100 INNOVATIONS

TROPHÉES
INNOVATION
TROPHIES **2019**

INNOVATION AT ENGIE

With more than 150 years' industrial experience and as a global energy and services group, ENGIE has set itself the aim of leading the energy transition in Europe, particularly through innovation. This dynamic drives the whole Group to convert good ideas into operational solutions for its clients.

ENGIE favors entrepreneurial creativity and close connections to innovative ecosystems that contribute to the Group's long-term development. To achieve this aim, ENGIE uses its "ENGIE New Ventures" Corporate Venture Capital €171M fund, which has already made 21 investments in startups. Also, the Group regularly issues Calls for Projects from startups. ENGIE has created several "New Business Factories" around the world. They combine internal and external talents to give birth to new innovative offers.

EDITORIAL

“ACCELERATE INNOVATION TO ACCELERATE ZERO CARBON TRANSITION”

Isabelle Kocher
CEO

In 2019, more than ever, innovation is at the heart of our strategy. Consumers, whether they are businesses, local authorities or individuals, are now used to high value-added services in all activity sectors. Their purchasing decisions are made knowingly and they expect a high level of service as well as a great ease of use and control from their suppliers, especially thanks to the digital tools.

For ENGIE, this issue is particularly important since we are an energy company. To decarbonize the world economy by 2050, we need a steady pace of innovation, to develop technological solutions and accelerate their use in daily life. To become a leader in the zero-carbon transition, our strategy is to develop both digital and services to effectively meet our customers' demands and feed our infrastructure and energy production activities with renewables and gas.

Furthermore, to attract new talents, ENGIE must remain a place where the expression and creativity of all its employees can thrive.

ENGIE employees have every reason to be proud of the 100 innovations presented in the booklet you now hold in your hands.
In all our activity sectors, you managed to create new ways of producing, thinking, working, adapting our offers to the diversity and the specific needs of our customers. These innovations demonstrate that we have the means of our ambitions, and above all, that we are a community united by the will to contribute in a positive way to the evolutions of the societies we serve.

INNOVATION TROPHIES

2019

For more than 30 years, the Innovation Trophies have recognized our employees' innovations.
The projects are selected over several months before the competition winners are chosen. One highlight is when nominees present their project to a Grand Jury, who selects winners. The interest in this event, which has been part of the Group's history for more than three decades, underlines employees' enthusiasm for inventing solutions that help to transform the energy and services industries.

52

SHORT-LISTED PROPOSALS

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APPLICATIONS SELECTED BY GROUP'S BUS

520

APPLICATIONS FROM 48 COUNTRIES


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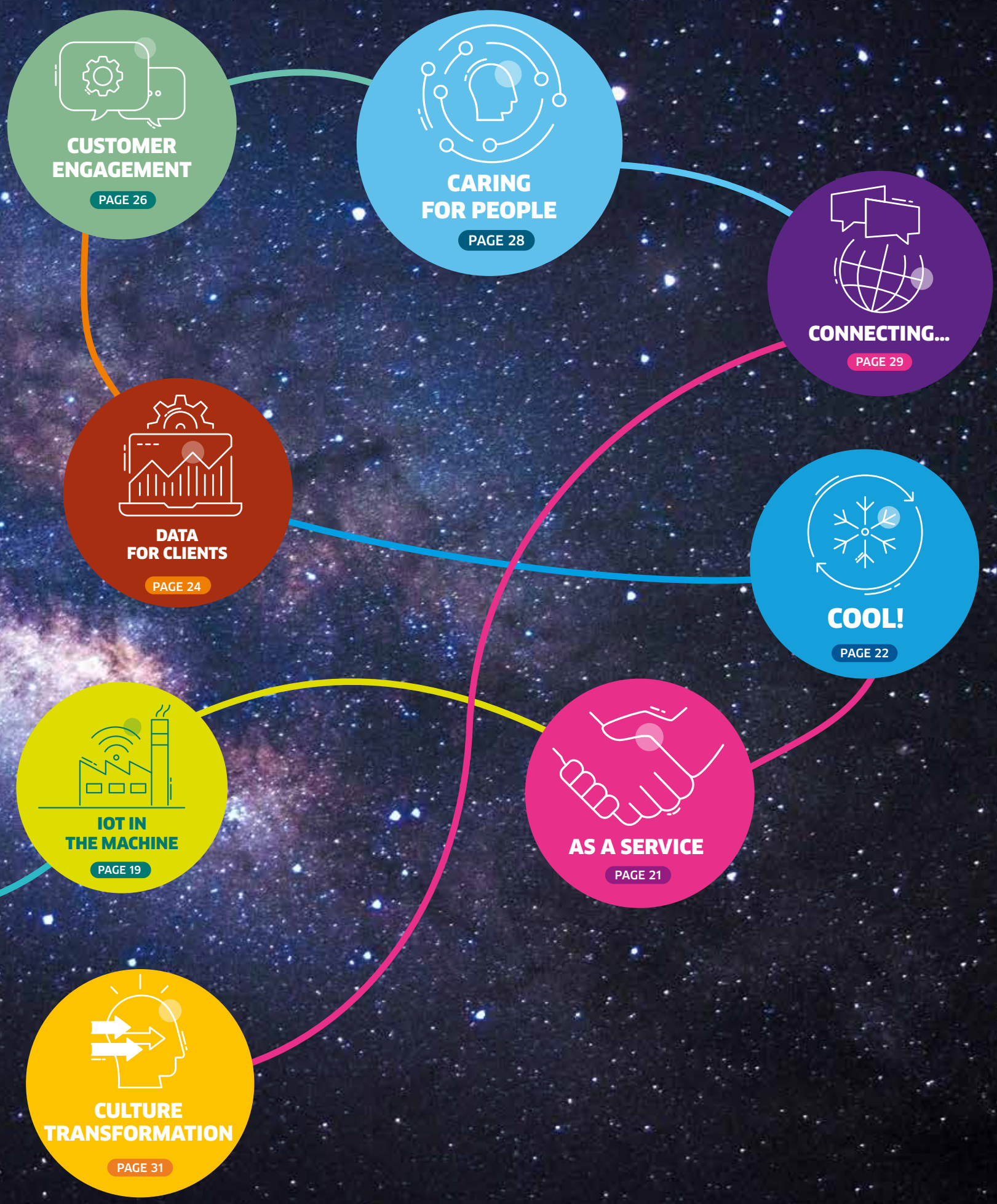
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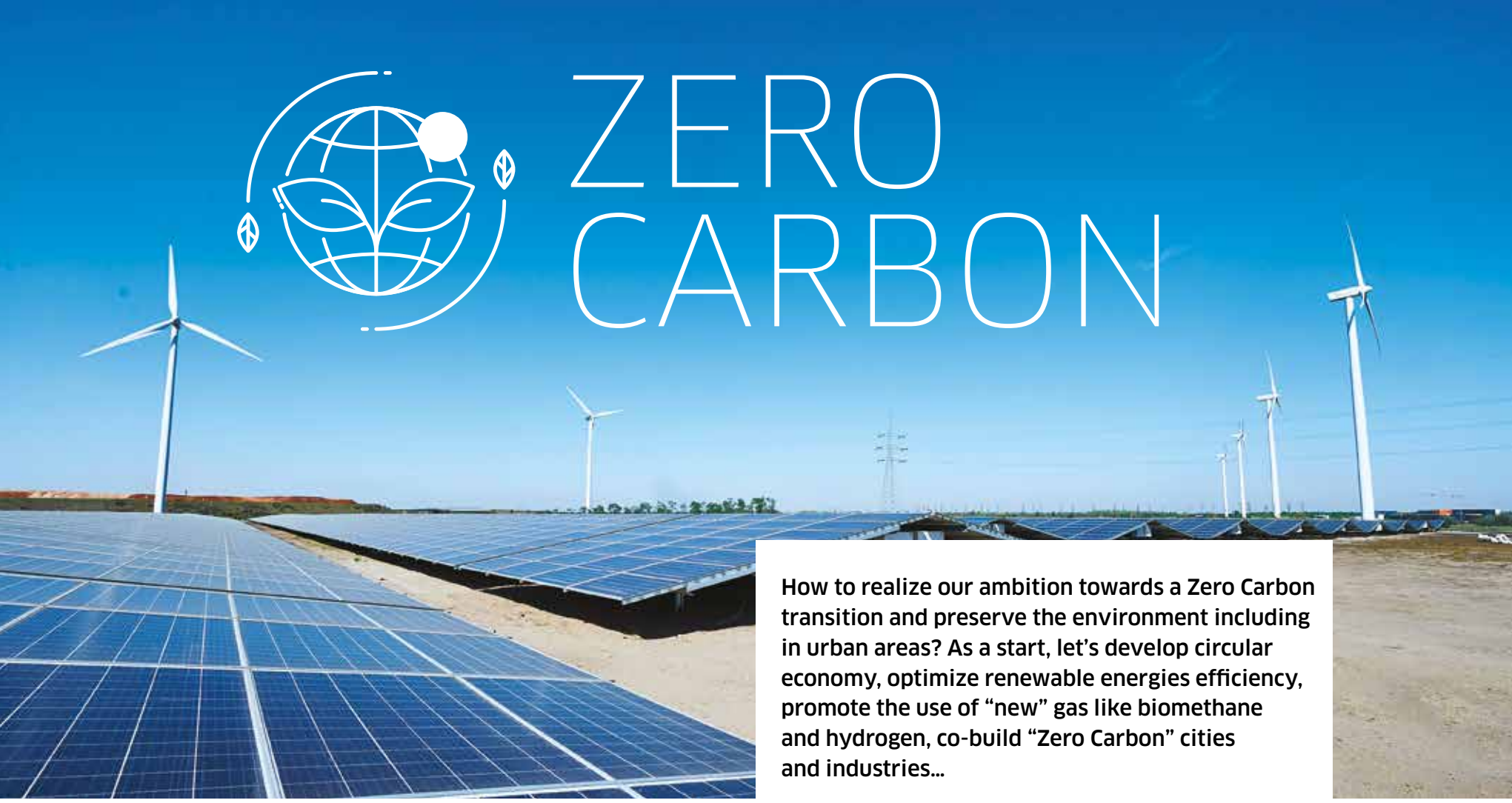


ZERO CARBON

How to realize our ambition towards a Zero Carbon transition and preserve the environment including in urban areas? As a start, let's develop circular economy, optimize renewable energies efficiency, promote the use of "new" gas like biomethane and hydrogen, co-build "Zero Carbon" cities and industries...

CIRCULAR ECONOMY OF BIOMASS ASHES

We have incorporated an industrial waste, ashes from our biomass boiling rooms, in a filter to clean biogas in substitution of active carbon, a polluting product. Doing this, we reduce cost treatment of these ashes, and improve biogas carbon footprint. Cylergie, with SOVEN and DeltaLys, support the development of this new international sector (replicability).

105 **France BtoB • ENGIE Cofely**
Christophe PASCUAL, Michel BOYADJIAN, Pierre RENNESSON, Raphaël GENIN

WIND TRACK

When ENGIE wind turbines do not let the wind escape!

The study and the optimization of the reactivity of the wind turbine in front of the wind direction changes have demonstrated the increase of its production, this by ensuring the integrity of the machine, all by modifications purely software. Usually, studies on yaw focus on static misalignments of windmills. Here, for the first time, we are optimizing the control-command aspects of the machine.

326 **France Énergies Renouvelables / Belgique, France**
Sophie GUIGNARD, Thomas DUC, Damien BRUYÈRE, Thomas MUSEUR, Marc VAN CAILLIE, Nicolas GIRARD, Colin LE BOURDAT

THRIVING IN CIRCULAR ECONOMY

From river waste to bioproducts in mini Hydro. Business based on the circular economy. This solution uses an innovative technology capable of transforming non-recoverable vegetable waste from the river into a business opportunity by selling biocoal. The biocoal produced has an energy efficiency far superior to traditional alternatives and the process is without emissions, without water consumption and without waste generation.

360 **NECST / Spain**
Mirian CORDERO, Mar CASANOVAS, Vicente MARTÍN, Carlos TREMPS, Irène OGEA

SEA TITAN

Building a faster, stronger and more efficient wave power conversion system.

ENGIE Fabricom has partnered into SEA TITAN, a European consortium to develop a disruptive, generic and modular linear generator. The project aims at a clear step change in wave energy by designing and validating a generic Direct Drive Power Take-Off (PTO). The proposed linear solution leads to higher robustness, higher efficiency, less used material and hence lower costs and higher reliability.

302 **BENELUX / Belgium**
Dennis RENSON, Rik VAN SOETENDAEL, Alain GODDYN

GREATER SPRINGFIELD

Building Better Cities TODAY in Australia.

A 50-year, exclusive, strategic alliance to co-create a city with energy at the heart of its development. Leveraging the full capabilities of the ENGIE Group and relevant subsidiaries, Springfield will rely on our imaginative builders to create the example 21st century city, giving us the opportunity to showcase ENGIE's zero carbon transition as a service strategy, at scale...

314 **Asia-Pacific / Australia**
Tolga DAGLI, Sheldon RENNIE, Greg SCHUMANN, Corinne ONG

URBAN CO_2EQ FREE

Tackle the issue of Urban Air Quality.

Based into the framework of a PPP scheme, we propose a new business model to improve the Urban GHG reduction, providing funding and investments through the economic exploitation of CO_2 eq abatement measures at City level. Thanks to the application of ENGIE LIVIN', the innovative digital interconnection and supervision platform, we will be able to collect data and information in real time on the territory and to return a dynamic analysis of the urban environmental context, with a particular application focus on the calculation of the environmental footprint of the urban area itself.

336 **NECST / Italy**
Béatrice GUSTINETTI, Alessandra CAVALLETTI, Francesco PASQUALI

LILIBOX

Flexibility Platform for Biomethane

The "Little Liquefaction Box" allows biomethane producers to get full value of their production without network constraints.

372 **Storengy / France**
Claudio BUCELLA, Thierry HORTANED, Julien CAMY-PORTENABE, Stéphane MAUREL, Hamadi CHERIF, Hamdi SAWSSEN, Damien VAN OOST, Hicham GUEDACHA, Laurent BENOIT, Frédéric LEGRAND, Gabrielle MENARD

GREENWAY

The fast-track to decarbonize and develop our business in Industry.

A three steps global and integrated offer to support industrial customers' decarbonization journey from consulting to operational zero carbon transition implementation.

034 **GEM / France**
Jean-Christophe TOUREL, Raphaëlle BAYLE-LABOURE, Romain REBOUX, Sébastien PARENT, Valéry LATOUR , Marion RUDDELL, Thierry GINIOUX

GREEN HYDROGEN IN GAS

The GRHYD project decarbonizes the energy at Dunkirk.

A very innovative business to decarbonize energy in cities thanks to the development of a new energy renewable Hydrogen-Natural Gas (H2NG) coupling the electricity and gas networks and thus creating new markets.

451 **New Corp • ENGIE Lab Crigen / France**
Isabelle ALLIAT, Hélène PIERRE, Maïlys PALE, Vianney NIES, Jacky DOUMENJOU

BIM TO CIM

Pioneers of the BIM, we continue to develop our know-how and our partnerships with innovative young companies to extend our scope to cities with 3D simulations, Big Data, Open Data, co-construction of tomorrow's energy efficiency, and quality of life on a daily basis.

Monaco becomes a world reference for smart cities thanks to its Digital Twin, *City +*.

The first CIM in France designed for the Belvédère site in Bordeaux.

BIM & CIM IN ACTION

Building and City Information Models to design cities of the future.

The aggregation of millions of urban data in the framework of CIM (City Information Modeling) / BIM (Building Information Modeling) approaches makes it possible to address issues of urban planning, mobility, energy and the environment. Partnerships between technological startups recently acquired by the group (SXD, SIRADEL) and traditional business units (Axima, Aire Nouvelle, Réseaux) encourage the definition of innovative and cross-functional business models through projects "in action" that illustrate the rise of ENGIE in the real estate and urban development value chain.

092-197 **France Réseaux • SMEG - France BtoB • ENGIE Axima / France, Monaco**
Matthieu FERRUA, Thomas VANQUAETHEM, Marielle BOUILLOT

NEW MILESTONE: THE GOAL OF 100 BIM REFERENCES HAS BEEN REACHED

The BIM Life adventure continues with the digital avatar!

Thanks to the BIM Life digital avatar, we can now manage building life and optimize buildings' usage from the design to the operation-maintenance, throughout the life cycle of the building. The ENGIE Axima BIM Factory has become a key player in BIM with more than 100 references. The 2019 target is a backlog of 10 new "BIM Life" projects, with hospitals and aquatic centers as priority targets. (BIM: Building Information Modeling)

129 **France BtoB • ENGIE Axima / France**
Luca DAL CERRO, Matthieu FERRUA, Marcello CACIOLO, Caroline TARBY, Oscar MANNARELLA, Hugo COMBES

CREATING SMARTER AND MORE SUSTAINABLE CITIES WHILE IMPROVING URBAN MOBILITY

Deployment of a revolutionary Intelligent Traffic System for an optimized urban mobility in a smart city perspective.

Deployment of a revolutionary Intelligent Traffic System (ITS), Variable Message Signs (VMS), CCTV and a scalable data network (based on EPON technology) in Niterói – Brazil.
These systems and technologies were integrated by MAESTRO – our open, customizable and innovative software – which optimized urban mobility (by 30%), improved sustainability, facilitated traffic management and created the foundation for additional digital services, amplifying the smart city concept.

846 **Brazil**
Leonardo DA SILVA MATTOS, Jonas MARIANO, Flavio VERAS, Médéric DE LA HOUSSAYE

KAIROS

A TRUE CONCENTRATE OF INNOVATIVE TECHNOLOGIES TO MANAGE CRISIS SITUATION.

KAIROS command center meets specific needs of security operational teams in providing a wide spectrum of what is taking place on the field – in real time. KAIROS helps commanders in immediate and appropriate decision-making and allows them to manage the most critical situations thanks to artificial intelligence and disruptive patented technologies.

418 **France BtoB • ENGIE Ineo / France**
Laurène GUSSE, Jean-Marc DU SAILLANT, Christophe ANSEL

livin'

ENGIE's city data management platform.

Livin' is ENGIE's first operational urban data management platform developed in-house. Livin' is a data platform for cities that connects to urban infrastructure like street lights and traffic management systems, giving them real-time data about operations. It enables cities to manage devices at distance, to monitor, intervene and predict functions across multiple infrastructure systems, for better quality of life and service. Livin' is being developed and rolled out across multiple BUs at the same time.

073 **Global Business Support, New Corp-BtoT, ENGIE Digital**
Vincent VANDENBERGE, Romain PETIT, Eamon DRUMM and more than 40 people from ENGIE Digital, ENGIE Ineo, ENGIE Brazil, ENGIE, NECST, Métier BtoT, Siradel

BUILD LOCAL ECOSYSTEMS

Energy transitions require to re-invent territories on a local scale. Together, we are stronger! Here are some examples combining inventiveness, data modeling and expertise to help "co-transform" the local ecosystems.

REDUCING THE LIGHTING FOOTPRINT ON TERRITORIES

For a better societal and environmental integration.

In the current context of biodiversity erosion, reducing the light footprint is a major issue, as it is estimated that 30% of vertebrates and 65% of invertebrates are nocturnal in whole or in part.
Our approach aims to reduce the light footprint of our activities, towards a territorial integration that complements the technological expertise on lighting solutions.
This offer will enable the ENGIE group to create value either directly for industrial and tertiary assets or indirectly as a differentiating element in calls for tenders.

200 **New Corp, ENGIE Lab Crigen, Storengy / France**
Jean-Claude PHILIPPE, Caroline DE ZUTTER, Denis LECA, Léa THONAT, Alexandre DELBE, Mailys DEWILDE, Anne PRIEUR

TERR'NR

New replicable model of partnership with local communities for the development of renewable energies.

The implementation of a new form of public-private partnership negotiated over the counter allows a majority private operator and minority public actors to form a company whose purpose is the production of decentralized renewable energy, without theoretical limitation of duration and without submission to the constraints of the public order. For example, the Renewable Energy Society of Monplaisir (SEREM) was created in September 2018 in Angers. This "SAS ENR", a simplified joint-stock company whose purpose is to produce renewable heat, brings together Angers Loire Métropole, Caisse des Dépôts et Consignations and ENGIE Networks. As a 65% shareholder, ENGIE Networks will be in charge of the construction of a biomass power plant and a heat network as well as the operation of the whole for a period of 30 years.

830 **France Networks / France**
Delphine ODOU, Camille MARCHAND, Sébastien GOHIER, Marine LE GUILLOUX, Anne-Laure MEHEUST, Damien BERNUCHON, Lucie MELON, Cyril GUESTIN, Camille FALHER, Laurianne RAT-TUDAL, Laurent REMARS, Séverine LEBEL, Karine PATIN, Thierry LANDAIS

SOCIAL FOOTPRINT

Innovative digital solution valuing HR impact of ENGIE on French Regions.

It enables ENGIE representatives to engage in a dialogue with local elected officials (senators, deputies, mayors) and prefects by showing them the economic, social and societal impact of ENGIE on their territory in terms of jobs, number of employees, links with educational schools and universities. This much expected application, by being both simple and intuitive, gives a visual presentation of transversal data, from every sector of the Group, and is developed in-house with standard solutions.

015 **New Corp / France**
Philippe PERRET, Thierry PONASSE, Béatrice PLOUVIER, Véronique HUCHET, Benjamin DELOISON, Joël CASTAGNET, Laëtitia MACE

BUILD
LOCAL ECOSYSTEMS

NEWCASTLE REGENERATE PARTNERSHIP

Newcastle / ENGIE partnership to regenerate the city.

A pioneering partnership between ENGIE and Newcastle City Council to support the Council's objectives of de-carbonizing the city and improving the living standards of City's residents, through the development of district energy schemes and other energy projects and services including energy efficiency, demand response, renewable energy, EV infrastructure and energy storage, over a 40-year term - to 2050 and beyond!

211 **United Kingdom**
Richard LONG, Ben WATTS, Hannah KEMP, Xavier DUAULT, Andrew NORTCLIFFE

MHYRABEL

An innovative model of energy transition in a rural area.

Supporting rural areas in their energy and local transition: set up, in rural areas, a production and distribution station for green hydrogen produced from local wind farms to supply carsharing.

487 **France Renewable Energy / France**
Thomas TREGOAT, César TEJERINA, Bernard LAURENT, Christelle BRIDEY, Nicolas GIRARD

ENGIE ZERO

An innovative approach to 'Whole House' refurbishment.

ENGIE Zero is a radical whole-house retrofit solution which transforms existing inefficient homes to net zero energy through the introduction of energy efficiency solutions. The funding model enables the capital costs of these measures to be spread over the long term via a financed energy plan with guaranteed savings, which results in no net increase in costs to the occupier.

436 **UK / Belgium, France, Germany, Italy, Netherlands, Spain, United Kingdom**
Andy MERRIN, James COOK, Ben HOW, Stuart MOORE

ZERO EMISSION VALLEY

An innovative project setup to launch hydrogen mobility in a region.

Tipping the Mont Blanc Valley territory towards hydrogen mobility, through a public/private alliance to design, build and operate a network of 20 green hydrogen stations and deploy a fleet of 1,000 vehicles.

069 **Hydrogen - New Corp • DIFT / France**
Marjorie BROWN, Thierry RAEVEL, Franck LE BARON, Julien CHAUVET, Jérémy FOGLIA, Florian TILLOUS-BORDE, Frédéric ROUECHE

SPEED

Through the SPEED project, the ENGIE group is the first energy company in its capacity as the last operator and institutional owner to have ceded with constraint to rehabilitate part of its real estate assets (former industrial sites) for new uses through the implementation third party claim proposed by the ALUR law. The first phase of site requalifications will be the building of some 2,200 lodgings on 150,000 sq. meters between 2020 and 2024.

503 **Global Business Support / France**
Sandrine HOSTYN, Isabelle SCHUN, Marie-Laure DAUMAS, Oriane VALADE, Mélody GEHIN, Patrick DELABRE, Jean-Michel CORMIER, Gil DUBERNARD, Florence BIRAUD

SAM

Aligning ENGIE brand with social causes on a harmonious progress.

Since 2009, ENGIE Brazil performs voluntary allocation of resources to promote social transformation and contribute to Sustainable Development. ENGIE Brazil developed a system which centralizes in one unique place all the Corporate Social Responsibility requests made from the communities to the company. A digitalization process that guarantees AGILITY, CONTROL and TRANSPARENCY in all donation and sponsorship processes.

444 **Brazil**
José MAGRI, Luciane PEDRO, Eduardo VIEIRA, Anelise SCHWENGBER

ACCESS TO ENERGY

Access to energy is a condition for wellbeing and human development. Today, technology, digitalization and decentralization allow to be more innovative than ever.

READYLINK

A secure low-power wireless network for pay-as-you-go (PAYGo) solar home systems.

ReadyLink allows for secure wireless communication between pay-as-you-go (PAYGo) solar home systems. This technology decreases the cost of scaling an energy solution, provides a rich source of product usage information, and improves customer experience. More than 25,500 power systems with ReadyLink capability have already been sold.

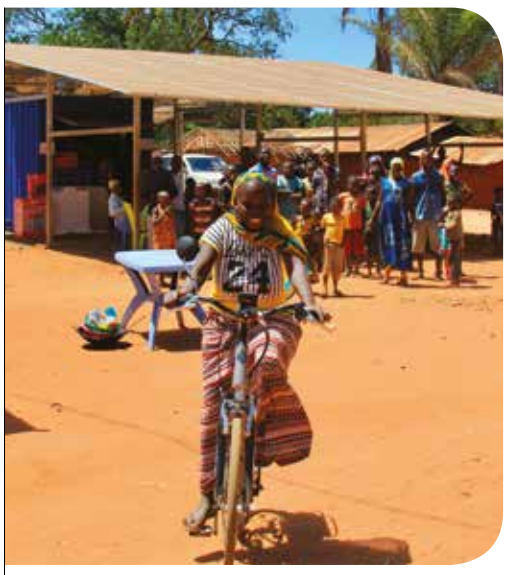
483 **Africa / Uganda**
Luke HODGKINSON, Emma FREDERICK, Farhan NAEEM, Jesus VILLEGAS, Andrew TIMMINS

FENIXGO

A mobile app to support sales teams in the field that integrates customer information and vendor results.

FenixGO is a custom built, offline first, lightweight android mobile application that was developed to support our large field sales team so that they could access customer information and have informed and proactive customer interactions, onboard and educate customers efficiently in rural settings, view personal sales goals and commissions, and ultimately help drive down operational costs for a PayGO company.

489 **Africa / Uganda**
Terry KARUNGI, Albert LUMU, Andrew WEKESA, Gilbert TURYABASA, Paul RWEMALLA, Bineyam AFEWORK



BEYOND ENERGY

An innovative approach to make mini-grids economically viable.

Developing electricity usage in rural areas of Africa by offering innovative products and services that boost economic growth and thereby create the conditions for profitable renewable mini-grid development for ENGIE PowerCorner!

087 **Africa /Tanzania**
Quentin PERIES-JOLY, Frédéric MADRY

SUSTAINABLE SOLUTIONS FOR HOMELESSNESS

A fast and effective solution to a complex, high priority social problem by providing a groundbreaking, unique offering to finance, design, build, maintain and power affordable new accommodation to help Local Authorities tackle homelessness. The solution is decentralized, decarbonized and digitized, creating long term organic growth through an infrastructure and asset-led business model which combines ENGIE's energy, services and regeneration capabilities.

UK / United Kingdom 534
Caris HENRY, Sam HOCKMAN, Haydn SCARBOROUGH, Karl LIMBERT, Dan GERMANN

MOBILITY

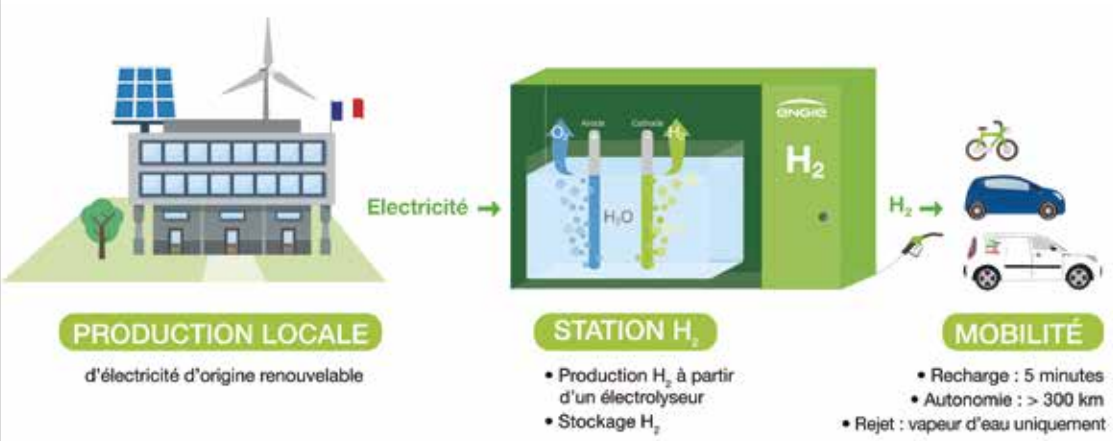
New mobilities are here…"as a service": with electricity or hydrogen, from micro-mobility to collective transports, while controlling your EV charging at distance.

DISRUPTIVE E-MOBILITY SOLUTIONS AS A SERVICE IN CHILE

How Engie became the major e-mobility player in Chile.

With 50 e-taxis and 100 e-buses, ENGIE Chile entered the e-mobility market with a complete set of integrated solutions offered as a service (financing of the vehicles and chargers + design, installation and O&M of the charging infrastructure + green energy supply + digital solutions) breaking all the barriers our customers were facing to embrace e-mobility. As a result, ENGIE became the major e-mobility integrated player in Chile with a total investment of ~USD 35.0 million.

010 **LATAM / Chile**
Dimitri LEBRUN, Rodrigo SANCHEZ, Sebastian FERNANDEZ, Laurent FUREDI, Louis PHILIPPERON, Andres PIZARRO, Lode VERDEYEN



HYSTART

Green and local hydrogen to make mobility accessible.

Hystart is a solution providing a hydrogen production and refueling station as a service, over a period of a few years and for a fleet of a few vehicles. With Hystart, ENGIE Cofely supports the zero-carbon transition of its customers by introducing them to hydrogen mobility.

101 **France BtoB • ENGIE Cofely / France**
Clément DOUGUET, Caroline DAUTEUILLE, Guillaume DESMIER, Habib SEHIL, Sidney KOMBEM

FLEXCO MOBILITY

An easy electric vehicle solution for everyone, everywhere.

Flexco is an innovative front runner end-to-end electric mobility solution integrating our many capabilities and those of car leasing from our strategic partner, Arval (BNPP). Adapted for every client, carried simultaneously by several ENGIE BUs with the same business model and architecture with local adjustments, Flexco ambitions to position ENGIE as a leader in the affordable and competitive energy transition through electric vehicle business.

001 **New Corp / Belgium, France**
Frédérique DUFRESNOY, Solenne CUCCHI, Éléonore BON, Delphine GISMONDI, Christophe BOGE, Michaël DE KOSTER, Piet CORTIER, Olivier THIERY, Sylvain THIEBAULT, Mathilde FERRE, Clément DOUGUET, Florian CHEVALLIER, Isabelle GUILLOU, Géraldine CADIER-MIRALLES, Corinne FRASSON, Sébastien QUACH

MOTMOT®

A multimodal mobility startup created by ENGIE Factory to offer shared electric mobility solutions as a Service (MaaS) for B2B and B2C users.

MotMot® is currently under validation phase, launching a fleet of 50 electric kick scooters for micro-mobility and 50 electric mopeds for mid-range mobility in Puebla, Mexico. This will allow the Company to measure the impact of multimodal transportation. MotMot® is also in discussions to integrate their platform with digital public transport services to test commutes.

388 **LATAM / Mexico**
Fernando DEL CUETO, Edgar HANNA, Alejandro BADA, Rafael MONTALVO, Lode VERDEYEN, Jacques DE T SERCLAES, Eduardo GUZMAN

MOVE IN PURE MOBILITY

How to control the charge of your electric vehicle with your smartphone.

Move in Pure optimizes and supervises the charging of electric vehicles. Unlike the so-called "natural" loads, which are immediate and without control actions, controlled recharges are optimized to follow a tariff signal for example, or a network constraint. In 2019, this solution will be deployed on all CNR terminals, along the Rhone Valley.

155 **France Renewable Energy / France**
Caroline RAMONDOU, Éric FRANCON, Nicolas MANGUE, Sébastien GAUTHIER

ENERGY COMMUNITIES

From self-consumption to the use of vehicles as a means to store energy, Energy Communities continue to invent themselves...

Vehicle 2 Building (V2B)

Use a company fleet of Electric Vehicles as energy storage and power supply for its office.

ENGIE can create a microgrid with EVs by connecting a car battery via a bi-directional charger (charging/discharging) to an office. By using a car battery as energy storage, one can have the benefits of energy storage without the disadvantages of buying and maintaining batteries. It also allows peak shaving at the best possible moment. This concept also enables ENGIE's smart buildings proposition by integrating the EV charge infrastructure into the building energy management system.

416 **BENELUX / Netherlands**
Tom KRAAIJ, Jacco VAN DER BURG, Tom VOS, Tom KRAAIJ

ICO GREEN TERMINAL PROJECT

ENGIE's integrated approach setting the example in the energy transition.

ICO, a global market leader in the port handling and storage of cars, aspires to become a "Green Terminal", providing green electricity for the charging of the increasing number of Electric Vehicles (EV) on the terminal and the vessels arriving at the quay. ENGIE was chosen as a partner to develop and operate Belgium's largest on-shore windfarm (11 wind turbines), largest EV charging island (308 connectors), both combined with ENGIE's SMATCH cloud application allowing grid balancing possibilities (DSM).

403 **BENELUX / Belgium**
Reinout CLAEYS, Piet CORTIER, Pierre MOENCH, Frédéric LAURENT, Nico PRIEM, Tom VANDEWALLE, Laurent DE VROEY

AXIGREEN

"As A Service" electrical self-consumption for the B2B market.

An energy efficiency and self-consumption offer "As A Service" for B2B: optimization of electricity consumption produced on site in commercial and industrial buildings by real-time management of building technical equipments.
The return on investment time is 50% shorter than a conventional photovoltaic solution and offers 25% energy saving per site at least.

524 **France BtoB • ENGIE Axima / France**
Simon AULAGNIER, Benoit LECHAT, Benjamin BREVET, Remy FAURE

BIG BATTERY BOX

Mobile Green Energy "As a Service".

Investments in large scale battery storage mostly do not guarantee stable revenues throughout a longer period. The most important markets for batteries, being the ancillary markets, are tendered on weekly or daily basis. On the other hand, the rental market for backup power (construction sites, events) is evolving to more carbon-neutral activities and less noise. Together with our external partner, we developed and invested in 20-foot mobile battery storage containers in which we achieve a viable business case by combining both markets.

375 **Generation Europe / Netherlands**
Marcel DIDDEN, Leon SLUIMAN, Toon STRIJBOSCH, Bob VAN SCHOOR

ENERGY COMMUNITIES

THE SIMPLY ENERGY VPPX PROJECT

A "world first" Virtual Power Plant integrated with a market platform for residential "prosumers".

In Southern Australia, Simply Energy has built and launched a "world first" Virtual Power Plant that is integrated with a market platform – DEX. This provides maximum optimization for customers on self-use and makes available their excess energy to the market. Customers will profit from participating in the VPP and monetize the flexibility in their assets (batteries, smart hot water systems and others) whilst at the same time contributing to grid stability and reliability through the market platform (DEX).

409 **Asia-Pacific / Australia**
Greg TRAINOR, Campbell HUTCHINSON, Daiyan PIEREZ, Ben WILSON, Luc VAN DUINEN, Jennifer ZULL, Alexa HARRIS, Ryan WALKER

SOLARIMO

Let's make solar energy accessible to tenants.

Solarimo, a one-year old company, plans, builds and operates solar systems on rental properties. We sell cheap green electricity to the tenants directly from their roof in partnership with the owner of the building. We reconcile general interest (green energy) with individual interests (low price energy).

328 **NECST / Germany**
Daniel FÜRSTENWERTH, Malte KÜNZER

BOOSTING THE PERFORMANCE OF LARGE-SCALE SOLAR ASSETS

In moderate climates, Potential Induced Degradation or PID is one of the most common failures in the 3-4 years after commissioning of a PV plant, showing mean annual yield degradation rates of 16 % for affected parts. Thanks to this project, ENGIE is now capable of detecting PID with a high degree of certainty using routine drone inspections, and to install a proven cost-effective regeneration solution, boosting the performance of large-scale photovoltaic power plants at unprecedented speed.

279 **Tractebel / Belgium, France**
Andreas WABBES, Stijn SCHEERLINCK, Arthur CABRIMOL, Emmanuel FOULON, Hélène GRANDJEAN, Jaideep SANDHU

CIRCULAR STRATEGY DIGITAL TOOLBOX

Simulation toolbox to plan the optimal use of local resources to co-construct circular and decarbonized territories

Tractebel and ENGIE Lab CRIGEN have developed a first of a kind simulation toolbox to plan the optimal use of local resources (energy, water, materials), that allows ENGIE BUs to co-construct with potential clients (B2B/ B2T) and partners differentiating value propositions in line with circular economy principles (better local integration, 100%RES...). BE CIRCLE and Prosumer are already part of it.

136 **Tractebel - New Corp • ENGIE Lab Crigen / Belgium**
Vincenzo GIORDANO, Delphine ANTONIUCCI, Parvathy CHITTUR, Axel MICHEL, Céline PAGNARD, Damien SCHYNS, Dimitri TOMANOS, Pierre GASOUX, Julie CLAVREUL, Caroline DE ZUTTER, Yann COGNARD, Akim RIDA, Raphaëlle BAYLE-LABOURE, AXIGreen

CARING FOR ASSETS

Flexibility, urban expansion, predictive maintenance, optimization of resources and assets, create fascinating challenges for our Imaginative Builders.

200 MW BACK-TO-BACK HVDC SYSTEM INCREASES GRID FLEXIBILITY IN SOUTH KOREA

Smart control of power by back-to-back HVDC avoids new transmission lines and cables in metropolitan area near Seoul.

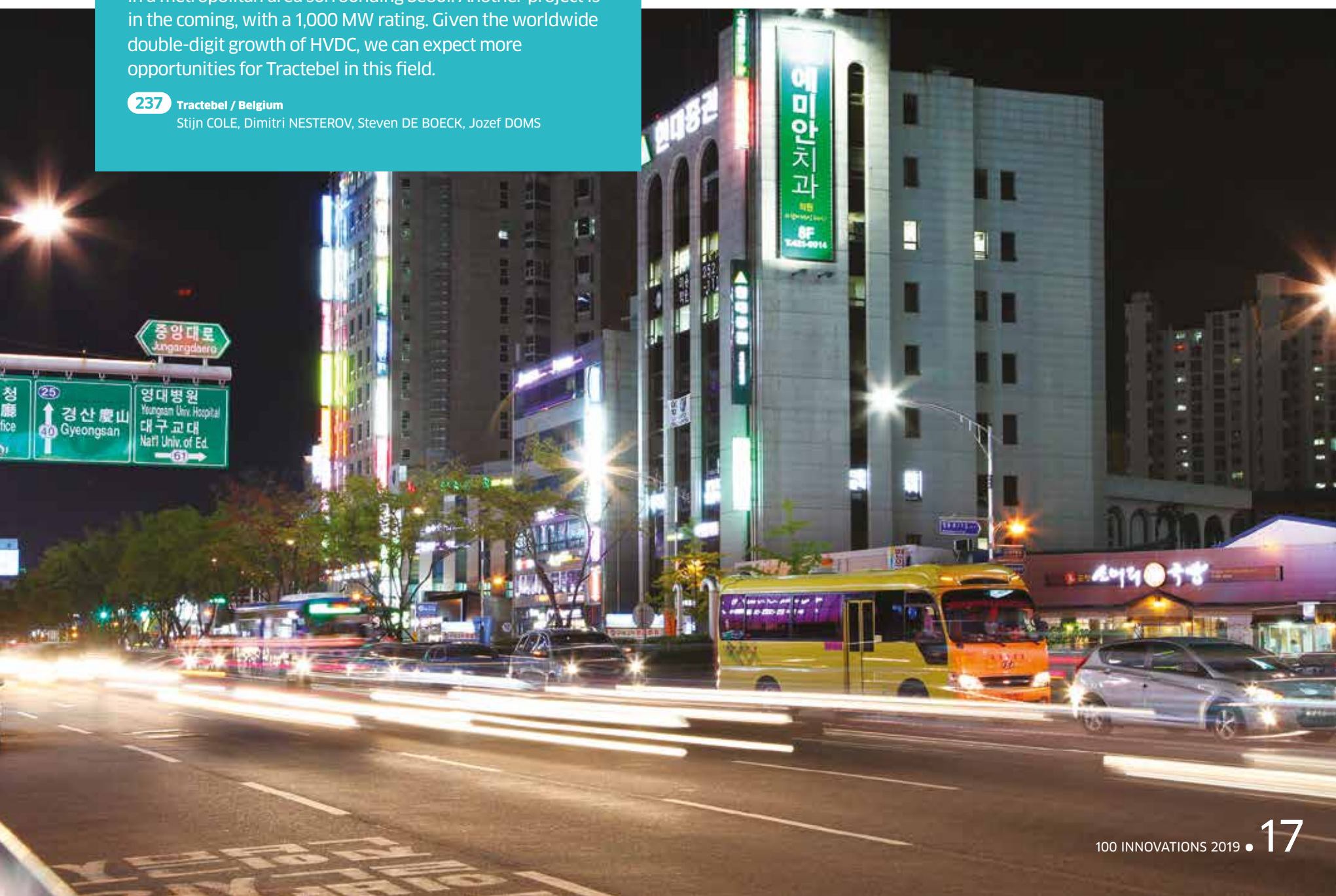
Together with a small, specialized consultant, Tractebel proposed a 200 MW back-to-back High Voltage Direct Current (HVDC) system as a solution for the power problems in a metropolitan area surrounding Seoul. Another project is in the coming, with a 1,000 MW rating. Given the worldwide double-digit growth of HVDC, we can expect more opportunities for Tractebel in this field.

237 **Tractebel / Belgium**
Stijn COLE, Dimitri NESTEROV, Steven DE BOECK, Jozef DOMS

NEW VALUE CREATION FROM PUMPED STORAGE PLANTS

The pumped storage plant Pfreimd substantially increased its revenues from Ancillary Services after 2013, due to the innovative solution to combine pumps and turbines in a so-called hydraulic short-circuit, thus enabling a controllable power consumption, and in addition unlimiting the time duration of services. Meanwhile the solution has been implemented at Coo and was also studied for the UK pumped storage plan. This flexible storage enables the development of renewables enabling the energy transition and addressing the intermittency of the latter.

280 **NECST – GEM / Germany**
Cornel ENSSLIN, Jasmin RAINER, Bernhard OSTLER, Andreas PREM, Ghada SELWAN and Michael FENSKI (GEM)



CARING FOR ASSETS

TURBO COAT

Creative solution for damaged steam turbines.

Do you know that erosion is a silent killer? 50% of all steam turbines worldwide are affected by erosion. Erosion is driven from frequent start/stops and long-term low load operation, directly linked to the new market situation by need of flexible operation mode. TURBO COAT, our ENGIE alternative solution, developed in-house, allows to perform a highly qualitative, fast and low-cost solution without opening the turbines.

067 **Generation Europe / Belgium**
Tomas VAN ACKER, Nick LEMMENS, Tom POTTIER, Alain GUELTON

INTERNAL SOLUTION TO REPAIR AND UPGRADE KEY COMPONENTS OF GENERAL ELECTRIC AT LOW COST

Marafiq Independent Power & Water Plant is one of the major plants in Middle-East, commissioned in 2009 and producing 11% of the water market and 4% power market share of the Kingdom of Saudi Arabia. In Marafiq IWPP, we developed, we implemented and we validated an internal solution to repair and upgrade some key components of General Electric control system, realizing 11,5 million dollars of savings with 99.9% of reliability.

330 **MESCAT / Saudi Arabia**
Abdul Salam SAGIR, Arul SANKAR S, P L SHAJU, Rajesh Kumar GANTA

SMALL-SCALE LIQUEFACTION FOR FOS-TONKIN

In the LNG terminal of Fos Tonkin, this natural gas liquefaction facility will be connected to the gas transmission network and will also be able to liquefy bio-methane produced locally.
Thus, Fos Tonkin will be a supplier of bio-LNG for the Mediterranean Sea, especially for bunkering.
In the long run, it should become a large-scale producer of bio-LNG made in France.

508 **Elengy / France**
Benoît DUEE, Cyril HUGOO

IODA

App that guarantees the operational excellence of biomethane injection.

IODA is a unique web application, developed by ENGIE Lab CRIGEN that centralizes all the data of the biomethane injection stations, thus making it possible to evaluate their performance and to guarantee the operational excellence of GRDF.

421 **New Corp • ENGIE Lab Crigen / France**
Marine JUGE, Cécile RAYNAL, Jérôme MANGIAPANE, Zacaria REDDAD

PREV'DO

Mobile application for preventing damage to structures.

Prev'DO (Prevention of Damage to Works) gives access to real-time reporting of earthworks in progress to all people concerned (network operators, local authorities, project manager, design offices ...) through a smartphone application. Awareness-raising visits on the risk of damage to the buried structures are then carried out to diggers. Through its many integrated features (geographical reporting, integrated navigation, real-time information capture, real-time reports to stakeholders ...), this community application aims to significantly increase the efficiency of the site visits activity for less damage to networks and a better security of people and property.

151 **GRDF / France**
Hassan EL HOUDAIGUI, Florence CORLAY, Joel ESCANDE, Stéphane BRUDER, Khamis SOUIDI, Marine ROUBY

IOT
IN THE MACHINE

A bit of intelligence in the machines, a huge quantity of data, and a lot of human intelligence for more efficiency and more services!

ENGIE MAINTENANCE INSIGHTS (EMI) - SMART HEAT PUMP MONITOR

ENGIE Maintenance insights will improve the uptime and performance of your heat pumps.

The traditional way of monitoring heat pumps is based on experience, static alarms, average performance. However, the performance of a heat pump fluctuates over time, so how do you know if a drop-in performance is normal behavior or the first sign of a potential breakdown? A generic algorithm was developed, using neural networks, that enables the unique circumstances to be taken into account. EMi uses these algorithms to monitor the performance and all parameters 24/7, notifying technicians if relevant anomalies in behavior of the heat pump occur.

454 **BENELUX /Netherlands**
Jesper BORST, Stefan GELISSEN, Solange LECLUSE, Arie Kleijn HESSELINK, Marijke ENSERINK, Winfried TILLIE, Daniel SOUTE, Martin MEMELINK

A DUAL MACHINE-LEARNING APPROACH TO QUANTIFY SOILING

Quantifies, without any hardware, the accumulation of dust on solar photovoltaic installations.

Soiling is the accumulation of dust on solar modules. We have developed a new disruptive solution using two machine learning models in parallel, allowing to detect it directly from standard data monitoring. This avoids expensive hardware installations and systematic inspections, yielding a reduction of operational costs (optimal cleaning planning) and a global increase of panels efficiency.

041 **Tractebel / Belgium**
Olivier MARTIN, Louis REDONNET, Sébastien CHAUMONT, Nicolas COSME, Mathieu BOUISSON

SOCRAT

Operational System of Control of Regulation of Auto Tensioning devices "SOCRAT" is a service for railway maintainers, which allows to monitor remotely and in real time the auto tensioning devices of Catenaries & Tramways, switching to less expensive and more preventive maintenance. This digital solution, autonomous in energy (composed of distance sensors, temperature sensor, solar panel and Sigfox relay) that puts data back in real time on a web site is a world premiere. It is unique and patented.

188 **France BtoB • ENGIE Ineo / France**
Gilles DARROUY, Jean-François DONAT, Nicolas KINDERSTUTH, Rémi BARROUILLET, Stéphane ELLENA

THE RAFT OF THE MEASURE

A revolutionary floating LIDAR whose stake is acceptability by banks in project finance.

To measure intensity of wind on the sea, a key figure for any off-shore windfarm project, the industry used until now an Offshore Met Mast, a colossal measurement structure fixed on the seabed. Our current projects have turned to a radical innovation with the use of an ultra-discreet floating raft that measures by laser (LIDAR) as an answer to different stakes related to installation, flexibility, cost-cutting and environment. A four-year journey to gain recognition from funders and replicate on other oceans.

510 **France Renewable Energy / France**
Aymeric BOYER-VIDAL, Olivier CHAPERON, Henry VALIBUS, Alexandre GUYENNE

ASSET-INTELLIGENCE

Enrich gas distribution asset databases through Deep Learning.

Asset-Intelligence is a Deep Learning solution developed by GRDF which automatically recognizes the type of regulator in boxes from already available pictures, avoiding inventory field interventions.
So far, 3M regulators have been identified from the pictures, avoiding many field interventions hence saving GRDF nearly 30M€. Deployment of smart meters will last until 2023 and will continue to enrich the database while avoiding substantial costs.

247 **GRDF / France**
Sophie GABBAY, Jean DE LA FAYOLLE, Yann-Edern L'HOUR, Stéphane DE MICHELE

GASMART

Gas demand Prediction using Machine Learning

GaSmart, using Artificial Intelligence techniques, forecasts gas demand for residential, industrial and NGV customers for the next 10 days, allowing ENGIE to make decisions on buying operation, approaching to the real consumption of gas. Benefits are: savings on the gas operation; cost reduction in employee turnover; optimizing gas transport, creating new business opportunities.

009 **LATAM / Argentina**
Pedro CIANCAGLINI, Diego MALATO, Matias ROMERO, Sergio COZACOV, Carlos CANOSA

ENGIE CONNECT

The IoT Edge Solution for TFM & Energy Services.

ENGIE Connect provides integration of services under a single FM platform, unifying all kinds of heterogenous controllers and sensors. It is an "edge computing platform", able to localize the data processing at the hardware level, minimizing communications' costs and allowing the implementation of AI and machine learning algorithms.

419 **NECST / Greece**
Nikos KOUZINOGLOU, Anastasios MATIKAS, Dimitrios ZACHARIAS, Kostas ALEXIOU, Konstantina PARISSI

RETAGAZ

The app that optimizes the reinstatement of severed customers.

RETAGAZ Mobile is an application dedicated to an optimized management of the gas refueling as soon as possible at the customers of GRDF. This return to service occurs after a gas delivery stoppage in a geographical area following a maintenance operation or an incident. The impacted geographical area is determined by an algorithm. All the information exchanged between the different operational entities of GRDF and the clients is done via digital media (tablets, smartphones). All stakeholders have a real time vision on the evolution of the incident. Customer experience as well as technical operations are thus improved for the satisfaction of all.

226 **GRDF / France**
Eddy LEVY, Gwenael GUILLOU, Carole VIRRION, Carolyn KOKOCINSKI

MINIRTU

(Mini Remote Terminal Unit)

Development and implementation of an alternative device to those used as RTU (Remote Terminal Unit) in a SCADA (Supervisory Control And Data Acquisition) system. It allows to reduce high acquisition and replacement costs of each RTU. It doesn't require expensive hardware to monitor a few process variables, nor does it depend on proprietary licenses of PLC manufacturers... and it works! At present, approximately 25 MiniRTU are already installed. It is estimated to reach 40 units by the end of 2019.

023 **LATAM / Argentina**
Pablo Martín RIVAROLA, Fabian MARCOS, Mauro TAGLIONI, Hernan RODRIGUEZ ARAYA, Federico ACUÑA, Sergio SCALERANDI

SMART-VUE

The ultimate interaction tool.

This multi award-winning platform provides an advanced User Experience for interacting with building hardware and software platforms to deliver a "single control point" for the operators. With over 60 applications, the system covers every aspect within a connected building and is totally "permissions-based" managed, to ensure the user only gets what they need in a simple and intuitive user format.

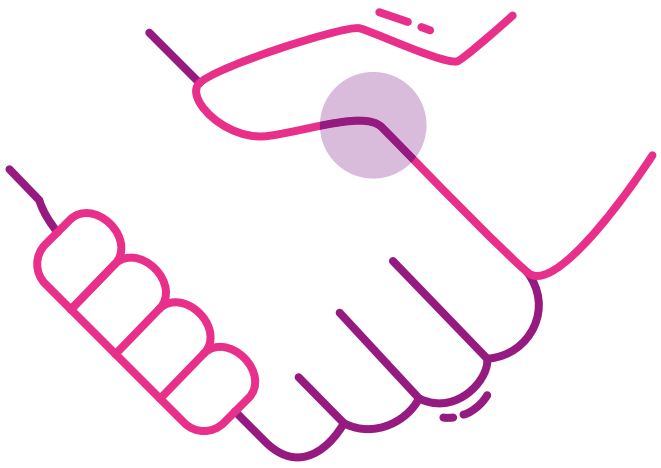
215 **United Kingdom**
Mark DAVENPORT

TESTER BF (LOW FREQUENCY)

Low frequency tap tester for communicating industrial meters.

The Tester BF (Low Frequency) is a box that facilitates the control of the electrical connections of the various equipment that form the chain of succession/metering of gas consumption in customers. It allows the reliability of a commissioning or a customer troubleshooting while reducing the intervention time.
This box contributes to the operational performance of GRDF and of their customers satisfaction. This innovation has been patented, and can be extended to other communicating industrial meters (eg: water meters).

291 **GRDF / France**
Nicolas LEROUGE



AS A SERVICE

New offers "as a service" keep inventing new services in: co-working, logistics, data centers, facility management, and even refrigeration.

LODGE.CO

Our co-working solution that feels like home.

LODGE.co is commercializing a co-working solution to companies, in order to monetize their underused spaces, whilst connecting their employees with other people, freelancers and young professionals in an inspiring environment. It is an on-demand workspace provider, its offer is variable in time and volume. The co-working offer compliant with high level corporate constraints (ergonomics, security, IT) relies on a digital platform monetizing in real-time a network of exciting workspaces with a community of users for whom the primary emphasis on user experience, agility and security are valued.

107 **Global Business Support / France, Belgium**

AVRIL DIGITAL

Smart Data Centers of the Future.

Internally developed predictive cloud-based platform equipped with sophisticated machine learning algorithms capable of capturing and analyzing large volumes of real-time and historical data from equipment/sensors at high speed to proactively anticipate operational threats and predict future outcomes for data centers. We deliver predictive actionable insights that transform data centers to be Sustainable, Agile and Energy efficient for the future.

411 **Asia-Pacific / Singapore**
Joycelyn LONGUE, Alex CHUA, Anil KUMAR, Choon Min YEAT, Shahnawaz PUKKEYIL, Lai BERNIE, Jih Houh LEE, Melisa TAN

LAUNCH OF THE SUPPLY CHAIN OF BU FRANCE BTOC

Anticipate the needs and exchange with the manufacturers for the necessary supplies of BU France BtoC.

The Group's first Supply Chain is a real Control Tower launched by BU France B2C to monitor the centralized warehouse stock as well as the stocks of the 200 agencies and 3,300 technicians' vehicles. The right product in the right place to better serve our customers is our motto.

024 **France BtoC / France**
Stéphane MOILLIC, Joel DEGUILLY, Amélie CAPELIER, Gwladys LOUKAKOU, Jean-Gael HEROUT, Sylvia BOUQUET

IN-NIGHT SERVICES

In Night Delivery of Materials and Tools in Vans.

Increase operational efficiency of our technicians by delivering, during the night, directly into the vehicle of the technician or in a safe place close to his residence, necessary parts for their activity (include spare parts/tools/material).

043 **Global Business Support / Belgium**
Grégory NAVET, Jochen DE BACKER, Ludwig ANTHONISSEN

REFRIGERANT AS A SERVICE

The security of refrigerant supplies for cold chain actors "as a service".

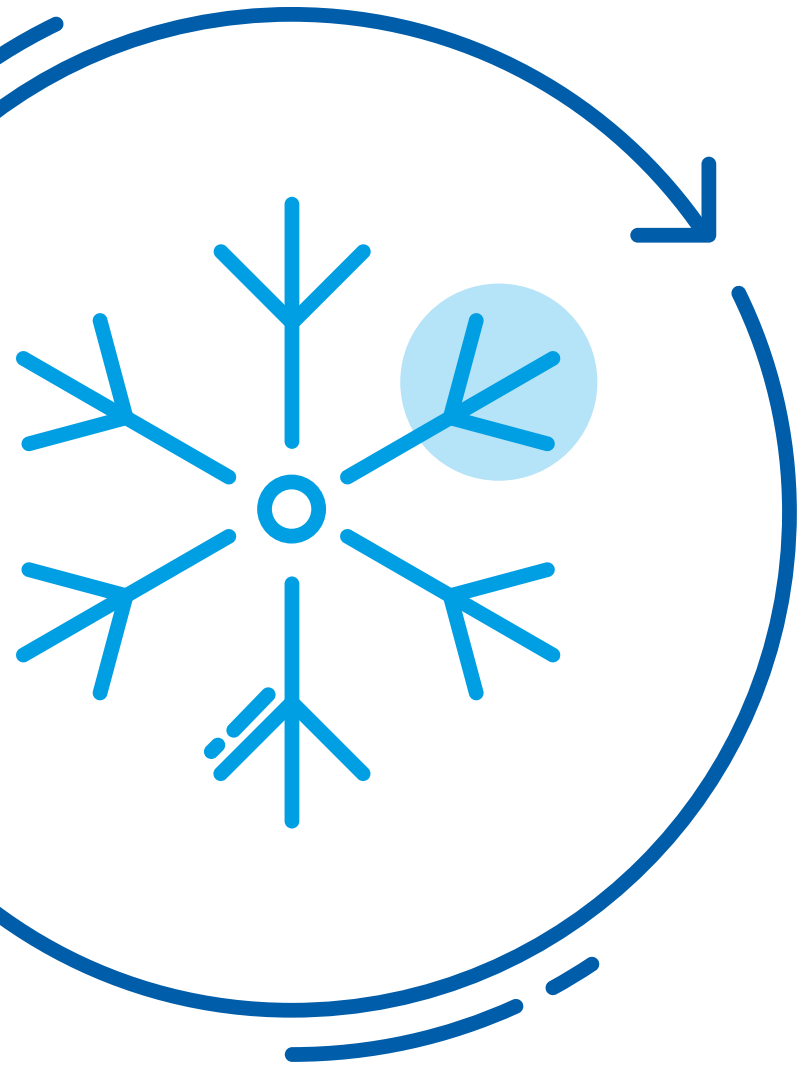
Refrigerant as a service is an innovative service that responds to the security of refrigerant supplies for cold chain actors and accelerates reconversion to carbon-free solutions. Since 2018, 15 key customers have chosen our solution.

171 **Axima / France**
Francois GLESSER, Jonathan LEGUIL, Audrey GRIES

FACILITY MANAGEMENT EXCELLENCE THROUGH IOT

Our innovation empowers Facility Management activities with a digital layer driving our competitiveness and differentiating us on a tough market. This innovation already contributed to the renewal of 10% of Singapore's portfolio and will generate up to 10 million euros in revenue in the next 3 years.

113 **Asia-Pacific / Singapore**
Maxime SEGURA, Yee Wah TANG, Charles VIRY, Wandrille DOUCERAIN



COOL!

Less energy, less carbon, less impact when looking for the perfect temperature, now, that's cool!

ENGIE'S FIRST HIGH TEMPERATURE BESPOKE COOLING SYSTEM!

In collaboration with ENGIE and TfL (Transport for London), we have designed, built and installed the first bespoke, robust, low cost solution to operate effectively in extreme environmental conditions by being able to withstand high ambient temperatures. It is destined to replace the aging, ineffective comfort-cooling infrastructure of condensing units and evaporators currently installed on the London Underground network, and other underground networks too.

160 **UK / United Kingdom**
Anthony MARTIN, Jake REEDER, Amy HAINSWORTH

DATA-DRIVEN ESTIMATION OF POTENTIALS AND BOUNDARIES FOR DISTRICT HEATING/COOLING SYSTEMS

Using the power of big data collected in urban areas and advanced artificial intelligence algorithms to achieve minimum marginal cost for maximum new business opportunity exploration.
On the basis of urban data, this innovative data-driven solution automatically searches, evaluates, and identifies the boundaries and potentials of district heating and cooling for a city, leveraging the integrated power of big data collected in urban areas and advanced artificial intelligence algorithms to achieve minimum marginal cost for maximum new business opportunity exploration. New business opportunities could be explored through the power of artificial intelligence.

259 **China**
Ben SCHWEGLER, Zheng YANG, Eleanor Ho, Hao ZHENG, Fabien PFAENDER

NATURAL REFRIGERANT HIGH TEMPERATURE HEATPUMPS : COOL!

High temperature heat pumps using natural refrigerants offering temperature ranges from 95° to 110°: an efficient solution for hot water for various industrial segments and avoiding CO_2 emissions.

For each use case the optimal high temperature heat pump solution can be proposed, knowing that ammonia offers high efficiency in the range from 0.5 to 10 MW (30-50%), whereas our heat pumps based on CO_2 (Thermeco2) will be more adequate in cases where specific requirements exist on safety and for installations up to 1,500 kW, presenting high efficiency degrees (COP >7.5) for heating and cooling. 70 units of $Thermeco_2$ have been sold and the heat pump on ammonia is being tested regarding the oil management together with the manufacturer.

422 **NECST - France BtoB • ENGIE Axima / Austria**
Mathias BLASER , Jürgen FURTNER, Jörn STIEGELMEIER, Jochen HORNUNG, Éric HOOGENDOORN, Jean-Claude LOGEL

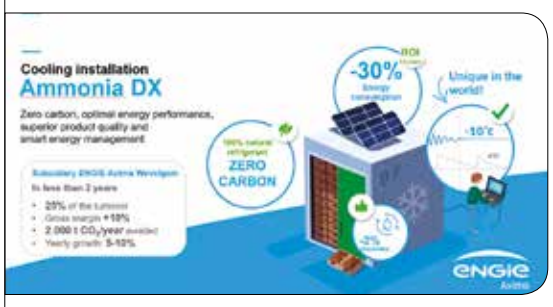
WEATHER-INDEPENDENT AND ENERGY NEUTRAL STORAGE AGRICULTURE PRODUCTS

A storage solution for agricultural products adapted to climate change and using solar energy.

Due to climate change, outside air conditions are unpredictable. This makes the storage of agricultural products challenging and energy-intensive. The ENGIE storage eliminates the use of outside air and gas. It allows farmers to precisely adjust the optimal storage conditions. The system is designed with a heat pump which allows farmers to use the residual heat. The fraction of electricity which is needed is generated with solar panels. The system can be controlled from anywhere using a tablet.

393 **BENELUX - NECST / Austria, Belgium, Germany, Netherlands**
Gert Jan KNIPPENBERG, Marcel BENNINK, Henk TEBBEN, Koen DEMERIE, Peter KRATZER, Stefan HUIJSMANS, Frank VANAERT, Erik HOOGEDOORN

THE NEW AMMONIA DX REFRIGERATION PLANT



A ZERO-CARBON solution to traditional installations using polluting refrigerants.

This new concept offers a zero-carbon alternative for small and large refrigerating capacities. The synergy of using ammonia with direct expansion (=DX) results in a cost effective and efficient cooling installation with an exceptional cooled product quality. Additionally, with this type of installation, ENGIE Axima can offer a unique monitoring in real-time of the performance of each cooler.

405 **BENELUX / Belgium**
Davy DHONDT, Jessica VANCLAIRE , Thomas DE CUYPER, Floris PIETERS, Peter CAMERLINCK, Jim GELDHOF

SHOPPING BOX

The smart and refrigerated box.

ENGIE Axima has co-developed Shopping Boxes with WN (formerly Whirlpool Factory in Amiens) that allow to deliver temperate, fresh and frozen products ordered on the Web and meet the customers' new expectations: need for more flexibility, willingness to consume locally, to limit the intermediaries between the producers and the consumers (farm to fork) and to revitalize the shops in city centers. The challenge is met; ENGIE Axima and WN are currently deploying Shopping Boxes in France.

184 **France BtoB • ENGIE Axima / France**
Ulrich JOPS, Amélie MARTIN, Thierry DOREY, Stéphane LOBELLE, Thierry FOISSET, Francois MESNIL

DATA FOR CUSTOMERS

Do we need to say it? Data is the core of our businesses' transformation. Today, we are putting it directly into our customers' hands.

you're energy manager

Management of B2B European Supply Contract through Webservices.

YEM is a platform to make small and medium enterprises in Europe autonomous in the management of their energy supply contracts. Thus, they could avoid going through intermediaries brokers and/or consultants. Pan-European tenders are managed in a few clicks and the energy bills significantly reduced thanks to purchasing strategies adapted to each profile.
YEM will be present on the Italian market from July 2019 and will extend its services to the rest of Europe in the course of 2020.

104 **GEM - New Corp • ENGIE New Business Factory / Germany, Austria, Belgium, Bulgaria, Croatia, Denmark, Spain, Finland, France, Greece, Hungary, Italy, Liechtenstein, Luxembourg, Norway, Netherlands, Poland, Portugal, Czech Republic, Romania, Serbia, Slovakia, Slovenia, Sweden, Switzerland**
Nicolas HENN, Christine PAUL-BRAY, Marco BARTOLO, Raffaella GALIANO

SPECTRUM

The ENGIE Italy API-driven Digital Ecosystem.

ENGIE Italy is the "first mover" within ENGIE Group in the creation and management of an API-driven Digital Ecosystem based on a "business-first" approach. The main ingredients to govern Spectrum – deriving from the application of this multi-dimensional approach – are: a "Relationship Environment" and a Digital Environment providing an APIs catalogue, showcasing apps "powered-by" the APIs, and enabling the publication of the APIs after a validation process and a compliance agreement for usage. This Governance Model can be easily replicated in other Business Units and countries within ENGIE Group.

026 **NECST / Italy**
Luca MONTANARI, Francesco FRUCI, Carlo BENIGNO

TRADE INNOVATIVE POWER (TIP)

Trade Innovative Power (TIP) is a digital and integrated solution (API-based) that puts the client in the driver seat to balance his power needs on short-term power markets.

Making short term markets accessible to clients and giving them the means to be in the driver seat (cockpit to follow parameters in real-time, combining information from day-ahead, intraday and imbalance markets; i.e. information for which they today use 3 different systems). The TIP-solution is built with a modular approach to ensure standardization and customization. It can easily be integrated into the client's application landscape.
Pilot deployed on 3 clients. Fine-tuning ongoing. Feedback is very positive and promising.

021 **GEM / Belgium, France, Germany, Netherlands**
Sophie VAN DEN BOSCH, Kris VANDEKEYBUS, Olivier VAN CAUTER, Rosa SURIG, Dirk NEIRINGS, Frédéric ROELANDTS, Julien ANSAY, Mireille TSHIBWABWA, Jean-Nicolas LEJEUNE, Sébastien DE MENTEN

JULESMART ONLINE TRADING PLATFORM

Online trading platform which allows customers access to power day ahead auctions or ENGIE's forward curve.

Julesmart is our first customer facing online trading platform. It aims at increasing asset profitability by enabling easy seamless asset optimization. Coupled with switchboxes, fitted directly on the assets for remote operation, the platform functionalities allow assets to run automatically when market prices turn out above specific parameters customers have set up for each period of the day.

238 **UK / United Kingdom**
Ben FINNERTY, Paul DIXON, Russell READING, Aaron NEWBY-WRIGHT, Katrina HILLARY, Maryline PINEAU

ENERGYSCAN

A web application giving ENGIE's internal & external clients up-to-date insights and valuable data on energy markets in a customized way.

298 **GEM / France**
Julien HOARAU, Sandrine FERRAND, Benoit GUARD, Lucas BERBESSON, Claire BERBESSON, Eddy BOITE, Romain MIGNON, Aurélien CAMPEAS, Arnaud CAMPEAS, Adrien MEOT

C3NTINEL®

ENGIE's favourite Energy as a Service platform.

C3NTINEL® is a scalable, digital platform that collects and collates all interrelated data from energy meters, asset sensors, BMS, weather data and energy market pricing. The system employs machine learning to map normal conditions and trends, and analyses incoming data to identify anomalies. These anomalies flag up an existing or emerging issue, that enables a skilled energy or facilities manager to make smart, corrective decisions for cost and carbon reductions.

161 **UK / United Kingdom**
Darren PEARSON, Richard CHANT, Mike GODBER, Darren MOSES, Stuart DRAPIER, Joshua DUNN

COZIE.ME DIGITAL SERVICE PLATFORM FOR DELIGHTED CUSTOMER AND EFFICIENT FIELD OPERATIONS

Customer self-care appointment taking & automatic real time planning optimization.

Cozie.Me is a unique end-to-end digital service support platform that enables important efficiency gains and a flawless customer experience with field service operations for B2C customers in the heating & cooling service business through the combination of automation and customer self-care. It reaches from the self-care appointment taking until the automated billing of the performed services.

172 **BENELUX / Belgium**
Bert RESSELER, Sander VERHAEVEN, Geert FOSTIER, Anthony THOMAS

CUSTOMER ENGAGEMENT

Be it for Industrial Customers, local governments, professionals or individuals, we offer new services, new approaches to renew our customer relationship and engage with them.

STORYTELLING TO SERVE BUSINESS

In this innovative approach, it is a question of addressing the client through his/her points of interest and to make him/her live an experience, by provoking emotions by the theatricalization of the support. Between 2015 and 2018, we have renewed 197 M€ in maintenance contracts for Nuclear Plants. We are looking forward to prospective new markets.

289 **France BtoB • ENDEL ENGIE / France**
Pierrick SAURET, Damien LE GLEVIC, Grégoire CASSAN

QWEST ENERGY

A decentralized, low carbon local energy and services brand launch.

A "white-label" partnership between ENGIE and a Local Government Authority to provide a tailored energy and services offer to the residents. Local Authorities have challenging targets in reducing fuel poverty and carbon, with decreasing budget and resource. Qwest Energy helps the Local Authority to deliver their targets whilst enabling ENGIE to grow a long-term profitable energy and services relationship.

208 **UK / United Kingdom**
Simon KENDREW, Chris SOWERBUTTS, Daniel YOUNG, Lucy HUGHES, Georgina PATEL

CRYSTAL BALL

A data management & portfolio analysis framework to aid the growth of advisory services at ENGIE Insight.

Crystal Ball will leverage the enormous amount of data collected via ENGIE Insight's Utility Expense Management service to offer our clients additional services related to sustainability. It allows easy access to the information required for data-driven decisions, customer segmentation, and the derivation of missing data. This will enrich pilot projects and new feature offerings and serve as a unified resource for users across Marketing, Sales, Strategy, R&D, and other teams to size markets and find the specific opportunities within those markets.

497 **NORAM / USA**
Shikhar VERMA, Judy CHENG, Tamir HEGAZY, Lacey KLOSTER, Yousra BEKHTI, Varun GOWDA, Shy MURALIDHARAN, Joel TRAVIS

COAST TO COAST SUSTAINABILITY TOUR

Learning and amplifying the current state of sustainability in the U.S. through 10 days, 10 cities, learning expedition.

The Coast to Coast Sustainability Tour was a 10-day, 10-city, market disrupting experience where ENGIE Insight executives traveled across the country in electric vehicles to engage with clients, partners and industry experts to learn and amplify the current state of sustainability in the U.S. By decentralizing the typical client conference, they were able to reach nearly 3 times the number of clients and prospects we have historically engaged directly by meeting them where they were at and reduce their overall impact on the environment.
The team also focused on leveraging media coverage, new client testimonial content and relationships with clients' contacts and prospects to continue to drive awareness and results.

210 **NORAM / USA**
Raevyn WEST, Mike KAPLAN, Paige JANSON,

Guaranteed Savings Product

A B2C business model built on customer segmentation and advanced analytics.
Revolutionize the B2C profit model: from a low margin territory approach to capture of month-to-month value at the individual household level. Offer customers guaranteed savings through an arbitrage of regulated locked-in utility rates.

395 **NORAM / USA**
Joel ELKINS, Julian MITHANI, Neil MCKELLAR, Greg DEASARO

ECO ÉNERGIE

An innovative information campaign to raise awareness about energy savings among professionals by offering personalized and free advice: this information campaign is an innovative method of collecting EWC at a lower cost.

492 **France BtoC / France**
Géraldine CADIER-MIRALLES, Laura SARAGA, Sarah SURANYI, Béatrice PAROISSIEN, Soheil KACHANI, Marie PAYA, Olivier CAMELENA, Maxence CLOT, Marie-José DEROBERT-MASURE, Matthieu MAURICE, Marjorie TERRAL, Carine PROUT, Anne DENIBAUD, Robin DOREMUS, Michael BLANC, Olivier CAMELENA, Audrey DARMON, Alain MARCOU, Vincent REBUT, Nicolas LEFEBVRE, Fatima HAMIDI, Jonas CACHAU-HERREILLAT

EIDERIS

The first ENGIE boiler, remotely monitored for more serenity and comfort.

ENGIE Home Services is the French leader for the maintenance of heating systems. The Eideris offer is an innovative solution for private customers which enables remote and real-time monitoring of the boiler by heating experts.

002 **France BtoC / France**
Camille MAINGUENAUD, Laurent COSSON, Amaury LAMARCHE, Fabien MARGUERON, Thierry DEVANT

CARING FOR PEOPLE

Caring about safety and protection for our employees, but also for our customers. We dream of predicting work-related accidents before they arrive, of operating swimming pools at low energy cost and good air quality, and of preventing industrial hazards.

DATASECURE

Data analysis for the safety of our employees.

DATASECURE project analyzed crossed data related to 582 work accidents with machine learning techniques correlating 64 different criteria to establish correlations between the characteristics of the accidents, the profile of the victims and the circumstances of their occurrence. The results were inconclusive which demonstrates the difficulty of conducting a Data Science project when input data are heterogeneous and complicated to harvest ... as is still often the case in our businesses!

265 **France BtoB • ENGIE Axima / France**
Yannick VICAUD, Lisa RIVALIN (Berkeley), Marie-Perrine DUROT

THE AIR HANDLING SYSTEM FOR POOLS BY ENGIE

An offer at the service of the Energy Transition of territories.

By designing the Air Handling System for Swimming Pools by ENGIE, we have created a unique offer available for our commercial development in the swimming pool and municipality market segment. This offer guarantees a maximum level of energy performance, combined with an optimal level of Indoor Air Quality.

484 **France BtoB • ENGIE Cofely / France**
Hamid BELDJENNA, Julien GARE, Maxence BUREAU

RADIATION PROTECTION AREA 4.0

Preventive & autonomous active safety, 0 accident in radiation protection.

Our patented solution eliminates risk of accidental exposure to X-rays or gamma radiation during industrial X-ray (non-destructive testing) via the analysis of the speed and trajectory of the intruder. Thanks to co-development between TENEO and ENGIE Lab CRIGEN, Smart Home and Lidar technologies have been successfully implemented 6 times in EDF in 2018. Our innovation will provide a competitive advantage on the NDT market and save lives !

065 **France BtoB • ENDEL ENGIE / France**
Lionel WOISEL, Arnaud PETIT, Florence LIVREAU, Louis GORINTIN

SAFETY BY THE SIGN: CREATING A SIGN LANGUAGE ADAPTED TO AN OPERATIONAL TEAM

To improve safety in boiler rooms, a tailor-made language has been created and adopted.

By creating a dedicated sign language to allow communication in noisy or dusty environments without removing personal protective equipment, a jump has been made to improve health and safety in boiler rooms. This new language required the support of an association for a real "tailor-made" and participative creation of nearly 70 signs, in two site visits and three working sessions. This initiative brought teams together through games and an extraordinary sharing of experience. The requested association usually working for people with disabilities was happy to work this time in disability prevention!

124 **France Networks / France**
Rodolphe VERAN, Clément LE GOUHINEC, Alexandre FOURNERIE

ENGIE CONNECTED CUSTOMERS

First Smart solution for gas detection.

In the context of an increasing digitalization on all device markets, which ENGIE adheres to, we consider joining the gas detection solution to a smart remote alert. There are no certified SMART devices for gas detectors on the Romanian market; this solution will be the first of this type. It is a simple system that only requires previous installation of the detector and an optional connection to the automated shut-off valve. The customer is instantly aware there is a gas leakage at home and can therefore promptly act in order to mitigate the risks (considering the gas has already been shut-off from the automated valve when the leak had been detected). As another benefit we mention the independence to the WIFI router, since the relay directly sends the signal to a GSM network.

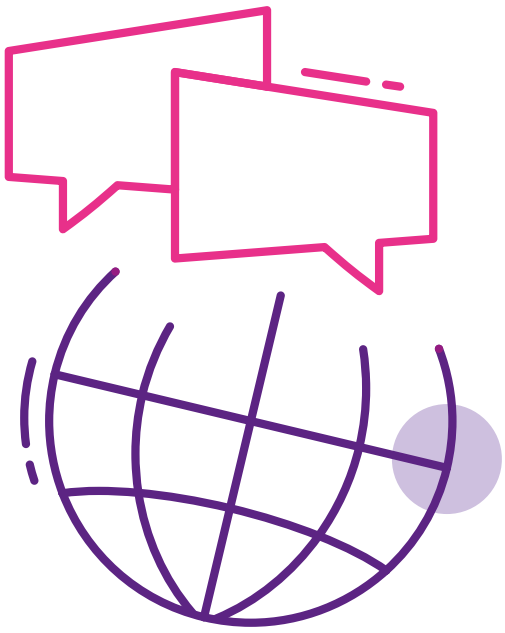
288 **NECST / Romania**
Cristina Maria GHEORGHE, Andreea VLASCEANU, Cristian DOBREANU, Radu CURSARU

CYRIL

Overseeing your health in the comfort of your own home!

Cyril uses passive movement sensors around the home to advise carers about patient movements and health status. Specifically, it intends to prevent avoidable pressure sores by embedding pressure technology to provide further detail into the patient's condition. Preventing bed sores from occurring can prevent admission into hospital, thereby improving patient care quality and minimizing the burden on the UK National Health Service (NHS) resources.

230 **UK / United Kingdom**
Katy LONGHURST, Sam HOCKMAN, Pauline JACKSON, Liam SUTCLIFFE, Mike COLLINS



CONNECTING...

**Of course, it's about connectivity, but not only...
It's really about working together to find unexplored new solutions.**

PROJECT MEGAWATT

Let's mobilize ENGIE to keep the lights on in Belgium.

After being faced with an unprecedented low availability of our nuclear capacity this winter in Belgium, ENGIE took its responsibility and mobilized 3 BUs: Generation Europe, GEM, and BENELUX. Together, we set ONE GOAL and put in all effort to find in less than 3 months a new portfolio of 1,273 MW of additional capacity to help the Security of Supply in Belgium. This general mobilization was made possible thanks to the trust from management and to our people's involvement. It required unseen efforts on project management/realization, contracting of external parties, stakeholder relations and a continuous quest to challenge the "unfeasible".

308 **Generation Europe, GEM & BENELUX / Belgium**
Frank VAN DEN SPIEGEL, Niels SMOLDERS, Paul-Étienne VERHEVEN, Vincent VERBEKE, Christophe BAUGNET

KITCOMWIFI

How to seamlessly connect your 2.0 operator.

Digitization and decentralization are priority issues for ENGIE's operations. To do this, it is necessary to guarantee an access to a high-quality connection for tablets and telephones in urban areas. Moreover, the same quality is not available in remote areas in France, like wind farms. In less than 1 minute, KitComWiFi is installed and provides a broadband hot spot with 75m radius around your vehicle. It combines: a router with 2 SIM, 3 very high gain antennas, and a mounting bracket.

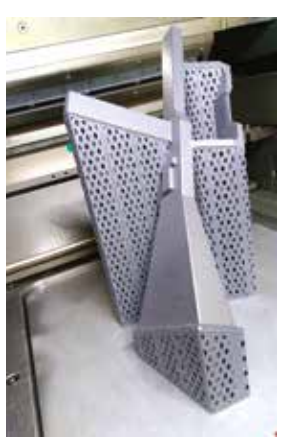
344 **New Corp • ENGIE Lab Crigen / France**
Florence LIVREAU, Raphaël GENIN

3D PRINTING OF METALS HAS PROVEN ITSELF

First printed high-temperature component implemented in the field.

First installation of a fully 3D-printed complex component from a pressure regulation valve at the Maxima Power Plant in the Netherlands. Component was printed at ENGIE Laborelec 3D Printing Lab in Belgium, and is considered to represent the first step towards the dream of a digital warehouse, since the part is now available to be printed on request.

342 **Tractebel • Laborelec / Belgium, Netherlands**
Kurt BOSCHMANS, Steve NARDONE, Linus WIERSEMA, Vincent VAN DEN BERG,,Marco SIEBELINK



BENEFITS OF 3D PRINTING FOR INEO DEFENSE

Long delivery time combined with high manufacturing and assembly costs make each SATCOM antenna a high-end application in a very competitive marketplace dominated by the Americans with their shelf-products. The innovation is the development and performance validation of a new hyper-frequency source for SATCOM antenna thanks to the key ENGIE expertise in radio-frequency and in metal 3D printing process.

253 **France BtoB • ENGIE Ineo - Tractebel • Laborelec / France, Belgium**
Thierry LEBASTARD, Miguel GODINO MARTINEZ, Steve NARDONE, Thibaut ROLLAND, Sébastien NOYAL

EDENBOX

In the Fos-sur-Mer LNG terminals, the Edenbox project is a multi-technical maintenance contract with performance targets. During 11 months, the teams of Elengy, ENDEL ENGIE and ENGIE Ineo have negotiated and gathered 40 activities in one single multi-technical maintenance contract covering 60% of the maintenance costs.

384 **Elengy - France BtoB • ENDEL ENGIE, ENGIE Ineo / France**
Thomas PIERRE, Thierry LABROUSSE, Dominique PASCAL, Audrey LORILLERE, Stéphane LACORE, Marie-Véronique DEYDIER, François-Xavier ROZE, Eric AGNIEL, Magali MOREAU, Sophie CHARRIER-MONCET, Mathieu STORTZ, Rodolphe LELIÈVRE, Julien DUHART, Pascal ANFOSSI

EPPAS

A mobile rounds management application tailored to Plant Operators requirements.

The ePPAS application allows operators to carry out field observations from their mobile devices. The assets are able to replace paper check sheets or existing third-party digital products.
Supervisors can track KPIs, trend data history and be automatically notified of alert readings. User adoption is ensured by taking an iterative approach using design thinking to meet end users' requirements. The customizable tool will fit any industrial asset to support any O&M department with their readings. Hosting on the cloud eases access and scalability with over 300 users at 10 plants since release mid 2018.

273 **MESCAT - ENGIE Digital / Oman, Pakistan, Saudi Arabia, Turkey, United Arab Emirates.**

We transform ourselves from within, we train ourselves, we explore, we experiment and... we share to serve our customers better and look to the future.

CULTURE TRANSFORMATION

ENGIE TECHNICIANS AMBASSADOR COMMUNITY

Promote the technical sector and its professions to encourage vocations internally and externally.

Volunteers who share a passion for their profession and express their pride, through their experience and their vision to make technical jobs better known and recognized, in a community created in April 2018. This community counts more than 130 members from 16 entities of ENGIE. They should become more than 500 at the end of 2019. They represent their trade and the company at job fairs, vocational days in schools...

514 **New Corp / France**
Véronique HUCHET, Gabriel VARACHAUD

School of Agility

MaaS

An innovative training to enable the agile paradigm shift in GEM.

School of Agility is a tailor-made innovative training. It enables GEM shifting from "here is a perfect plan, let's follow it" to "let's experiment, get regular feedbacks, learn and adapt" (the agile paradigm shift). All along the teaching journey, it allows trainees to feel and experiment the agile way of approaching complex problems.

054 **GEM / Belgium, France, Italy, Romania, Spain, Turkey, United Kingdom, USA**
William REVAH, Anne-Gaëlle COUTRIS, Romain TCHERTCHIAN, Sophie LIMPENS, Christelle WYNANTS

LET'S CODE

Anybody can code.
A volunteer-based peer-to-peer coding training program for beginners, providing the tools to automate simple tasks and the freedom to be creative, innovate, and create value.

167 **GEM / Belgium, France, Italy**
Madeleine FUTTERMAN, Razvan DORDEA, Stéphane RAGUIDEAU, Colin BOUNOUAR, Adrien ROUX

TILT.IP

An action-training to boost the creation of value by anchoring "intellectual property" pro-active attitudes through emotion.

Through an action-training based on gamification and focused on collective intelligence, emotional intelligence, and role games, which can be played in 2 to 6 hours to adapt to the audience and their stakes. It simplifies the concept of Intellectual Property and allows to anchor pro-active attitudes in each participant:
TILT, I identify my intellectual property!
TILT, I protect it!
TILT, I create value with it!

532 **GRDF / France**
Jean-Luc GODON, Anthony BONO

LEARN-HEAT

A simulator adapted to different real-life scenarios that offers a unique experience in the management of a district heating network.

LEARN-Heat is part of a process of knowledge management in a funny, interactive and digital format to increase the teams' skills in the management of district heating systems. The moderator chooses a scenario, then the gamers must, within the allotted time, make the right settings at the right time to improve the energy performance of the networks. Deployed within ENGIE Networks, this simulator allowing learning by doing is becoming increasingly popular.

278 **France Networks / France**
Thierry DUMORTIER, Fabrice RENAUDE

MOOC EXPLORE

Let's learn about the offers dedicated to the general public in France and share them.

The "Explore" MOOC aims to inform all ENGIE employees about the offers and services dedicated to the general public in France, so they can promote them around them.

307 **France BtoB / France**
Sandrine GEORGE, Nathalie ALLINE, Maëllys LEOSTIC, Gwenaëlle PIERRE, Élisabeth PELLETIER

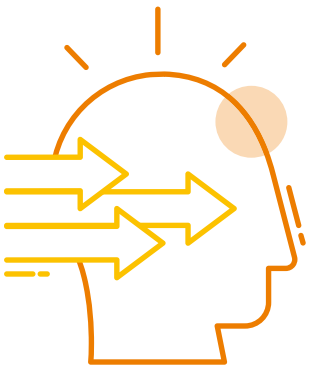
LIVE MY LIFE

Create an environment of continuous learning to gain new perspectives, by "living the life" of another colleague for a couple of days.

The "Live My Life" Program is where a BU GEN employee ("guest") temporarily "shadows" another employee ("host") within BU GEN or elsewhere in ENGIE in order to gain insight into his/her role. This program is about creating meaningful exchanges between people, enabling them to explore different business realities, whilst, at the same time, strengthening their collaboration, broadening their network, increasing their know-how, expertise and best-practices sharing. It's a means to explore new ways to develop themselves, their employability and the business.

270 **Generation Europe / Belgium, France, Germany, Greece, Italy, Netherlands, Spain**
Gastón CORTI, Christophe DEMAEREL, Sarah Jane HORNER, Florence STAHL

CULTURE TRANSFORMATION



YESWECOOPT TO RECRUIT THE TALENTS OF TOMORROW WITH A CREATIVE AND INNOVATIVE CO-OP APPROACH

YesWeCoopt to recruit the talents of tomorrow with a creative and innovative co-op approach.

Developed by and for Business Support IT, YesWeCoopt is a solution for sharing job offers and news via social networks (LinkedIn, Twitter, Facebook, WhatsApp ...). Available on mobile and web, it makes each employee the ambassador of ENGIE IT by participating in building a greater visibility with potential candidates. A win-win scheme with the organization of challenges and associated rewards for employees and an effective recruitment system for the company.
YesWeCoopt is also a bold, fun and offbeat communication campaign that actively involves employees.
YesWeCoopt is finally full of challenges and competitions to maintain the momentum.

117 **Global Business Support / France**
Rosietta PLANTE, Malika MEBREK, Agnès LECLEVE

STORINDUSTRY 4.0

Develop an intrapreneurial digital culture to meet the challenges of the industry of the future.

Storengy is revolutionizing its operations and maintenance activities by developing its own digital ecosystem around the roll out of an ATEX tablet on its industrial sites, thus opening the door to industry 4.0.

242 **Storengy / France**
Franz DANYACH, Christophe DEVOILLE, Caroline BRUGGEMAN, Christophe RENARD, Nicolas MONTMIREL

ENGIE UK'S CAPABILITY MAP CULTURE TRANSFORMATION

A unique "map" of ENGIE UK & Ireland's 140 capabilities.

ENGIE Capability Maps has digitized knowledge management to create an invaluable tool for business growth and scalability across ENGIE. It offers a single source of information providing insight into the vast and varied services we deliver. Each segment of the map is linked to a Business Activity, providing an overview of that Capability – describing what we do, with details of the SME & hyperlinks for further information.

183 **UK / United Kingdom**
James HERITAGE, Ben WATTS, Ria BROOKES, Damien KELLY, Jack PIERREPOINT, Jesse BOOTH

UP!

The program dedicated to the BUs' Talents.

Up! has the ambition to prepare the Future of ENGIE and of our BUs entities (France BtoB, France BtoC, France Renewable Energy, France Networks), through the identification and the development of a diversity of talented people.
Talent as a service ! Better meet the expectations of the "client collaborator", to build loyalty, giving him the means to be a player in his own career.

471 **France BtoB - France BtoC - France Renewable Energy - France Networks / France**
Ingrid DEBAR, Fatima SALHI, Valerie LEPERCQ, Carol DENOYER, Evelyne GUIDET

FULL TIME

Agile and digital solution to favor the loan of internal manpower.
This digital platform gives the opportunity to managers to share the resource requirement (under-staffed or over-staffed teams) within an Algorithm which performs the immediate data matching and proposes the available employees corresponding to the skills asked. This solution promotes internal resources and aims to reduce the use of temporary workers.

121 **France BtoB • ENGIE Ineo / France**
Carol DENOYER, Philippe STANIC, Brahim GARDA, Gérald BLAIS

CUSTOMER JOURNEY MAPPING

HOW IT HAS TRANSFORMED OUR CLIENT-ORIENTED ORGANIZATION

Customer Journey Mapping has been a powerful source of inspiration for our company to redesign its organization. It has been a key factor in our ability to translate customer feedback into management insights: eliminating our organizational barriers, leading to smoother relationships with our clients. Our learnings have allowed our people, not just senior management, to think about their roles and impact in helping to create satisfied and loyal customers.

452 **France BtoB • ENGIE Ineo / France**
Delphine CHAUVIN

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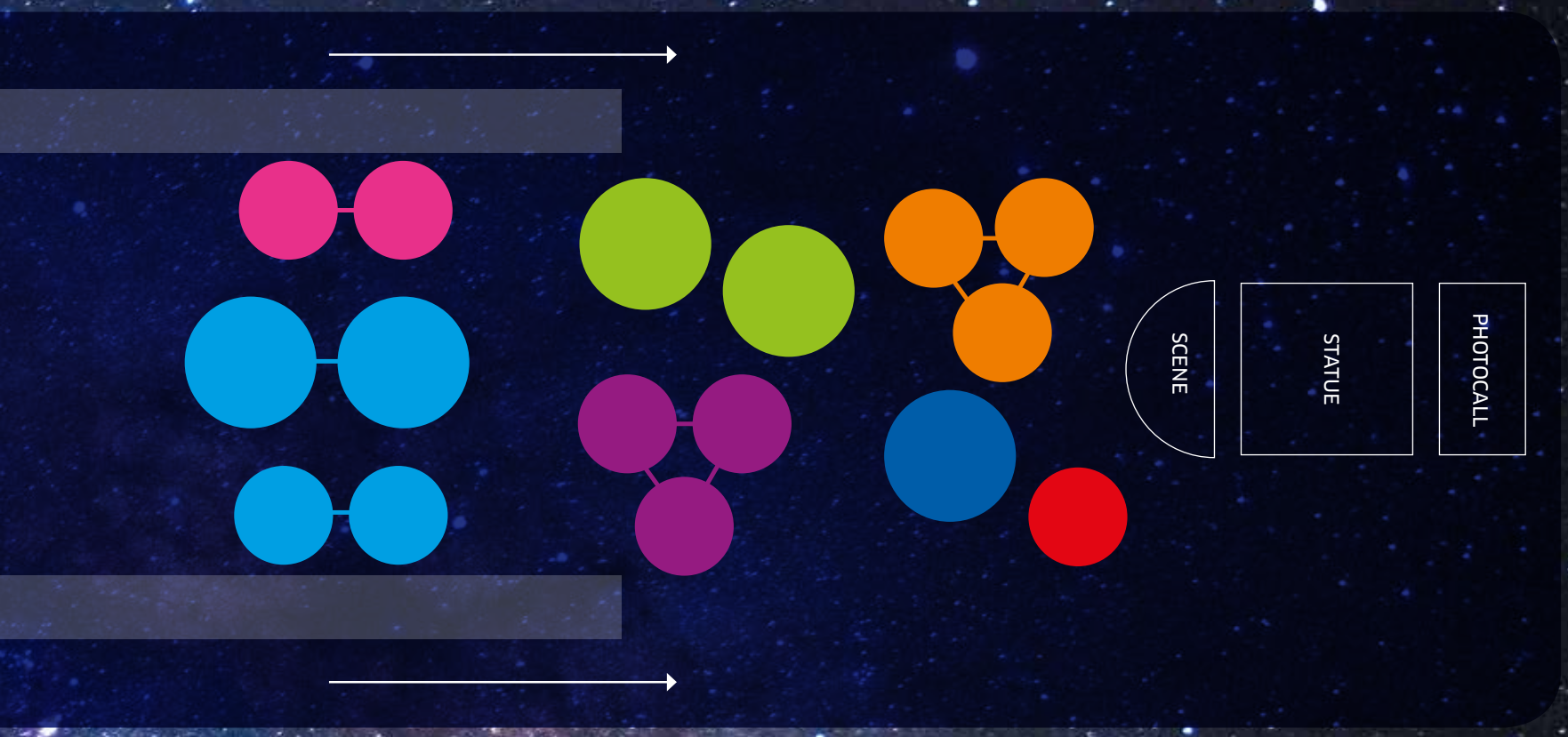
BUSINESS DEVELOPMENT

INNOVATION TROPHIES CEREMONY,
JUNE 18, 2019
MARKET PLACE ZONING – STATION F



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50 years ago, Niel A. Armstrong, the first man ever to set foot on the Moon, said “one small step for man, one giant leap for mankind”.

This is what our innovators strive to achieve every day.

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17 au 21 juin 2019

ENGIE
INNOVATION WEEK

« We are Imaginative Builders »

One week to mobilize, promote, discover, discuss, showcase and communicate on the ENGIE Group's innovations and partners all over the world.

5 days, from June 17th-21st 2019 to make a common project be real : "We are Imaginative Builders".

MORE THAN **80** EVENTS AND INITIATIVES

IN **23** COUNTRIES

ENGIE OPEN-INNOVATION ECOSYSTEM

MORE THAN **100** STARTUPS CALL FOR PROJECTS

4,400 STARTUP PROJECT APPLICATIONS AND SOLUTIONS IN INNOVATION DATABASE

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250 INNOVATION AMBASSADORS

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