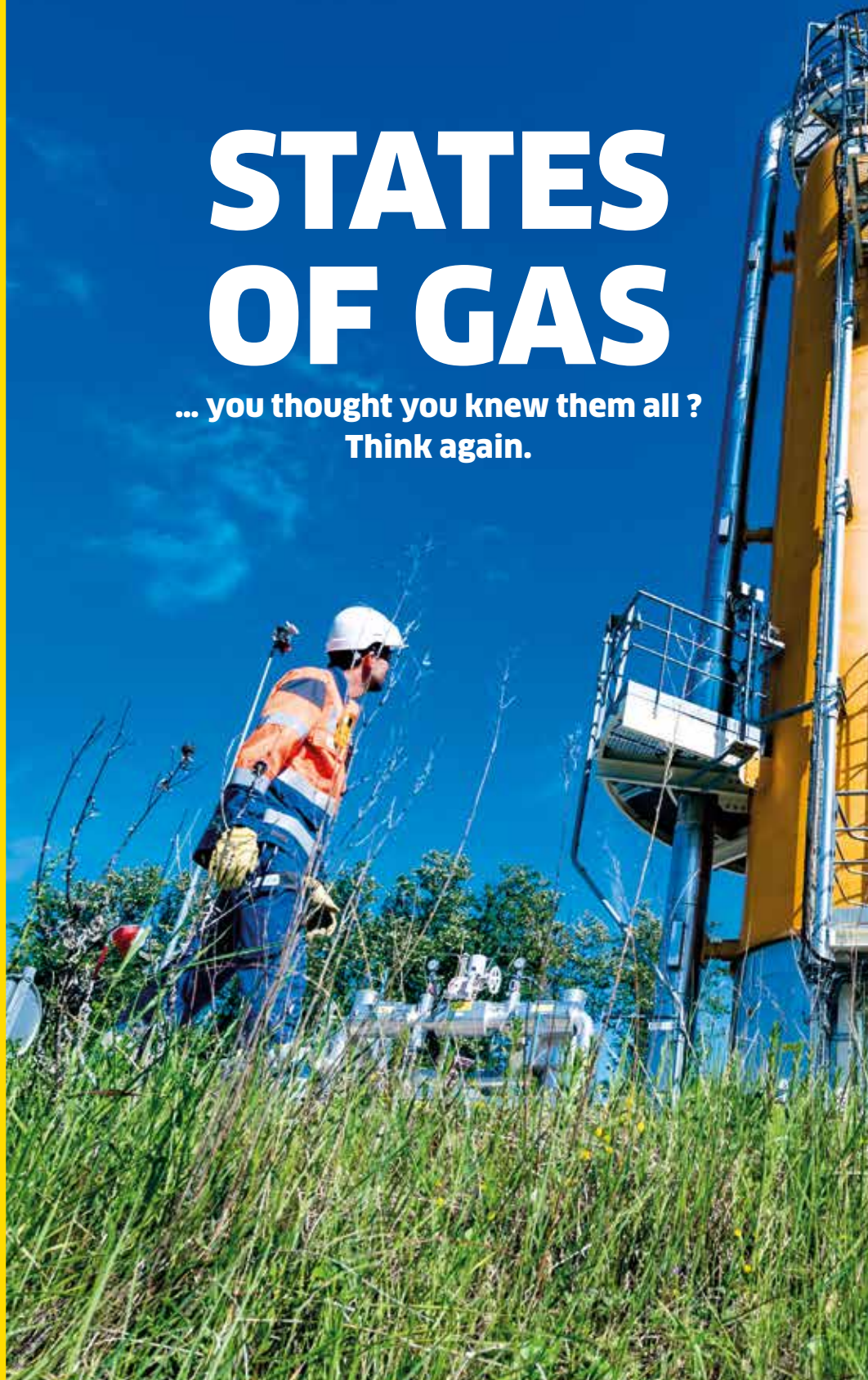
The value creation of this professionalizing ENGIE Schools' action is to speed up the transmission of targeted technical skills by arranging the sharing of experience and skills between in-house experienced peers. The first FLYING School developed in 4 months, by actors of 4 BUs, supported by 4 centers of expertise, trained 41 people at the end of 2019 in Chile in an international U. Camp, bringing contract managers to train from all over Latin America.

032 Corporate RH

Monica Delgado, Isabelle Jouet Pastre, Emmanuel Tiglio, Pedro Britos Dominguez, Frederic Rivera, Carole Matarazzo

STATES OF GAS

... you thought you knew them all?
Think again.





LiLiBox

from the CRIGEN patent to the industrial application at Storengy

LiLiBox is a solution to liquefy biomethane, store it and re-inject it into the gas network when it is available. The solution allows to increase the revenues of biomethane producers, allowing them to maximize the value of their biomethane production. At the beginning of the LiliBox adventure in 2014, there was no adequate solution. From the design of an adapted and four times patented process that contributes to the objective of having 100% green gas in the gas networks by 2050 to a first deployment on a biomethane production site, it took 4 years to transfer the solution to Storengy for commercialization as Azola.

305 Corporate ENGIE LAB CRIGEN

Frédéric Legrand, Gabrielle Menard, Laurent Benoit



REMBRAN

It's a traction machine that allows the replacement of polyethylene (PE) pipe connections without opening a trench, when PE is crossing a road.

037 GRDF

Guillaume Dupas and Pascal Chevré



Hydrogen energy for low carbon cities

Through a full-scale demonstration in a district of the urban community of Dunkirk, the GRHYD project paved the way to a quick and massive deployment of a low-carbon energy for more sustainable cities. This new gas, a mixture of renewable hydrogen and natural gas, will be in the short term part of the green gases commercialized in France and in Europe. During the final months of the project, economic models have been finalized with several BUs and thus open up new markets for the Group.

139 Corporate ENGIE LAB CRIGEN

Hélène Pierre, Isabelle Alliat, Mailys Pale, Vianney Nies, Jacky Doumenjou

Fénix, Creation & Renewal

Fénix is an innovative digital platform focused on the sale process of natural gas service for B2C customers in ENGIE Mexico.

It helps to speed up the operational and administrative process of contracting: functionalities and tasks carried out by commercial partners, sellers, and ENGIE collaborators.

More than managing customer traceability from sales, it focuses on customer experience to provide the best active experience via a mobile app connected to the back-office system.

436 LATAM

Julio Rosas, Lidia Galan Vazquez, Edgar Galicia, Lucero Garcia, Maritza Torres, Tania Fernandez

DINGO Project

The unexpected growth in traffic at the Fos-Tonkin LNG truck loading station did not allow us to wait for the completion of the construction of the new station in the nearby Fos-Cavaou terminal.

In the very restrictive regulatory context of a Seveso site, and without interrupting its operation, the project managed to “boost” the capacity of the existing station by increasing its capacity from 22 to 34 slots per day. The “all-inclusive” project lasted only 10 weeks.

007 Elengy Tonkin

Romain Renier, Thierry Labrousse, Raphael Pujol, Pascal Anfossi, Jean-Pierre Agar

Esti'métha

Esti'métha is a simulator which makes it possible to estimate the potential for biomethane and digestate production, the investment required to carry out the project and the foreseeable turnover.

075 GRDF

Éric Feuillet, Pierre-Yves Eon, Pascal Garçon

Small Scale LNG cooling solution

Exploitation of LNG cryogenic state at customer installed LNG Satellite Regasification Plant to reduce the end customer's electricity needs for cooling purposes.

353 LATAM - Chile

Rafael Francolino, Marco Rebolledo, Kyros Christofides



CIRCULAR INDUSTRY

More local, optimized,
carbon neutral



EFESTO

Smart steel factories for Cities

The direct recovery process injects the heat into a green energy infrastructure built by ENGIE: a district heating architecture that has allowed us to meet Lonato del Garda's heating needs, achieving relevant economic results and a positive environmental impact. Going beyond the "state of the art" of an industrial process, EFESTO is a smart way to deal with waste heat, from dissipation to recovery. The steel furnace cooling system was modified, using water at 70 °C instead of 20 °C: the water, raised up to 90 °C, is then directly injected into ENGIE district heating network.

Today, Lonato del Garda is a proven success: in this small industrial city, EFESTO provides 85% of the heating needed. In Aosta, where we have started its first commercial roll-out, we expect a 400k€/y of potential savings, corresponding to 20 GWh/y.

257 NECST

Mélanie Oehmichen, Matthieu Bonvoisin, Barbara Marelli, Alessio Ciocca, Emiliano Piacibello, Michele Cerminara, Edoardo De Capitani, Gabriele Minucelli



BLADE RUNNER

A joint effort of Operational and Maintenance excellence creating optimal running conditions for the gas turbine and customized overhaul scopes during its entire life cycle allowing us to stretch maintenance intervals.

462 Generation Europe

Tim Carrette, Marc Eyckmans, Piet Roovers, Peter Lescauwaeat, Wouter Van Nederkassel

Ammonia absorption

The Ammonia Absorption Unit (AAU) recovers low grade waste heat from industrial customers and transforms it into useful heat and/or cold flows at flexible temperature levels using a zero-carbon working fluid.

452 Benelux

Daan Van Gansen, Jim Geldhof, Joachim Houtekier, Dirk Van De Woestyne, Jessica Vanclaire, Thomas De Cuyper



RHyno, the world's first hydrogen mining truck solution

The RHyno Project is a “proof of concept” in South Africa to develop and test the world 1st hydrogen mining haul truck, together with a renewable hydrogen (H2) supply chain, in order to promote the use of hydrogen within the mining sector to enable its transition to zero carbon. This project is a co-creation with Anglo-American, one of the world's largest mining companies.

1903 Hydrogen

Franck Le Baron, Koen Langie, Pascal Bourdeaux, Ramon Rituerto Prieto, Virginia Lopez Lopez

EDF PRIMARY ELBOW REPLACEMENT

This innovative EPC contract is a real game changer for ENGIE as a start for many opportunities within EDF.

With this first of its kind project, ENDEL and TRACTEBEL won together a strategic contract batch for replacement of primary components for EDF's nuclear power plants in France. A very high added-value operation that will mobilize expert teams over several phases until 2026.

423 Tractebel BE Belgium

Marion Dormant (Endel), Augustin De La Motte (TE), Thierry Beguin, Cédric Van Michel

BeCircle accelerating the transition to a Circular Economy

It consists in a geodata-based web platform that allows to model territorial clusters (“ecosystems”) in terms of resources flows (water, materials, energy) without requiring confidential data. With BeCircle, ENGIE BUs can design projects that help close resource loops at local scale with shared economic and environmental benefits.

The BeCircle approach is now fully operational. It has already been deployed successfully in France (6 projects completed, 2 likely to come) and in other countries in Europe (2 projects completed, 3 likely to come). We will expand to the other continents in 2020 (1 project to come in Singapore, 2 others in discussion).

379 Corporate ENGIE LAB CRIGEN

Axel Michel, Nathan Sonalier, Delphine Antonucci, Anne Prieur, Olivier Grauwijn, Nathalie Filippini, Vincenzo Giordano, Dimitri Tamanos

Carbon Free Steel with ZERO emission methane and green Hydrogen

Steel industry is one of the biggest CO₂ emitting industry. Decarbonizing this industry is the Holy Grail of the energy transition. As steel can be produced today with Methane (CH₄), Hydrogen (H₂), and electricity, the innovation is the use of green H₂ carbon free methane resulting in the production of carbon free steel with existing assets and infrastructure.

506 Generation Europe

Daniel Marenne, Paul-Éric Vermeulen, Olivier Arthaudt, Thierry Lousberg



FLASH

Combined heat and power (CHP) plants are designed to operate at highest efficiency at 100% thermal load. Energy efficiency measures or changing demand profiles force heat recovery steam generators to operate at lower efficiency.

First in a kind is the introduction of a flashtank on the steam production side as an active steam generator to produce low pressure steam and hot water. Variations in the steam demand no longer have a negative impact on the efficiency of the CHP and associated CO₂ emissions. The usage of natural gas is also significantly reduced (for the same amount of steam supply). By making use of proven technology, the risk is low and it's easy to operate.

193 Generation Europe

Koen Rombouts, Soufiane Zizaoui, Willem Vandamme, Michel Turchet

Nuclear Diversification into SMRs

SMRs are the next big thing and may change the game for the nuclear industry. Our goal is to leverage ENGIE multi-métier knowledge of the energy market to:

- foster the emergence of the upcoming Small Modular nuclear Reactor (SMR) market;
- secure a pivotal role in the European SMR landscape;
- and ensure a long-term future for our Nuclear Services Entities.

111 Tractebel BE Belgium

Anicet Touré, Emmanuel Girasa, Lea Tatry, Nicolas Colangelo, Célestin Piette



JEDI Laser cleaning of machinery components

Cleaning large machinery components by laser instead of using conventional techniques (e.g. sandblasting, glass bead blasting), to avoid the risk of health damage for the sandblasting operators; the risk of possible mechanical damage to the turbine parts, and huge loss of time (for transport to the workshop or for building hermetic tents on-site).

137 Generation Europe

Tomas Van Acker, Luc Kerremans

SUSTAINABLE RENEWABLES

Ambitions Unleashed



EnergyRoof

Replacing asbestos roofs with solar panels

Together with our partner, insurer Univé, ENGIE services replace asbestos roofs with solar panels. This comes at no cost to the original owner and the generated solar energy is made available through ENGIE Energy to (other) members of Univé at a so-called fair trade price.

038 Benelux

Ton Kiffers, Derk Straathof, Annelies Hosmar-Keekstra, Rogier Bremer, Rob Kursten



CLARITY

to see clearly under the surface

Wind turbine blade defects due to design, manufacturing or fatigue can be critical, and require a great number of working hours of repair and long energy production stops. We evaluate that these repairs can be done 12 x faster if the defect is repaired early.

With the CLARITY project, ENGIE Green is using drones along with powerful laser-based analytical systems to spot invisible defects under the surface of the wind blades before they prove critical, therefore improving its windfarm sites' production and reliability.

048 France Renewable Energy ENGIE Green

Jeremy Hellot, Lucas Alloin, Bernard Laurent, Blandine Moquin, Erwin George, Supairvision, Université de Reims

EVALS

EVALS is an artificial intelligence system that facilitates the identification, technical definition and economic assessment of alternative layouts and thus, the optimization of potential hydropower projects by processing terrain data with geospatial algorithms, analyzing hydrological data and calculating bills of quantities based on 3D-modelling and applying tailor-made engineering design approaches developed by Tractebel in Germany.

1910 Tractebel BE Germany

Ozgur Beser, Jens Moedinger, Joerg Grossmann



FORECASTER

The industrialization of renewable energy production forecasts as an innovation accelerator! A world's premiere digital cooperation between 3 actors: ENGIE GREEN, DARWIN (ENGIE IT), ENGIE NORAM. Within the framework of this collaboration, we have already implemented, D+1 to D+10 production forecasts for all the solar and wind assets connected to DARWIN (6 GW). The benefits are: strong reduction in service costs per asset (70%), control of forecast quality on a global scale and ease of access. This is a "success story" that will contribute to building innovative solutions.

197 France Renewable Energy ENGIE Green

Christian Koessler, Mamadou Dione, Nicholas Chalou, Christopher Arnold, Keith Dyer, Manon De Ridder



Windfloat Atlantic the biggest offshore floating wind turbine in the world

The pre-commercial facility has three 8.4 MW wind turbines mounted on floating platforms, anchored with chains to the seabed at a depth of 100 m, 20 km off the coast of Portugal, reaching a total installed capacity of 25 MW.

The project is led by Windplus consortium, comprising EDP Renewables (54.4%), ENGIE (25%), Repsol (19.4%) and Principle Power Inc. (1.2%).

The floating technology is a game changer. Floating wind turbine foundations instead of a bottom fixed structure allow turbines to be located at best wind resource notwithstanding depth and seabed conditions. Assembly takes place in sheltered port areas with onshore cranes and techniques, and offshore installation and maintenance use regular towing vessels. Environmental impact is low due to accessibility of deep-water depths.

133 NECST

Filip Meuleman, Raoul Filaine, Cedric Dewandre, Francisco Barbosa, Pierre-François Moizan, Luc Victor

400 MW Offshore Hydrogen Production Platform

The objective of the project is to develop a technically feasible and economically viable concept for a large-scale offshore platform to produce green hydrogen from offshore wind energy and sea water, using state-of-the-art electrolysis technology.

360 Tractebel BE Germany

Felix Knicker, Klaas Oltmann, Arne Schäfer, Andreas Rosponi, Ralf Bucher

MARINE FLOATING SOLAR

Marine floating solar photovoltaic farms are a potentially disruptive solution for competitive offshore renewable electricity production. They also introduce a new business model for Tractebel.

241 Tractebel BE Belgium

Tine Boon, Andreas Rosponi, Michael Wuennemann, Caroline Tjengdrawira, Antony Grande

Offshore Wind Site Search Model

Quickly and accurately evaluate future Offshore Wind Farms opportunities for every 100 m² of sea, thanks to a bespoke and highly advanced model combining geographic information system (GIS) & data with in-house datasets to gather, manage and analyze the risks and estimated costs of wind energy.

422 United Kindom

Chris Thomas, Jonathan Griffiths, Robert Lawrenson



The Blades of the Future, 100% recyclable!

“Almost perfect”: a wind turbine produces 100% renewable energy thanks to 94% recyclable material. Blade recycling is a vulnerability that opponents are using to undermine the wind sector.

ENGIE and Arkema decided to gather representatives from the wind value chain in order to establish a long-term partnership aiming at demonstrating the technical, economic, and environmental relevance of blades built thanks to the Elium resin, developed by Arkema. For ENGIE, the purpose is to become the first company in Europe to use 100% recyclable blades on industrial-scale wind farms.

520 France Renewable Energy

Vianney de Lavernee, Thibaud Uhl, Hervé Macau, Ana Novak-Zdravkovic



Hybrid Power Plants (HPP's)

Make use of existing High voltage grid of a power station to connect newly built Wind and Solar assets, in a shorter timeframe and with less CAPEX.

434 Generation Europe

Harry Talen, Ronald Roes, Christian Bouwmeester, Rob van de Geer



New approach to make power systems more resilient

Identify and analyze the best solutions to improve the resilience of power systems against impacts of extreme weather events such as hurricanes, droughts and floods. Applying of this approach will guide power utilities to design their systems to face climate change.

179 ENGIE Impact

Sébastien Leyder, Tanguy Port, Pierre Henneaux, Florian Sparavier



From delivering power to NO BREAK power supply

Extend the traditional power supply by providing a No Break supply “as a service” to power critical assets/ enterprises and make it affordable by valorization of the back-up capacities on the energy markets (creation of a second revenue stream).

325 Generation Europe

Gaëtan Deckers, Éric Lamendour, Hervé Lauwerie, Quentin Renoy, Tjomme Van Der Meer



CO₂ FREE MOBILITY

Road, rail, and batteries



H2@Rail

Zero-carbon transition for the railway environment

We successfully tested the deployment of the renewable hydrogen value chain for the regional passenger train market, from renewable hydrogen production to distribution to the train: a first-ever breakthrough contributing to zero-carbon transition for territories.

307 Hydrogen

Soizic Le Goff, Hippolyte Broqua, Pieter de Jong, Quentin Nouvelot, Jean Frouin, Martin Faber



ENGIE e-XPLORE, the first integrated electromobility solution

ENGIE Romania launched ENGIE e-XPLORE which ensures a seamless transition to electric driving and a sustainable lifestyle by offering future drivers a complete solution. It includes an electric car that comes with a home charger and access to a public charging network, as well as a contract for green energy at home. Developed in partnership with BMW authorised dealer Auto Cobalcescu and Renovatio, the leading company in public charging infrastructure, ENGIE e-XPLORE offers a simplified customer experience, one which ensures future electric drivers that they have the best partners for their new journey. ENGIE e-XPLORE marked the public launch of ENGIE's electromobility business and was the first step in positioning the company as a main player on this market.

372 NECST - Romania

Andreea Ungureanu, Radu Cananau, Valentina Georgescu, Oana Gorduna, Adrian Fratean, Ana Maria Ivan, Laura Neagu, Bogdan Popa, Diana Stan, Bogdan Zamfirescu



La Belle Batterie the first certification service for EV batteries

Unlocking the second-hand electrical market by offering customers and professionals accurate, independent and transparent information on the state of health (SoH) of electric vehicles (EVs) batteries.

474 France BtoC

Florian Chevallier, Guillaume Hebert, Gilles Debuchy, Sylvain Huet

CarbonMobility

CarbonMobility is a carbon impact monitoring and calculation tool that allows all employees to become aware of the impact of business travel and to take action accordingly.

200 ENGIE Solution - Axima

Camille Dontenville, Mathieu Joly, Marie-Perrine Durot

SoX

The SoX is a completely new product that utilizes Electrochemical Impedance Spectroscopy in conjunction with Coulomb-Counting and machine learning algorithms to reliably calculate the current state of charge and state of health of any given battery at significantly reduced costs compared to traditional methods.

511 Africa - Rwanda, Tanzania, Kenya

Stefan Zelazny, Maxime Marion



FAST

Reshape fast charging business to make it smarter and profitable

ENGIE prioritizes mobility business development. New Electric Vehicles (NEV) sales continue to grow in a substantial way in many countries. There are constraints of CAPEX, OPEX and ramp up for the operator to develop and be profitable, that can be lifted through partnering with fleets like Didi's. Fleets volume account for a half of the NEV sales and requires fast charging solutions. Further integration can be reached with FAST through battery storage systems as a second-life for retired NEV batteries.

152 China

Andy Liu, Anne-Cécile Bonneville, David Zhang, Niko Chen, Rodrigo Machado, Jelle Smekens, Rafael Jahn



Electric mobility and CO₂ Aggregating EVs for decarbonization

The SMATCH® smart charging solution has been enhanced to integrate aggregation. This allows to control multiple chargers from different sites all at once and connect SMATCH® to the global external energy system. This massive real-time EV charging can respond to grid needs – but also prioritizes local green energy use or optimal charge times when CO₂ emissions of the national energy mix are at their lowest. By aggregating much more distributed EV sites thanks to our cloud scalable solution, the EV flexibility potential will increase in order to serve and optimize the grid, to generate revenues and to act for decarbonization.

067 Tractebel BE TRIS/Laborelec

Arthur Andruszkiewicz, Jérôme Glass, Laurent de Vroey,
Michael De Koster, Pierre Moench, Piet Cortier



CONNECTING ENERGIES

The Key to Success



ZES: Zero Emission Services with Mobile Energy Containers (MECs)

The ultimate goal is to create a new operating and logistics system for a large fleet of 20 ft Mobile Energy Containers (MECs). This fleet of MECs will be used to provide Zero Emission Services (ZES) to Inland Shipping Vessels (to replace diesel) and when the MECs are not in use on a ship they will be employed to provide different ancillary (flex) services to grid operators and to serve building sites, festivals, etc.

171 Benelux

Toon Strijbosch, Brendan Wauters (ENGIE Fab), Joost Brinkman (External), Leon Sluiman (Evis)

World's largest "Solar-after-sunset" project to be delivered by ENGIE in Guam

ENGIE's system will bring Guam closer to the 25% renewable target by 2025. Project paves the way for a 100% renewable global future powered by solar & batteries. An estimated CO₂ reduction of 1.2 million tons over the system's lifetime, 85GWh of clean energy and 30% reductions in electricity cost.

361 North America

Laura Caspari, Mark Akehurst, Kotryna Kanapyte, Stefano Terranova, Dario Gliott

Microsoft 24/7 Custom Renewable PPA Solution

Microsoft has ambitious carbon reduction goals and sought renewable energy supply that better matched their consumption pattern. In response to this request, GEM and North America BUs together offered Microsoft a highly innovative renewable solution which combined the production of new ENGIE solar and wind projects with the risk management capabilities of GEM.

003 GEM | North America

Nicolas Malcorps, Emily Cohen, Anne Idiart, Makhiban Gengadharan, Graham Downey, Joseph Gillespie, Adam Roth, Quynh-Anh Lam

Decarbonization as a service in the port of Antwerp

Several ENGIE entities collaborated to develop a new joint offer of PV, battery system, EV charging stations, optimization of cooling assets and energy management system (EMS) "as a service" for a B2B customer, allowing him to optimize his carbon footprint.

406 Benelux

Dean Van Raemdonck, Jelle Smekens, Rafaël Jahn, Françoise Sotiau, Stijn Huysmans, Quentin Ramon

Local Energy Optimization

The energy transition implies a massive development of renewable energies connected to the distribution network which must adapt accordingly. Local Energy Optimization provides the grid operator with a service for controlling consumption and production in order to reduce the constraints on the grid. This service thus reduces the need to reinforce the network while providing value to ENGIE customers.

334 GEM

Guillaume Lehec, Cyrille Pellizzaro, Cécile Cordier, Yoann Maudet



GREENER TERRITORIES

A World of Opportunities

Paris - Porte de Montreuil ENGIE Solutions' First Zero Carbone Global District

This future district will be carbon neutral in terms of energy, materials, and mobility for 50 years. Nature will be reintroduced to increase both humans' well-being and local wildlife. The buildings are designed to be reversible, which allows a low carbon future adaptation of spaces.

370 ENGIE Solutions - Ineo

Sylvie Dao, Marc Daumas, Olivier Marcos, Morgane Kerdoncuff, Nikolay Kolev

Australian Hotels Association Aggregate Renewable PPA

ENGIE ANZ and Simply Energy partnered with the Australian Hotels Association (AHA) to build the world's first industry-scale renewable energy offer, aggregating electricity consumption of participating AHA members to achieve competitive pricing while underwriting large-scale investment in renewable energy sources.

389 Asia-Pacific

Luke Peacocke, Jody Doran, Guillaume Vercauteren, Mazhar Shah, Sally Kandil, Anthony Lopresti, Sandy Menichelli, Mark Kotzen, Lucas McAuliffe, Lidia Misev, Stuart Smith, Suchet Metha, William Owen

Data-driven Estimation of Potentials and Boundaries for District Heating/ Cooling Systems

It is an innovative data-driven framework to automatically search, evaluate, and identify the boundaries and potentials of DHC (district heating and cooling) systems for a city using publicly available datasets and artificial intelligence, with an interactive web platform to provide SaaS (Software as a Service) to ENGIE BUs, governments, planners, and engineering professionals for new DHC business exploration.

144 China

Ting Nie, Zheng Yang, Eleanor Ho, Ben Schwegler, Lingqi Su

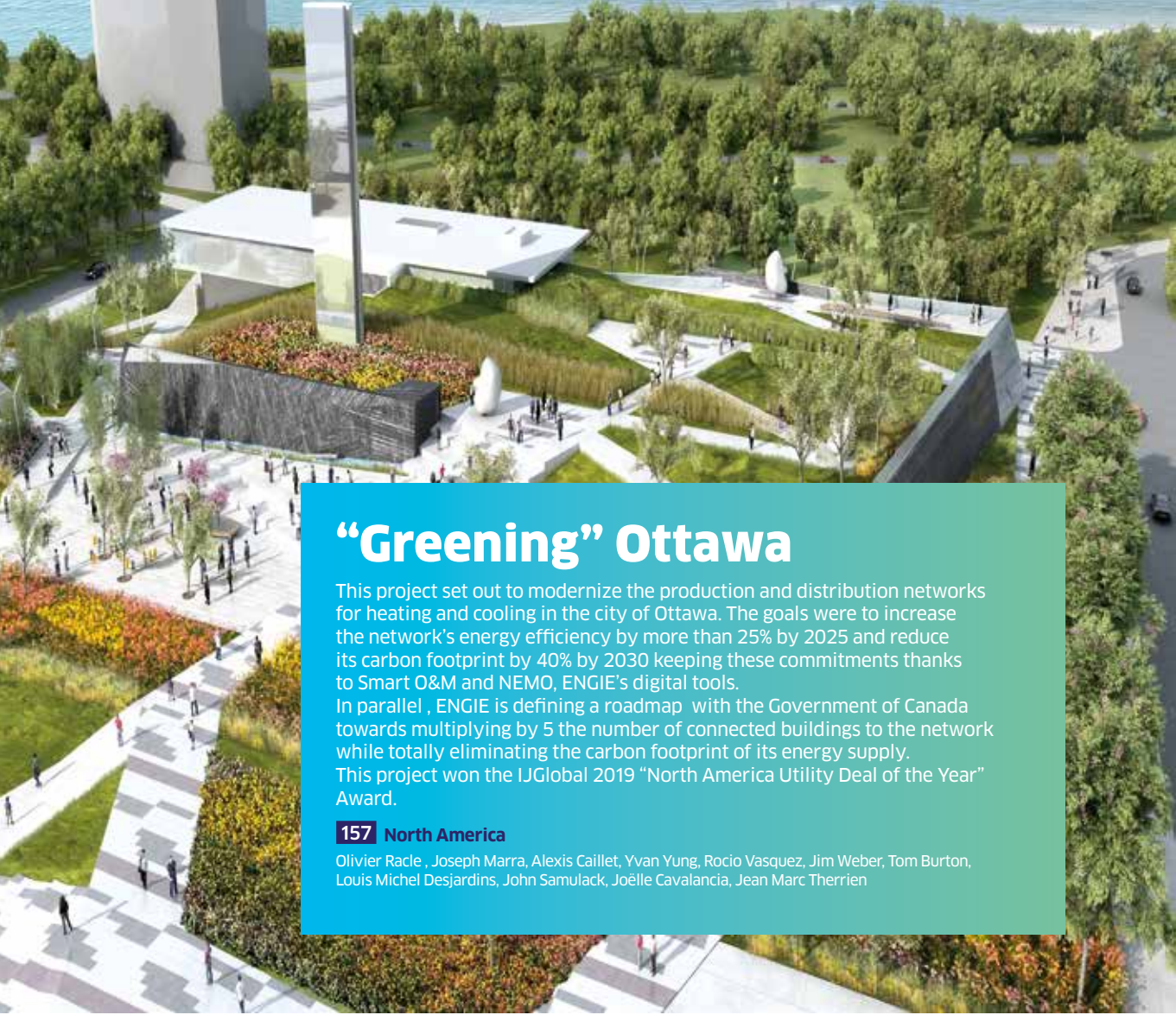
Modul'Eau

Modul'Eau is a monitoring tool based on instant consumption and the profile of customers of the Climespace cooling network (Paris) that acts remotely and in real time.

It optimizes the operation of production means over short periods of time by adjusting customer demand as closely as possible to installed production capacity, favouring critical customers. Modul'Eau avoids the investment of new means of production. In 2019, during the heat wave, the tool was used to deliver the most critical customers and to limit the risk to the network caused by a very high demand/production imbalance.

265 ENGIE Solutions - Climespace

Frédérique Bravin, Luc Jann, Yveline Marnier, Alexis Martinet, Clark Leborgne



“Greening” Ottawa

This project set out to modernize the production and distribution networks for heating and cooling in the city of Ottawa. The goals were to increase the network’s energy efficiency by more than 25% by 2025 and reduce its carbon footprint by 40% by 2030 keeping these commitments thanks to Smart O&M and NEMO, ENGIE’s digital tools.

In parallel , ENGIE is defining a roadmap with the Government of Canada towards multiplying by 5 the number of connected buildings to the network while totally eliminating the carbon footprint of its energy supply. This project won the IJGlobal 2019 “North America Utility Deal of the Year” Award.

157 North America

Olivier Racle , Joseph Marra, Alexis Caillet, Yvan Yung, Rocio Vasquez, Jim Weber, Tom Burton, Louis Michel Desjardins, John Samulack, Joëlle Cavalancia, Jean Marc Therrien

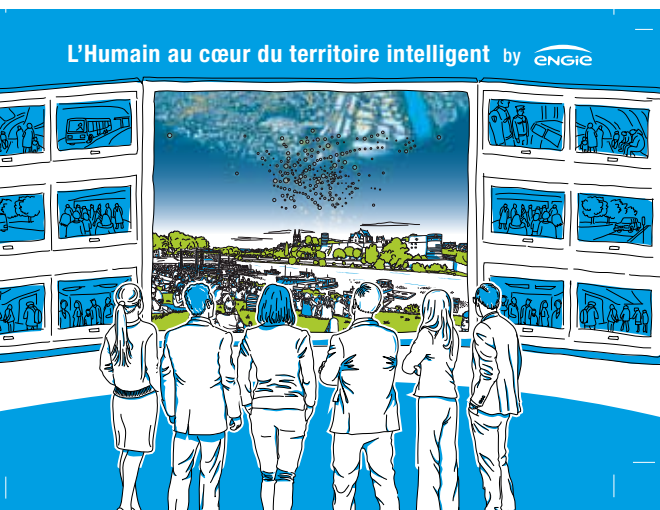
Smart territory of Angers Loire Métropole (ALM)

Build with Angers Loire Métropole the replicable French model of smart territory thanks to a unique and atypical grouping sharing the same values, combining diversity and complementarity of expertise. This market, on an unprecedented scale in France, made it possible to lay the foundations for ENGIE’s offer in terms of smart territory: sustainable and inclusive, using technology to take care of those who live and build the territory.

To the 4 major challenges of this ambitious project, ENGIE and its partners have brought solutions which relate to 9 business themes: public lighting, traffic lights, security, buildings, mobility, green spaces, water-sanitation, waste, health.

080 France

Guy Paganelli, Santa Orsini, Lucile Hofman, Benoit Brient, Raphael Kazadi, Nathalie Allegret





Development Framework for Corporate Power Purchase Agreements in Gulf Region

ENGIE MESCAT developed an innovative commercial, legal, financial and technical framework for addressing the renewable corporate Power Purchase Agreement (PPA) market in the Gulf Cooperation Council (GCC), which was successfully put to the test in the NADEC 30 MWp solar photovoltaic Independent Power Project (IPP) tender resulting in the first renewable success in the Gulf region for ENGIE.

318 MESCAT

Mathieu Ablard, Suresh Athilkar, Mauro Solari, Amir Hamraz, Wail Al-Shafie

Lifou, first 100% green energy island

A replicable model for PICs (Pacific Island Countries)

In New Caledonia archipelago, ENGIE West Pacific has implemented since 2018 on Lifou Island (comparable in size to Martinique though inhabited by 10,000 people) an ambitious, tailored island, renewable, and replicable solution to reach 100% of green and affordable energy by 2020.

The masterpiece of the solution is a smart centralized storage unit, driven by a last-generation energy management system coupled with high performance power converters.

042 ENGIE Solutions - EEC

David Lefèvre, EEC (NC), ALIZES ENERGIE (NC), EPS (Italy), SOCOMETRA (NC)

Pipe inspection robot

Based on the combination of two pre-existing technologies (visual inspection robots and distant field probes), this inspection solution has been adapted to the configuration of CPCU's heating network. This association allows the inspection of small diameter pipes over long lengths to identify and locate defects on the network (leaks, aging pipes) and thus target and limit road openings to carry out repairs.

292 ENGIE Solutions - CPCU

Sarah Lancry, Tristan Facon, Laurent Paul, Arnaud Riand, Stéphane Bois

Rugeley Zero Carbon Energy Masterplan

Using Prosumer, the whole system, multi-vector optimization tool, ENGIE has applied a unique and innovative design and modelling process to create an economically optimal zero carbon energy strategy comprising electricity, heat and mobility, as a key enabler for the redevelopment of the former Rugeley Power Station into a sustainable community.

105 United Kingdom

Christoph Mazur, Pierre Garsoux, Arnaud Vanhove, Chris Langdon, Dale Sager, Andy Davey, Sandrine Bosso

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ON THE ENGIE INNOVATION
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