



WHITE PAPER

Smart Energy & Utilities

We are driving evolution throughout the energy supply chain, from business models to our customers' processes.



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01 Trends, challenges and opportunities





Over the last 40 years, primary energy consumption around the world has more than doubled.

The continued growth of the global economy and population levels over the past few decades has caused a sharp increase in the demand for electricity.

According to the Energy Information Administration (EIA), the statistical and analytical agency within the United States Department of Energy, **world energy**

consumption will grow by almost **50%** between 2019 and 2050. These estimates are constantly evolving, much like the global geopolitical landscape, which is triggering major consequences in terms of raw materials, energy sources and state energy policies.

In recent years, two major factors have profoundly impacted our society: the pandemic (and the risk of future outbreaks) and geopolitical turbulence.

The repercussions are also reshaping the energy market, affecting every element of the supply chain. On one hand, the geopolitical turbulence and uncertainties are impacting energy sources and raw materials; on the other hand, climate change is having a disruptive effect on both companies and production activities.

Finally, while the public is increasingly

aware of sustainability issues, certain sectors and production operations are struggling with the sacrifices required for the energy transition.

Clearly, we are facing a phase of transition and profound transformation affecting every aspect of society and the production chains.

According to the IEA, the International Energy Agency, **crisis periods shine a spotlight on governments and their reactions**. In addition to short-term actions, many governments are taking

longer-term measures: some are working to increase or diversify oil and gas supplies, while others are striving to accelerate structural changes.

The IEA has calculated that **the new policies implemented in the main energy markets will push annual investments in clean energy to over 2 trillion Dollars by 2030, an increase of more than 50% compared to current levels**.

Clean energy represents a huge opportunity for growth and employment, and an important arena for international economic competition.

By 2030, thanks in large part to the **US Inflation Reduction Act**, annual increases to the American solar and wind power capacity will reach two and a half times the current levels, while sales of electric cars will be seven times higher.

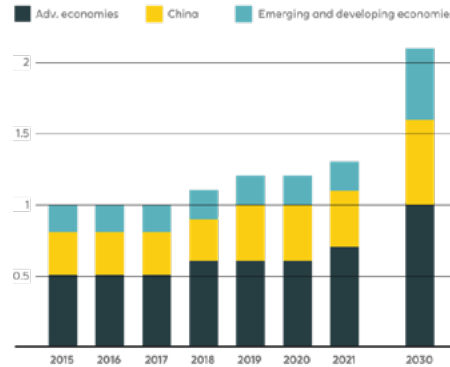


China's massive clean energy development operation is well underway, constantly working towards new targets: it follows that both coal and oil consumption will peak before the end of the decade.

The acceleration of renewable energy deployment and the improvement of energy efficiency levels in the **European Union** will decrease the demand for natural gas and oil by 20% in this decade and the demand for coal by 50%. Furthermore, the move away from Russian gas has made the search for new economically and industrially advantageous energy sources even more pressing.

Japan's green transformation programme has provided a major boost with funding for various technologies, including nuclear and low-emission hydrogen, while Korea is working to increase the share of nuclear and renewables in its energy mix.

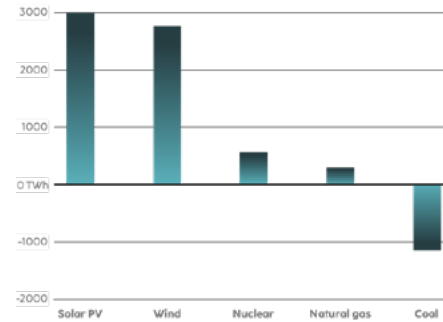
India is making further progress towards its national renewable capacity target of 500 GW in 2030, with renewables meeting about two-thirds of the country's rapidly increasing electricity demand.



USD trillion in clean energy investment in the Stated Policies Scenario, 2015-2030 (source AIE)

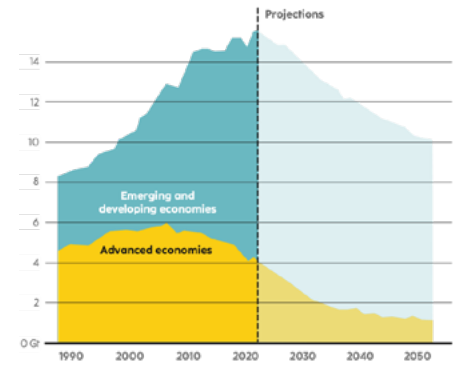
An energy revolution is on the horizon. According to the **IEA**, the growth of coal

as a result of the crisis is only temporary. The increase in electricity production from renewable sources is sufficiently rapid to exceed the growth rate of total electricity production, reducing the reliance on fossil fuels.



Change in electricity generation in the Stated Policies Scenario between 2021 and 2030 (source AIE)

With positive consequences in terms of CO2 reduction (source: IEA):



Power sector CO2 emission according to the Stated Policies Scenario

This is a crucial moment for the planet, and we must establish a more secure, sustainable and affordable energy system. The potential for faster progress is enormous if we take immediate action.

Investments in the clean electricity and electrification sectors, in parallel with the expansion and modernization of various



networks, offer clear and cost-effective opportunities to reduce emissions faster and cut electricity costs.

Electricity, and its supply chain, is at the heart of most development and investment programmes, but it is not the only avenue for progress. For example, there are some very interesting research and development initiatives regarding the development of biofuels, CO2 segregation, recycling, circularity and integration of production chains, and the development of the hydrogen economy.

Due to the various geopolitical crises that have shaped the last few years, the market has seen a renewal of the LNG supply chain and the development of biogas.

The associated systems are increasingly integrated and synergistic, from storage to transportation.

Beyond energy: Waste & Water Management

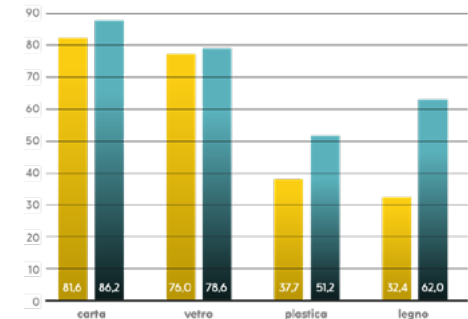
Our primary focus has long been the energy chain: from the search for sources to generation, and from transportation and distribution to related services. We must now broaden our gaze to strategic services in order to foster a sustainable and responsible society and economy, namely the integrated management of waste and water services. To advance the ecological transition, ambitious objectives have been established on the European level regarding waste management, including the Green Deal, Fit for 55, and Next Generation EU.

The Italian Recovery and Resilience Plan (PNRR) lays out specific measures in order to improve the sector with investments totalling 2.1 billion Euros, of which 1.5

billion is allocated to the construction and modernization of waste management plants, and 600 million is assigned to specific projects within the strategic supply chains for the circular economy.

According to 2020 Eurostat data, Italy ranks seventh among the member states of the EU in terms of the annual recycling rate of municipal waste.

Our country's recycling rate is 51.4%, compared to an EU average of 48.6%. Italy ranks above the European average in all types of packaging materials studied: glass, paper, plastic and wood.



EU VS ITALY waste / % of packaging material recycling in 2020 (source ANSA)

To reduce the gap between the internal regions, 60% of the total resources of the PNRR are due to be allocated to the southern and central regions, and two different thresholds have been established for the southern and central (60%) and northern regions (40%) with regard to interventions to be completed by 30 June 2026. The Italian PNRR encompasses specific measures aimed at improving the management of the



waste cycle, and each intervention is built around two main objectives: to improve the country's capacity for efficient and sustainable waste management and to foster a circular economy.

Alongside the investments related to the PNRR, numerous transformative actions have been planned, divided between **three pillars**:

- the National Strategy for the Circular Economy (**SNEC**);
- the National Programme for Waste Management (**PNGR**);
- the technical support for **local authorities**.

Water has been an overlooked sector for many years, but climate change has made the integrated water services sector a subject of public debate. From the data

reported in the "Blue Book" of The European House – Ambrosetti's Value of Water for Italy Community, of which Eng is an active member, we can draw several conclusions.

Climate change is having a significant impact on the water cycle.

- ⌚ In our country, the estimated average annual water availability for the last thirty years, about 133 billion cubic metres, saw a **20% reduction** compared to the period 1921–1950 (about 166 billion cubic metres).
- ⌚ In the **21 regional capitals**, compared to the reference 30-year period (1971–2000), the **decade 2011–2020** recorded an increase in average temperature of **1.3 °C**, and **2020** registered a decrease in precipitation equal to **91 mm** (15 cities were affected by a negative anomaly).

We must work and cooperate to handle the effects of the climate crisis.

- ⌚ To cope with the effects of the **climate crisis**, managers will invest about **10 billion Euros** in the coming years for a volume of recovered water totalling about **620 million cubic metres**.

We must protect water resources and use them in a more efficient way.

- ⌚ **Improving sample monitoring systems** for civil, industrial and irrigation water uses is absolutely essential.

The 5 Rs: Retrieval, Recovery, Reuse, Recovery, Reduction.

- ⌚ Increased investments and development of the overall sector are required for the transition to a circular water resources management model.

In the Italian market, one of the greatest challenges faced by the sector lies within implementing a **new economic model that can reconcile multiple opposing forces**: increased investments (under pressure from stakeholders), profitability (under pressure from investors), as well as competitiveness and the demand to contain prices within regulated markets (transportation, distribution, integrated water cycle).

We are therefore likely to see in the future continued **market concentration**, driven by a **search for synergy, critical mass for investments**, and effective management of financial leverage. As a result, **the associated IT maps must be renewed and rationalized**.

Moreover, for many operators, integration on a national level will be accompanied by **international expansion**.



As part of this process, the Italian IT maps must be integrated with the legacy maps present in the new countries.

In this scenario, **cybersecurity** will also be a priority, alongside the evolution of platforms and the increased automation of supply chains.

Some other aspects to be considered for their cross impact along the entire value chain, are those related to sustainability and energy transition. We might for example account for the evolution of the production model which integrates traditional with renewable resources, the “Prosumer” model, the Flexibility Market.

In order to implement the new economic model, organisations will have to embrace a **comprehensive overhaul of the associated business models, communication strategies, business**

processes and skills.

Companies that directly serve the retail market typically prioritize their customers, but this trend can also be found elsewhere in the value chain: we are moving towards a **client-centric** rather than user-centric approach to processes and technological solutions throughout the market.

A focus on customers also means an emphasis on the **user experience** and the **customer journey**, resulting in a constant search for solutions that allow companies to quickly adapt to the changing behavior of their current clients



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Smart Energy & Utilities Portfolio

Smart Energy & Utilities Portfolio



Promoting the creation and development of an efficient, responsible and safe Energy & Utilities ecosystem.

This is the great challenge of our times.

How can we do this?

How can we support the **energy transition**?

How can we succeed in accelerating electric flexibility? How can we use **GenAI** to improve services?

SUSTAINING RENEWABLE ENERGY COMMUNITIES

Renewable Energy Communities play an increasingly central role in the energy transition, renewable energy and the fight against climate change: they are working to improve energy security, support economic growth, and promote responsible development. By increasing the number of such communities, we can accelerate the energy transition.

Our Renewable Efficiency Management System (REMS) [composable platform](#) was created to **support the activities of members of Renewable Energy Communities, applying an end-to-end approach to business processes and operational activities** for the production, distribution and consumption of energy from renewable sources. REMS contributes to the governance of the entire consumer/prosumer ecosystem and supports **each REC throughout its life cycle**.

TRANSFORMING PRODUCTION, CONSUMPTION, DISTRIBUTION AND TRANSMISSION NETWORKS

The energy [distribution network](#) is evolving from a few large distributors to many small micro-distributors,

and from a hierarchical model, in which few large power plants generate energy on a pre-planned basis, to a smart grid model where many non-programmable sources, including renewable ones, contribute to the production and supply of energy.

In this new scenario, **machine learning, deep learning and algorithms** can be harnessed to make **accurate predictions and adapt to changes in system structures**. **GenAI** furthermore allows for the simulation of extreme events through the generation of data of synthesis, in order to prepare the control rooms to a **prompt** and **effective** response which can guarantee the security of the net under any circumstance.

Smart meters and **smart grids** also provide a granular and accurate overview of energy consumption and customer behavior, relying on 5G technology to support sensors, meters and Machine Learning (ML) applications.

ACCELERATING ELECTRICAL FLEXIBILITY

Accelerating electrical [flexibility](#) is a complex undertaking that requires a commitment from all players in the energy sector. Additionally, **the electrification of consumption**



and generation from intermittent renewable energy sources require a distribution network that can accommodate new needs and functionalities, opening up new roles for the DSOs (Distribution System Operators).

A more flexible electrical system offers significant benefits, including increased reliability, lower costs to connect to new renewable power sources, and a cleaner environment. Technologies such as **IoT** and **Digital Twins** can help design and test energy solutions from renewable and "circular" sources, promoting smart management in terms of supply/demand and reducing energy waste.

Associative algorithms are used to connect plants to one another; **optimisation algorithms** can identify the current load on the electricity grid; and **simulation algorithms** can evaluate performance trends and assess the number and optimal position of the sentry systems, providing real data in order to optimize load forecasting and ensure effective control and management of the network.

IMPROVING INTEGRATED WATER SERVICES

With regard to the water sector, we have established several priorities: monitoring the status of the water

infrastructure, anticipating potential failures, and reducing waste. The management of [integrated water services](#) and the current model of collection and distribution are being tested by climate change, which is causing a high level of variability, alternating between droughts and periods of heavy rainfall. Not to mention that most of the country's water infrastructure needs to be overhauled and digitalized with solutions that can, for example, **calculate water losses, prioritize and manage interventions, and provide reporting, etc.**

Digital water solutions must be applied throughout the entire supply chain, encompassing control via OT/IoT, as well as monitoring, prevention and prompt intervention to handle water losses. To support the challenges faced by integrated water service bodies, we have created our Water Management Solution (WMS), a **composable platform** that applies an end-to-end approach to business processes and operational activities to manage and reduce water losses.

REVOLUTIONISING THE CUSTOMER EXPERIENCE WITH GEN AI

We have been witnessing the transition from a user-centric to a client-centric approach to processes and

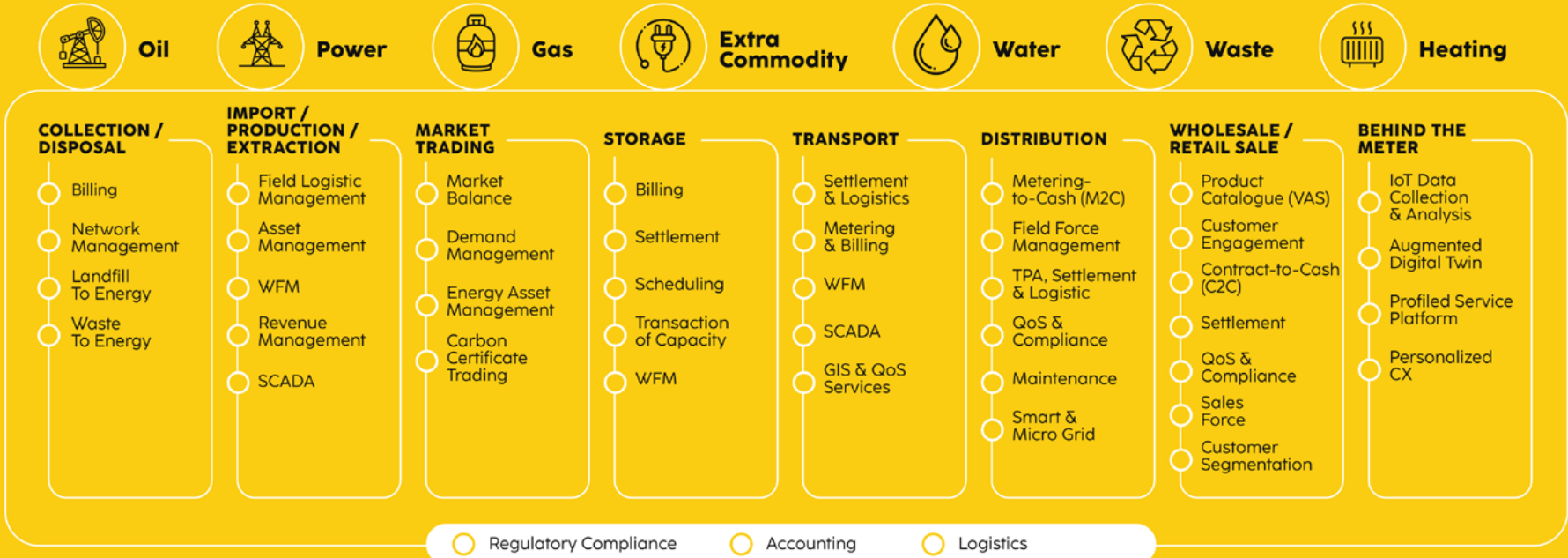
technological solutions for some time. Today, putting the end customer first means prioritizing the user experience and the [customer journey](#), looking for solutions that allow the service range to quickly adapt to changing user behavior. To this end, it is essential that we establish an in-depth knowledge of customers via online interactions, e.g. by implementing AI projects in contact centers, a fundamental touchpoint in the customer journey.

Generative Artificial Intelligence and Machine Learning also have the potential to revolutionize forecasting (demand, prices, energy consumption, efficiency of logistics flows) and support customer service activities using smart chatbots and avatars.

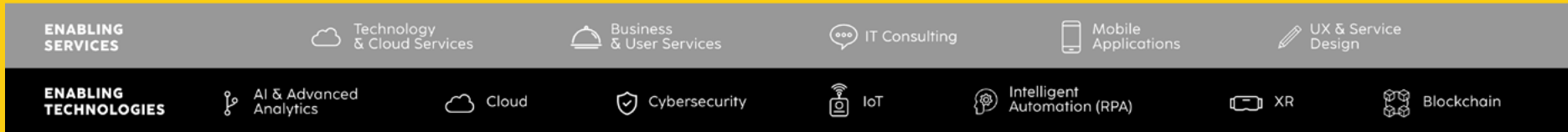
We have been active in the Energy & Utilities sector for more than 15 years. We are transforming business models and digitalizing processes throughout the entire energy chain, relying on our strong knowledge of core processes and our customers, promoting the creation of new and reliable business paradigms.

By way of the services provided by our team of experts, we manage to oversee core processes in the Oil, Power, Gas, Extra Commodity, Water, Waste and Heating sectors.

We have been operating in the Energy & Utilities sector for over 15 years. We are transforming business models and digitizing processes across the entire energy value chain, leveraging our deep understanding of core processes and our clients. This promotes the creation of new and reliable business paradigms.



D I G I T A L P L A T F O R M



Through the services provided by our team of experts, we oversee core processes in Oil, Power, Gas, Extra Commodity, Water, Waste, and Heating sectors.

Smart Energy & Utilities

Realizing digital transformation on business models and processes along the entire E&U value chain by leveraging our expertise on core processes and by supporting our customers in the creation of new and reliable business paradigms empowered by digital-enabled technologies.

1.100+
Specialists

300+
Clients

€220m +
Revenues
FY2023

35+
Years of
experience

15+
Countries
where we
deliver
projects

10 +
Competence
Centers

ADVISORY

TECHNOLOGY
& IMPLEMENTATION

PROPRIETARY
SOLUTIONS

MANAGED
SERVICES

Our Proprietary Solutions

Neta Open Suite
Smart Energy & Utilities
Platform

Billing ERP/CRM
Workforce Meter-2-Cash Settlement
Artificial Intelligence TPA DATA Digital Twin
CLOUD MANAGEMENT E2E
Industrial Cybersecurity **INNOVATION AGILE**
RESEARCH Platform and Infrastructure Analytics

NETA OPEN SUITE

Neta Open Suite is the market-leading CIS (Customer Information System) solution **for the management of Meter2Cash and the main business processes for all types of sales and distribution operators in the gas and electricity markets**. It can adapt to the needs of various industry operators, offering innovative As-a-Service options to improve operational efficiency and help achieve business objectives, harnessing the power of cloud, Artificial Intelligence and Machine Learning technologies.

The suite includes a series of next-generation modules designed to provide a **modular** and **comprehensive** solution that enables CRM, ERP and payment management services, including within specific market domains (e.g. gas distribution). It covers all regulated services (Gas, Electricity, Water services) and is equipped to manage new services, which are not yet regulated (e.g. energy communities).

The Neta platform, adopted by over 150 customers, draws on our in-depth knowledge and decades of experience in the key processes in the reference markets. It therefore allows us to support our customers as they embark on a **path of gradual technological evolution**, enhancing various processes and functions with a "best fit" approach to enabling technologies in order to adapt them to the changing regulations and developments arising from new market sectors.

NETA
OPEN SUITE





oil

03

The long-term **Net-Zero strategy** adopted by many countries, which aims to achieve carbon neutrality by 2050, is drastically changing the hydrocarbon market. The continued growth of electric mobility is accelerating this process: according to analysts, between 2035 and 2040, the number of electric cars registered in the world will exceed combustion-powered cars, with a market share of 54%. **In 2035, it is predicted that more than 60% of energy will be supplied by renewable sources.**

In the short and medium term, the consumption of oil and its derivatives will remain the primary solution for medium and long haul transportation, but estimates indicate that the peak will be reached in the next five years. The world of Oil is evolving to meet the challenging objectives set by the market, and the various players in the sector are defining strategies and implementing solutions to respond to this transformation, diversifying and adapting their offers according to sustainability principles.



04 Power

The challenges related to the growth in demand, in parallel with the decentralization of production, require a more efficient electricity network (lower transmission losses, energy dependence and dispatching complexity), reduced use of fuels, and the direct involvement of citizens in the energy transition.

At Eng, we support our customers in the management of activities throughout the entire electricity chain,

from production to transportation, and from distribution to sale. We are backed by years of experience in and beyond Italy, having for example worked on projects and solutions both in Latin America and throughout Europe.

We provide solutions:

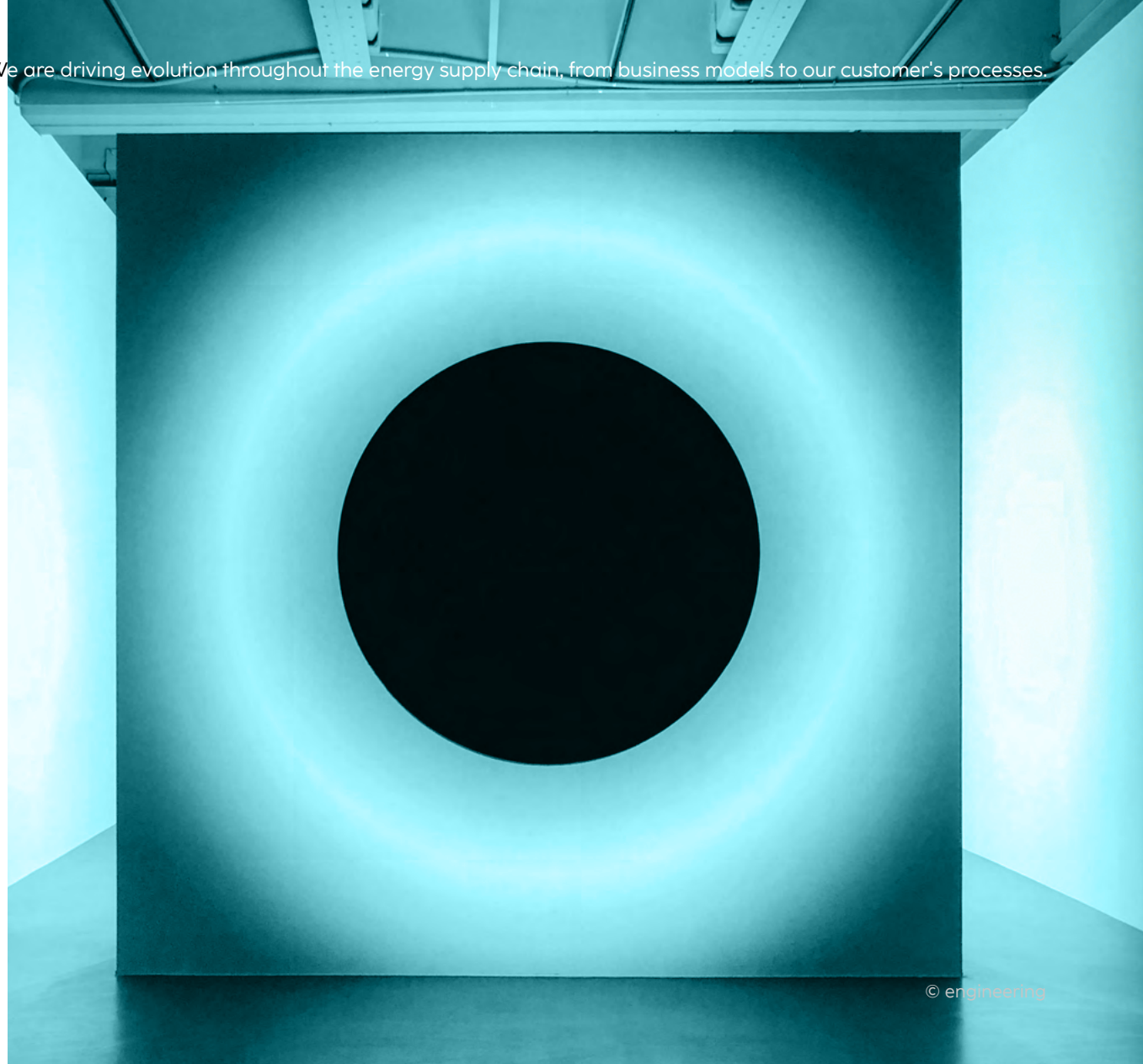
- in the **production** area, for example for re-engineering the production processes of bifacial photovoltaic panels, for the most important European production site of top quality photovoltaic panels, with a 3 Gw capacity per year;
- for **distribution**, fulfilling a support and partnership role for e-Distribuzione, the leading Italian company in the sector, as well as one of the largest in the world. This multi-year collaboration has led to the development of cutting-edge solutions for measurement, WFM and CRM;



- in the **measurement** arena, supporting projects to re-engineer measurement systems on a global basis, working on big data infrastructure;
- in the **sales** field, by customizing the SAP IS-U systems adopted by our customers or by installing our Neta Open suite product, as chosen by Plenitude, as a central system for managing the Meter-to-Cash process, in dual-fuel mode (light and gas);
- to balance the **grid** for the management of activities related to the development of wind and photovoltaic systems, providing solutions for the major Italian companies in the renewable domain;
- for Gestore dei Servizi Energetici (GSE), a company that pursues environmental sustainability objectives based on two pillars: renewable sources and energy efficiency.

We work with major technology partners such as SAP, Salesforce, Microsoft and Oracle.

Thanks to our proprietary Neta Open Suite platform, we manage to offer comprehensive solutions in the fields of **metering, billing, CRM, credit management, accounting (logistics and warehouse), energy communities and distribution.**





05 Gas

Gas has represented a key energy resource for many years and, in light of the current global socio-political and economic context, it holds an increasingly strategic position. There is therefore a greater need to balance and diversify its supply.

The entire Gas value chain is evolving, in terms of both production and transportation.

- ⌚ on a European level, thanks in part to EU funding projects, Power-to-Gas technology is being developed to meet gas needs; this process can even be used to harness surplus energy in specific countries. Additionally, the creation of FSRUs (Floating Storage Regasification Units) is underway in order to multiply the supply sites for each country, working with new storage and regasification operators.

In line with the European strategy, Italy is increasing the number of sites with FSRUs, of which three have existed for several years, to diversify both the supply and entry

points of gas into the national transmission network. On the other hand, with regard to distribution, there is a strong focus on the most efficient districts for Power-to-Gas, in addition to the existing gas supply system.

At Eng, for the gas commodity, we mainly handle activities related to the management of:

- gas **transportation and distribution processes**;
- gas **storage** and regasification operators;
- the **utility sales process**.

Through our professional services, and our own solutions (both proprietary and open source) or those of our technological partners, Engineering is able to oversee our clients' main core processes: **ERP, CRM, M2C, WFM, Revenue Management, Asset Management, SCADA, IoT, Cybersecurity, Cartography, Commercial Processes, Trading, and Sales to end users**.



Extra Commodity

The extra commodity sector encompasses a series of additional services that energy suppliers make available to end users, complementing their main offer.

These ancillary products and services can be added to complete the sale/purchase relationship, with the aim of rewarding the end user, or they can be sold as an integrated package at a competitive price. In parallel with their traditional offer, energy players have therefore developed new business lines to offer different services and products, such as: household appliances, boilers, air conditioners, and installation, maintenance and repair services.

Backed by our strong **technological and business skills** which span all sectors of IT and the market, Engineering is able to support energy players by providing proprietary and innovative solutions to manage their extra commodity endeavors, such as portals and solutions for the management of the purchase and billing process.

Our collaboration with Plenitude is a particularly relevant example, showcasing how the world of utilities has embraced this trend, embarking on marketing and commercial initiatives for the sale of Value-Added Services (VAS) alongside the core Gas and Power commodities.

Plenitude belongs to a consolidated market in terms of VAS, offering different types of products including: maintenance, smart home technology, boilers and air conditioners.

At Eng, we support Plenitude on the VAS market by way of the Net@Suite platform, which provides specific processes and functions to manage the active cycle of extra-commodity services already present in the catalogue. It is also being used to establish the basis for the next evolutions in the marketing roadmap. The solution offers several key benefits:

- **Robustness**
thanks to the Net@ billing and consolidated billing logic, the entire active cycle of VAS can be effectively managed;
- **Flexibility**
VAS contracts can be combined with each other or with other commodities (Gas/Power) for the same customer to ensure optimal flexibility;
- **Reusability**
management of the collection process and delinquent VAS or composite invoices, with standard functionality available for Gas/Power products;
- **Cross selling**
correlation of VAS services with traditional commodities for "bundled" sales;
- **Openness**
integration with the commodity services CRM and other external platforms to transpose and manage all the information related to the management of VAS on the billing system.



07 Water

Today, the water market requires state-of-the-art systems to monitor the networks. The resulting data plays a vital role in optimizing the costly maintenance and control of the infrastructures.

At Eng, we respond to this need by harnessing the most advanced technologies, including Artificial Intelligence and IoT sensors installed on the network, as well as the most mature technology in the world of workforce management. The latter is integrated with other areas, such as Asset Mgmt and GIS technologies, to allow for optimal management and better planning and coordination of any work.

In the water sector, we are a top-tier player, widely recognized and appreciated by our customers thanks to our proprietary platform, specifically designed for operators within the integrated water cycle: **MDM Smart**. This system can centralize the data acquired from all SAC sensors and walk-by/drive-by systems, providing a single tool to monitor the acquisition of measurements and the status of the meters and the network. Thanks to the highest level of automation, MDM Smart provides the necessary remote readings for invoicing and business processes.

The centralized readings on MDM Smart create a single source of truth that can be easily integrated with any Engineering or third-party solution, facilitating automation and new types of data analysis. **MDM Smart integrates reading management processes (acquisition, normalization and diagnostic validation), supports Asset Management (abnormal consumption analysis, operational parameter monitoring, alarms, automatic contact with inspection bodies), and enables monitoring activities (specific dashboards, reports, etc.).**

The solution is natively integrated with Neta2A for

end-to-end coverage of Meter2Cash processes (Billing, Credit Management, CRM), is cloud native, and guarantees the highest levels of scalability and integrability. Its data is also easy to access via third-party solutions.

Drawing on our expertise in projects and services on technologies such as SAP, Salesforce, ESRI, and the most popular hyperscalers such as Microsoft, AWS, Google and proprietary platforms, we are able to manage the core processes related to CRM, M2C, WFM, Revenue Management, Asset Management and SCADA, IoT and Cybersecurity covering the entire supply chain from extraction to distribution, through to sale to end users.

We work alongside the main stakeholders specialized in integrated water services, including Acquedotto Pugliese, Metropolitana Milanese, Cap Holding, Smat and ACDA, and with the main Italian multi-utility operators such as Acea, Iren, A2A and Hera. Our strong position in Italy is also reinforced by a constant growth abroad, both in Europe and overseas (notable clients include Acciona and SABESP).



08 Waste

At Eng, we cater to the needs of players in the waste management sector, which holds an increasingly central position within the sustainable development models pursued throughout Europe. The associated goals include the reduction of single-use plastics, the establishment of a low-carbon economy, and effective separate waste collection throughout the territory, with an ever-decreasing amount of waste destined for landfills, instead prioritizing reuse and recycling.

Our collaborations with the major multi-utility operators, such as Hera, the Veritas Group and the Tea Group, have

been ongoing for many years now. In Italy, working in this area means supporting local authorities. Our success in this sphere is built on two pillars: the commitment of Municipia, a Group company that supports over 600 Italian municipalities through dedicated services, and proprietary platforms.

Our goal is to support the redesign of production and management processes in order to **improve environmental performance** and to **integrate new technologies** into the waste management cycle.

In the coming years, Blockchain, IoT devices (sensors, RFID, readers, etc.) and AI will play an increasingly vital role in improving the traceability of waste in both collection and transportation operations.

- ➔ these technologies will become fundamental for the remote monitoring of waste collection and cleaning, and for verifying the status of waste collection containers. They will therefore feed into the smart city concept, helping to develop vertical solutions for customers operating in the sector.



09 Heating

Heating relies on thermal energy generated by different energy resources, such as geothermal energy, cogeneration, and heat recovery from Waste-to-Energy plants and wastewater treatment plants.

The production processes for electricity, wastewater treatment, waste destruction, etc. also generate "energy waste", which is typically lost. The use of the aforementioned solutions allows thermal energy to be recovered for private use or, if the area is equipped with a district heating infrastructure, to be transferred to other users via the network (commercial activities, condominiums, homes).

In Italy, the heating sector largely overlaps with the Gas sector, generally relies on district heating, and is one of the areas seeing the greatest growth due to digital transformation. The growing market flexibility in the electricity sector has led to the rise of increasingly small players, who are often able to interface with multiple energy networks, i.e. Gas, Heat, Electricity (for example, small cogeneration plants, data centres, Power-to-Gas plants, etc.).

This flexibility often gives rise to surplus thermal energy, which can be exploited by injecting it into the district heating network via bidirectional connection points.

Within the areas covered by the district heating network, multi-energy operators can therefore enjoy access to multiple markets, as well as greater coverage of their costs and a reduced environmental footprint.

At Eng, we primarily operate in this sector by way of our **Heating Efficiency Management System** solution, which covers the entire district heating management life cycle:

- management of plant heat and thermoregulation;
- management of all phases of the user's contractual life cycle;

- governance, monitoring and decision support;
- planning management and maintenance alerts;
- management of PNRR objectives and ARERA (Italian Regulatory Authority for Energy, Networks and the Environment) KPIs;
- management of periodic reports to regulatory bodies.

Our solution is based on data integration, drawing on information from multiple heterogeneous sources (IoT measurements from the substation and data on maintenance, user behavior, weather forecasts, etc.), and allows the main indicators of interest to be established for a management body:

- **efficacy:** energy balance, consumption per energy carrier of each of the units, types of energy produced, useful heat cogenerated;
- **efficiency:** non-renewable primary energy savings, recovery of waste heat and renewable thermal energy;
- **quality of service:** Improvement of interactions with users, optimization of return temperatures, usage curves.



Our projects

CASE STUDIES

EngGPT: our AI-driven assistant for your business

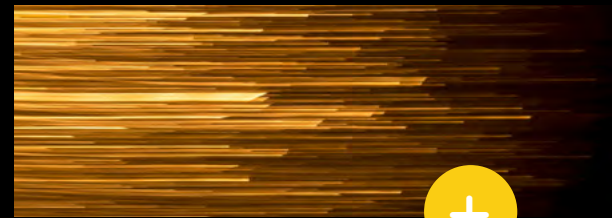
EngGPT, our advanced Large Language Model (LLM) allows you to harness the power of GenAI on a specific business domain.



CASE STUDIES

AR Quality Check: at Enel controls pass through Virtual Reality

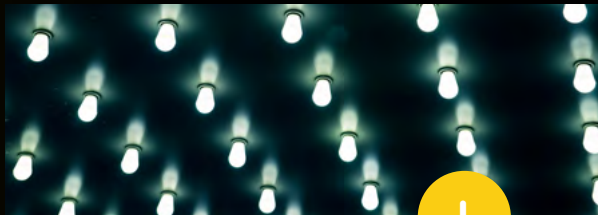
Trough smartglasses and tablets, our solution to control remotely Enel inspectors' activities.



CLIENT STORIES

Plenitude: a new platform for digital payment

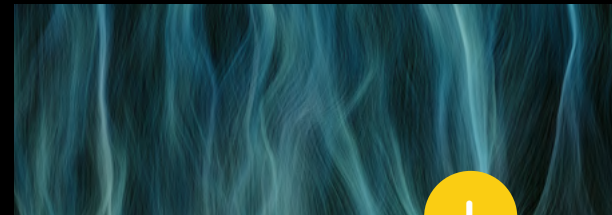
The platform that enhances the customer experience by ensuring maximum freedom to choose the preferred payment instrument.



CASE STUDIES

ASGI Asset investment planning and management

Improving asset, risk, and investment management processes.





CLIENT STORIES

ENGIE: constantly accessible customer service

Creating customer-centric solutions, ranging from renewable energy services to personalized technical support.



CLIENT STORIES

Enegan: betting on renewable energy

An "Energy Bank" to optimize the production, storage, use and exchange of energy from renewable sources.



CLIENT STORIES

ReLife: a new group ERP system with SAP S/4HANA

Significantly reducing waste and managing it appropriately, promoting the end of waste and redeveloping urban areas.



CASE STUDIES

Snam: a single access point for the data of each redelivery point

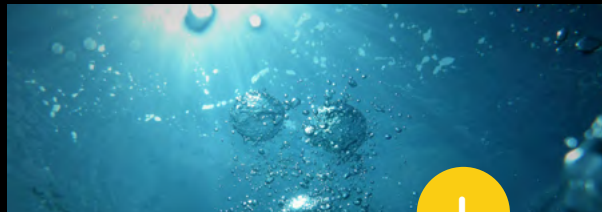
Enabling a new way of managing meter reading activities in the gas transportation sector.



USE CASES

Predictive analytics for smart public water management

Using innovative technologies in water management to simulate and prevent future events.



RESEARCH PROJECTS

PlatOne: a blockchain for the energy network

Mitigating grid congestion via increased integration of electricity from renewable sources.





**What does
the future hold?**





One of the main challenges of the digital world is making technology accessible to all, including people who are not "digital" by age or vocation.

This issue is particularly applicable to companies that provide a public service, such as utilities. However, GenAI is opening up new opportunities, creating a **bridge between analogue thinking and digital solutions**, encompassing the entire customer experience and improving accessibility and inclusivity. GenAI has the power to support the operational efficiency of the workforce, maintaining the competitiveness of E&U operators in a particularly complex context: in Italy, the challenges associated with the transition, geopolitical instability and the ageing workforce

are all unfolding against a backdrop dominated by the demographic crisis and the skills gap.

With GenAI, we will see a leap in quality in terms of **anti-fraud models and increasingly personalized campaigns**, as well as the prevention of errors and/or disruptions, with consequent reductions in the costs of services for users.

AI models are also ideally suited to supporting **supply chain optimization**: it will be possible to predict demand with increasing precision and therefore to optimize production and inventory management.

We said at the beginning that Asset Management requires a development-based approach: **strengthening the control and automation of the production chain** through investments in operational technology, in addition to harnessing the IoT and Digital Twins as tools to manage and optimize production, with a focus on the circular economy and the production chain of renewable energy and beyond. The evolution of OT and IT/OT convergence are key factors in terms of competitiveness and implementing ESG strategies. However, these developments immediately expose the OT network and all devices to

the threat of cyberattacks, creating new vulnerabilities.

Cybersecurity technology and skills must therefore be an integral part of any transformative/evolutionary plan for IT/OT, WFM, FSM and GIS platforms, which are essential for anyone managing services in the field, as well as Advanced Distribution Management System (ADM) platforms, which are crucial for managing distribution with a view to smart network evolution. Finally, **modular platforms** will support operations, starting from Renewable Energy Communities (RECs), a fundamental part of the ecological transition process. Furthermore, the same will supply a powerful tool for breaking down the barriers of the silos (both of process and technological) and for maximizing the entire value chain, which will finally find the business optimal.

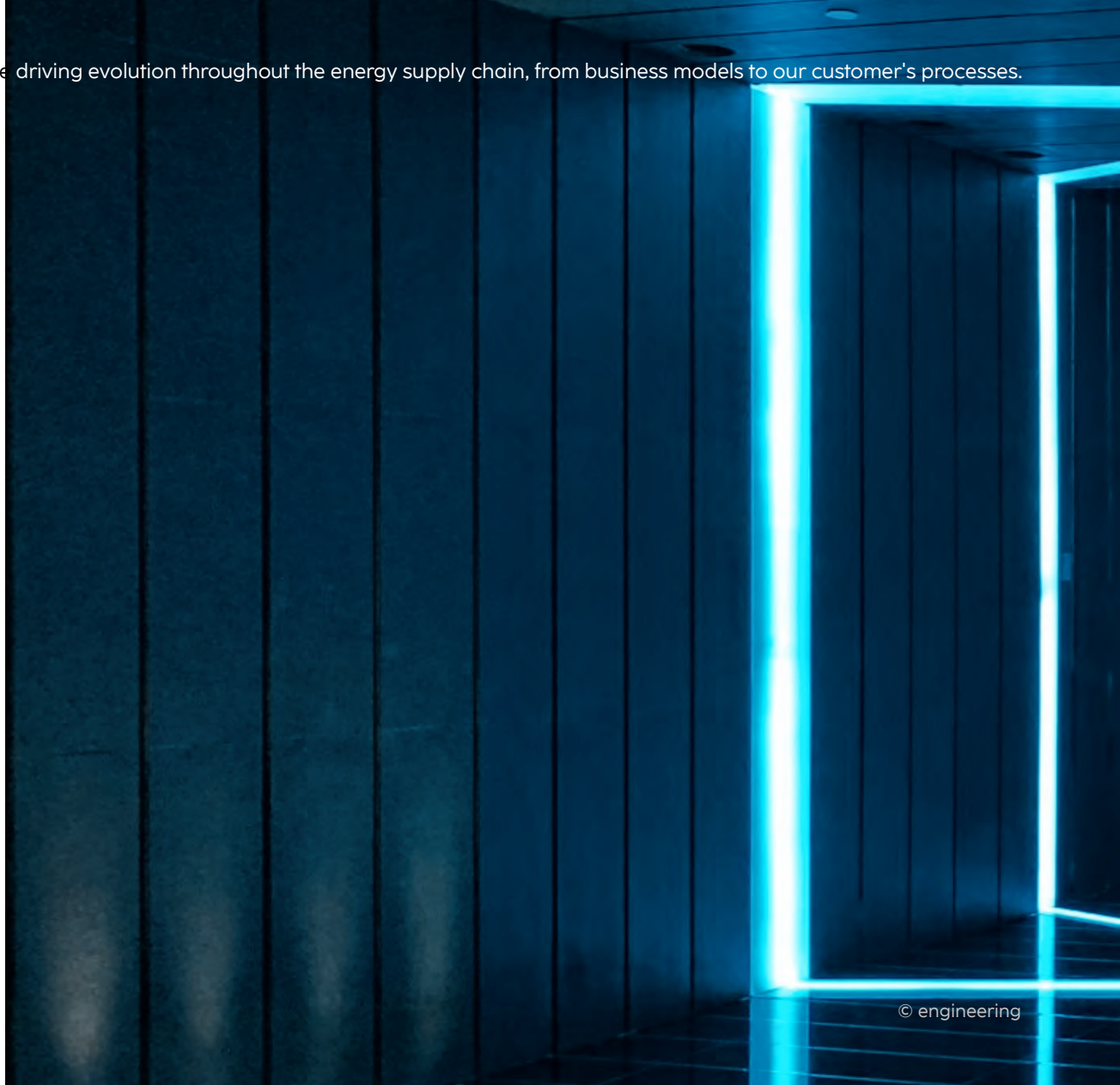
The first step is to establish a transformative path, and the second is to build solutions that are increasingly based on a modular approach, which must be equipped to unlock creative potential and to harness the power of ecosystems. Dedication to transformation and innovation must therefore be combined with fundamental building expertise, the centrality of data, and the modularity to unleash creativity and reuse in the world of IT. Building solutions on a modular basis should also reflect a sustainable



approach to development, which is why we must prioritize "green coding", i.e. the use of software programming and development practices to reduce the environmental impact of software development activities.

Engineering works alongside E&U operators to facilitate digital transformation. First of all, **we have the ability to reconcile technologies and platforms with a unique and vertical knowledge of the E&U market**, its processes and regulations. Thanks to our expertise and scope, we **manage any mission-critical transformation project** and support our customers in the maintenance and evolution of platforms.

As a partner, we can achieve **digital transformation without losing sight of investments**, applying a concrete and customizable approach to each scenario. We can therefore support our customers as they embark on a path **of technological evolution and process overhauls** in the name of digital transformation through the creation of **scalable solutions**, which can increase their long-term competitiveness on the market, streamlining their operations, increasing their IT security, and truly embracing composable architecture and ecosystems.







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