The footprint

of Artelia Italy in the energy transition

ARTELIA

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Gabriele Scicolone - Artelia Italia CEO

It is, upon close inspection, a matter of *footprint.*

What if, we are truly living in the decades that will be remembered as humanity's great energy transition from the era of industrialisation, driven by the advent of hydrocarbons, to that of widespread prosperity, driven by the advent of renewable and clean energy? Yes, many of us believe that to be the case. Many others believe that it will be possible, but only if we act quickly to change our use of primary energy sources, abandoning fossil fuels as soon as possible in favour of renewable energies.

It is, upon close inspection, a matter of footprint. And that is why we have chosen this title for this booklet, which marks our entry into the era of energy transition.

It is a matter of footprint; the one that each of us will leave behind in our lifetime. An energy footprint, more or less marked, more or less heavy for the fragile bio-climatic balance of the planet we inhabit. The footprint we decide to leave behind. At Artelia, we have decided that it is time to invest in the energy transition, to start lightening the load of our energy footprint, to start entering that new era of widespread well-being that only the use of unique and inexhaustible energy sources can guarantee humanity: renewable energy sources, the energy of water, wind, tides, the sun and the atom.

These are natural energy sources that are inexhaustible and unlimited, and can solve humanity's endemic problems and lead us towards a better future.

So let's delve into the world of alternative energy at Artelia Italia, take a closer look at our main actors, our managers, our specific projects, the innovations we seek to bring forward, helping our customers to lighten, with us and us with them, the polluting footprint that we necessarily leave behind as we pass through this Earth.

We have decided to believe in it!

Energy

Services offered by Artelia Italia

The energy transition is a challenge that requires innovative solutions that must be integrated into their host environment. At Artelia Italia, we are committed to the authorisation and design of photovoltaic systems ranging from utility-scale plants to solutions for corporate self-consumption, including installations on industrial plants, commercial buildings and Efficient User Systems (EUS).

In the development of agrivoltaic systems, we work closely with expert agronomists to maximise the benefits that this technology can bring to crop yields, while in electrochemical storage systems (BESS), we focus on safety and hydraulic invariance aspects.

We believe that reducing consumption and optimising production plants are key for companies to increase their competitiveness. which is why we offer our expertise in energy diagnostics, proposing cutting-edge solutions that can benefit from economic incentives, designing biofuel-powered co-trigeneration plants tailored to specific customer needs, and accompanying them on a virtuous path towards decarbonisation.

With these services, we contribute to accelerating the transition to a more sustainable and efficient energy model, offering customised solutions for companies and territories.

Fabrizio Terenzi
Business Unit Manager

Artelia Italia's Energy sector is regularly involved in projects focused on energy efficiency and energy consumption reduction in order to respond to the increasingly challenging demands imposed by the fight against climate change. We offer our experience in various fields of engineering and the environment to provide solutions for businesses and local communities aimed at reducing climate-changing gas emissions. The need for decarbonisation and the constant demand for energy for the development of new sectors focused on technological innovation drives our attention towards the design of renewable energy production plants that can be integrated into the local and socio-economic context in which they are located and on the simultaneous upgrading of energy transport and storage infrastructure, which is essential to ensure the sustainable development and growth of the country.

ndustrial-Scale Photovoltaic Plan - Grosseto

CLIENT	WKN Italia S.r.L.
LOCATION	Grosseto
TIME PERIOD	2024
ACTIVITIES CARRIED OUT BY ARTELIA	Electrical System Design, Fire Protection Design, Structural Design, Surveying and Topography, Acoustic Design, Geological and Geotechnical Analysis, Agronomic Analysis, Hydraulic Design, Environmental Design, Authorisations

Artelia Italia has recently signed a framework agreement with WKN Italia Srl for the design and authorisation of utility-scale photovoltaic plants distributed throughout Italy. The initiative aims to contribute significantly to achieving the ambitious targets set for 2030 in terms of electricity production from renewable sources.

One of the first results of this collaboration is the photovoltaic plant in Grosseto, designed by Artelia Italia according to the 'advanced agrivoltaic' model. The solution adopted fully complies with the requirements of the CEI PAS 82-93 standard for agrivoltaic systems, ensuring perfect integration between agricultural activity and clean energy production.

The plant blends harmoniously into the local landscape, ensuring the continuity of agricultural activities for years to come and contributing to a significant reduction in the amount of water needed for crops compared to the situation prior to the intervention.

The infrastructure, which covers an area of approximately 100 hectares divided into three lots, will be able to produce approximately 133 GWh of clean energy per year. This is equivalent to approximately half of the electricity needs of domestic users in the entire province of Grosseto, according to data provided by TERNA (2020). The project will also prevent the emission of approximately 55,000 tonnes of CO_2 equivalent per year.

This is an important step towards energy transition and environmental sustainability, demonstrating how technological innovation and protection of the local area can coexist in perfect harmony.

ndustrial-Scale Photovoltaic Plan - Udine

CLIENT	ALPENFRUT - Limited Liabilty Agricultural Company
LOCATION	Udine
TIME PERIOD	2023
ACTIVITIES CARRIED OUT BY ARTELIA	Electrical System Design, Fire Protection Design, Structural Design, Surveying and Topography, Acoustic Design, Geological and Geotechnical Analysis, Agronomic Analysis, Hydraulic Design, Environmental Design, Authorisations.

Artelia Italia has signed a new project of great importance in the Italian ecological transition landscape: the design of an advanced agrivoltaic plant of approximately 68 MWp in the province of Udine, built on behalf of Alpenfrut, a local agricultural company specialising in organic farming.

What sets this plant apart from many other agrivoltaic installations is its innovative and highly integrated approach to agronomy and technology. In particular, the main objective was to maximise crop diversification and increase agricultural yield by making the most of the benefits introduced by the presence of the photovoltaic plant.

The electrical design was entirely guided by the results of an in-depth agronomic analysis, which made it possible to study the optimal layout of the photovoltaic strings according to crop requirements. Thanks to this synergy, it will be possible to organically grow red fruits such as strawberries, huckleberries, blackberries and raspberries, perfectly integrating agricultural production with energy production. The result is a zero-impact supply chain, offering 100% organic products, entirely Made in Italy and obtained with energy from renewable and sustainable sources.

Organic basil and organic Pinot vineyards will also be cultivated on an experimental basis, in coordination with universities and/or research centres. But the benefits do not stop at agriculture. According to estimates, the construction and operation of the plant will have significant socio-occupational repercussions on the area, generating job opportunities and enhancing local skills. In addition, the plant will enable an estimated reduction of 44,000 tonnes of CO_2 equivalent per year, making a concrete contribution to the fight against climate change.

This project demonstrates how sustainable innovation can not only guarantee clean energy, but also enhance organic farming and support the local economy.

Sustainability

Services offered by Artelia Italia

The construction sector is evolving towards healthier and more efficient environments, integrating natural elements to improve psychological well-being through biophilia, noise reduction and acoustic comfort design, passive strategies, the choice of sustainable materials, improved air quality for the health of occupants, and optimised energy and water use to reduce waste and consumption.

Advanced tools such as dynamic energy simulations, thermal comfort models, natural lighting, solar radiation and wind optimise building performance, reducing consumption and emissions. Carbon footprint calculation, together with LCA and LCC, improves sustainability throughout the entire life cycle. Sustainability certifications such as LEED, WELL, WELL HSR, BREEAM, LCBI, ENIVISION and EarthCheck attest to the sustainability of buildings and infrastructure, monitoring them during design, construction and management. Public procurement also requires compliance with CAM and DNSH principles.

Commissioning of the building envelope and systems ensures that everything is functional and compliant with the required standards. Energy audits and energy monitoring improve efficiency, while decarbonisation strategies using tools such as CRREM and EU Taxonomy assessments guide choices towards low-emission buildings that are adapted to climate change. Finally, sustainable due diligence and ESG reporting ensure transparency and accountability, meeting the needs of investors and stakeholders. The adoption of these strategies makes buildings more efficient and the construction sector increasingly oriented towards sustainability.

Giuseppina Amorusi
Head of Sustainability
& Building Performances
Department

The Sustainability and Building Performance Department is committed to ensuring that every project not only meets high quality standards but is also a leader in terms of sustainability and energy efficiency, with a regenerative approach.

The team's methodology is based on internal ESG design guidelines developed to design sustainable buildings and infrastructure, integrating environmental, social and economic performance criteria in a measurable and quantifiable way. The department is made up of specialists in energy, climate and building performance, as well as LEED AP, BREEAM AP, WELL AP, CAM EXPERT, ENVISION SP, WIRED Score AP and Commissioning Authority Certified professionals.

Today, Artelia Italia's challenge for the future is to promote projects that not only integrate sustainability, digitalisation and innovation, but also adapt to climate change by becoming regenerative, health-conscious and socially inclusive. For me and my team, this represents an opportunity to make a positive impact on the ESG dimension of our projects.

Symbiosis Building D

CLIENT	Covivio
LOCATION	Milan
TIME PERIOD	2019-2024
ACTIVITIES CARRIED OUT BY ARTELIA	Sustainability, LEED, WELL and WELL HSR certifications, Commissioning, Energy modelling, Integrated Multidisciplinary Engineering, Specialised Works Management (MEP)
ARCHITECTURAL DESIGN	ACPV ARCHITECTS Antonio Citterio & Patricia Viel

Part of the Sharing Cities project, Symbiosis embodies an advanced urban model aimed at reducing CO_2 emissions and improving air quality. Located in a dynamic and well-connected district, the project combines productivity, efficiency and quality of life.

Building D is a multi-tenant building of approximately 20,000 square metres that is part of Covivio's larger Symbiosis urban regeneration project. The area covers approximately 120,000 square metres with green spaces, a tree-lined pedestrian square and ponds designed to encourage outdoor work and mitigate urban heat.

Artelia Italia oversaw the environmental, civil, acoustic and plant engineering aspects of sustainability using a BIM approach, ensuring advanced technological integration. Commissioning activities ensured the installation and optimal functioning of systems and the building envelope, as well as performance checks and tests. Air and water quality checks were also carried out, assessing contaminants and safety parameters.

Dynamic energy modelling made it possible to optimise the building's performance, improving its efficiency and reducing energy consumption. Thanks to the work of the Sustainability and Building Performance department, the project has obtained LEED v4 BD+C Core & Shell Platinum (90/110), WELL v2 Bronze and WELL Health and Safety Rated certifications, attesting to its commitment to healthy and sustainable workplaces.

WELL certification recognises attention to visual, thermal and acoustic comfort, as well as company policies for mental well-being, nutrition and physical activity. This result was made possible by teamwork between the project teams and the client, with the aim of redefining the concept of urban space through innovation and quality of life.

The project, designed by ACPV ARCHITECTS Antonio Citterio & Patricia Viel, stands out for its architectural excellence and sustainable vision, qualities that have earned it an honourable mention at the 2023 THE PLAN Real Estate Award in the Innovation and Design category and the title of Best Sustainable Building Project 2024 (OICE Award 2024)

Sustainability Strategies	Results
Energy Saving	35% compared to a regular building
Renewable Energy	>60% over the building's total consumption
Ventilation Volume	>30% compared to the minimum
Materials	>95% VOC Compliant 32 EPD 34% of cost of sustainable materials
Drinking Water Consumption Reduction	>75% compared to a regular building 100% reuse of rainwater for toilet washing
Construction Waste	99,3% to recycling

Vetra Building

CLIENT	Prime Ita Milan-T.Srl (AXA IM)
LOCATION	Milan
TIME PERIOD	2017-2021
ACTIVITIES CARRIED OUT BY ARTELIA	Sustainability, LEED Certification, Energy Modelling, Project Management, Construction Management, General and Specialised Works Management, Integrated Multidisciplinary Engineering, Health & Safety (CSP/CSE)
ARCHITECTURAL DESIGN	Il Prisma - LAND

The project involved the redevelopment of an office building in the centre of Milan, consisting of two buildings connected by a gallery and spread over six floors above ground and two below, covering a total area of 37,020 square metres.

The area is a nerve centre of the city, but also has great historical and cultural value, and is home to public and private institutions, banks and offices. To encourage sustainable mobility, bicycle parking spaces and changing rooms with showers have been provided.

The project involved a complete restyling of the interior spaces and technological equipment, combining energy efficiency, comfort and sustainability. The project, developed in accordance with the LEED v4 BD+C: Core & Shell protocol, has achieved Platinum level certification.

Thanks to advanced simulations, it was possible to reduce energy consumption and greenhouse gas emissions, maximising efficiency throughout the building's entire life cycle. Particular attention was paid to reusing existing structures and recovering demolition materials, which were sent to authorised centres or reused on site, with constant monitoring of the waste management plan. The choice of sustainable materials included the preservation of Ceppo d'Adda, a local stone that enhances the Milanese context. Water optimisation was ensured by high-efficiency taps and sanitary fixtures, with reduced discharge volumes and reuse of rainwater.

The project involved the Works Management, Commissioning Authority, LEED representatives, Facility Manager and contractor to ensure compliance with sustainability principles at every stage.
The Vetra Building has obtained an Energy Performance Certificate (APE) with a classification of A2.
During construction, public events were organised to highlight the benefits of the sustainable strategies adopted. In addition, information is displayed on monitors in the meeting rooms to raise awareness among users.

A distinctive feature of the project was the decision to adopt the LEED v4 protocol as early as 2016, even though it was still possible to register with the previous, less stringent protocol. This decision, agreed with the client, made achieving Platinum Certification an even more challenging goal, reinforcing the project's commitment to the most advanced sustainability standards.

Sustainability Strategies	Results
Energy Saving	47,3% compared to a regular building
Renewable Energy	4,3% over the building's total consumption
Ventilation Volume	>30% compared to the minimum
Materials	100% VOC Compliant 34,3% of cost of sustainable materials
Drinking Water Consumption Reduction	70,45% compared to a regular building 100% reuse of rainwater for toilet washing
Construction Waste	98,75% to recycling

CitizenM Hotel Roma

CLIENT	Colliers Global Investors Italy SGR
TENANT	citizenM
LOCATION	Roma
TIME PERIOD	2019-2023
ACTIVITIES CARRIED OUT BY ARTELIA	Sustainability, LEED Certification, Energy Modelling, Commissioning, Cost Management, Project Management, Construction Management, Integrated Multidisciplinary Engineering, Works Management, Health & Safety

The citizenM Isola Tiberina hotel is an example of excellence in terms of environmental, economic and social sustainability, thanks to the application of the LEED BD+C: Hospitality protocol strategies. The project has been awarded LEED Gold certification, demonstrating a strong commitment to reducing environmental impact.

Located in the heart of Rome's historic centre, the hotel enjoys a strategic, accessible and well-connected location, promoting sustainable mobility and reducing dependence on private transport. This choice helps to limit emissions and strengthen integration with the urban context, generating value for the local community.

The hotel adopts targeted solutions for water efficiency, with low-flow taps, dual-flush toilets and optimised systems, ensuring significant water savings. The integrated design has made it possible to reduce energy consumption with high-performance heating, cooling and lighting systems, together with strategies to maximise the use of natural light, improving indoor comfort and reducing operating costs.

In line with the company's broader decarbonisation strategy, the citizenM Isola Tiberina hotel combines a high-efficiency heat pump system with 100% electricity purchased from renewable sources to significantly reduce its operational carbon footprint. These measures guarantee guests low-emission stays. In this way, the hotel reinforces its commitment to influencing positive change in a world where we are simply guests.

The selection of sustainable, EPD-certified materials from responsibly managed forests has optimised the life cycle of products, minimising the use of virgin resources. Almost all waste generated on site has been recovered, reused or recycled, avoiding landfill. The use of low-VOC materials has improved indoor air quality, benefiting both guests and workers.
Commissioning ensured that the building envelope and systems met efficiency requirements. The hotel is managed with a focus on maintaining high environmental standards, using only 100% sustainable cleaning products and equipment, ensuring a constant reduction in environmental impact.

More than just a building renovation, citizenM Isola Tiberina is a true manifesto of applied sustainability. The project demonstrates how LEED standards are not only used to construct more efficient buildings, but also to create sustainable experiences for users. By combining waste reduction, resource optimisation, energy efficiency and guest well-being, it stands as a replicable model for the sustainable future of hospitality.

Sustainability Strategies	Results
Energy Saving	33% compared to a regular building
Ventilation Volume	>30% compared to the minimum
Materials	>90% VOC Compliant >20 EPD 24,2% of cost of sustainable materials
Drinking Water Consumption Reduction	>30% compared to a regular building
Construction Waste	>90% to recycling

Mobility

Services offered by Artelia Italia

Our know-how in infrastructure engineering and multimodal mobility is based on experience gained in urban and extra-urban transport projects. We are involved in the construction of trams, metros, E-Bus Rapid Transit and trolleybuses, as well as the modernisation of motorways, roads and railways, including interchange hubs and stations. We develop power supply, signalling and traffic control systems, with a particular focus on construction site safety.

Our expertise ranges from structural engineering, with the design of bridges, viaducts and tunnels and advanced monitoring systems, to hydraulic engineering, which focuses on the drainage of roads and transport infrastructure, ensuring flood protection and hydraulic invariance. We also operate in the field of environmental engineering, carrying out impact studies that include DNSH (Do No Significant Harm) checks and CAM (Minimum Environmental Criteria) assessments, as well as noise and emissions monitoring.

Thanks to an integrated and sustainable approach, we design efficient and innovative infrastructure, contributing to improved mobility in cities and across the region, with a positive impact on the quality of the environment.

Marco Gonella
Project Director

The engineering, mobility and infrastructure sector is undergoing a profound transformation, driven by the need to reduce environmental impact, improve transport efficiency and ensure accessibility for all.

Cities and regions face complex challenges, balancing development and sustainability. Today more than ever, it is essential to focus on integrated multimodal transport networks that promote public transport, 'soft mobility' and low-emission solutions. Technological evolution offers extraordinary opportunities: digitalisation, artificial intelligence and smart mobility can make transport more efficient and safer. However, important issues remain to be addressed, such as the resilience of infrastructure to climate change, the need for innovative, recyclable materials with low environmental impact and absolute compliance with hydraulic invariance to protect the territory.

Our activities are and will always be inspired by the DNSH (Do No Significant Harm) principle introduced by the PNRR, which requires that all infrastructure projects comply with strict environmental criteria, avoiding negative impacts on ecosystems and natural resources. The challenge for infrastructure and transport engineering in the future will be to find a balance between sustainability, economic feasibility and the need for modernisation, ensuring that infrastructure is safe, efficient, durable, accessible and suited to the needs of evolving mobility.

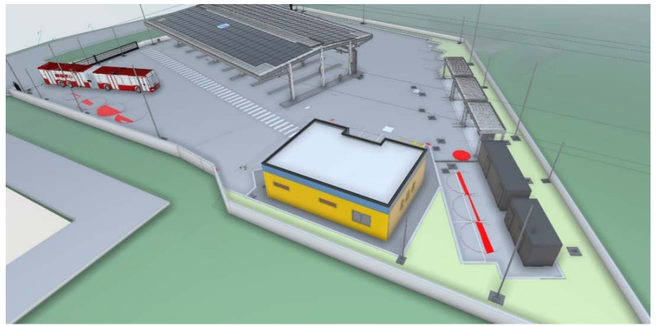
‘e-BRT System For The Municipalities of Bergamo, Dalmine And Verdellino

CLIENT	VITALI SPA
LOCATION	Bergamo
TIME PERIOD	2024-2026
ACTIVITIES CARRIED OUT BY ARTELIA	Engineering, Project Management
ARCHITECTURAL DESIGN	Erregi Srl

A new chapter in urban mobility is taking shape with the ‘e-BRT project, a high-frequency electric public transport system that will connect the Bergamo intermodal hub to the Dalmine University Campus. This strategic initiative will revolutionise transport in a manufacturing area, improving efficiency, sustainability and accessibility.

The 29.7 km route will reach Verdellino with 23 stops and an annual mileage of approximately 900,000 km. The electric buses will run largely on dedicated lanes, reducing travel times and improving service regularity. One of the most significant interventions is the redevelopment of the SP 525 road, with the covering of the Roggia Colleonesca canal to widen the road and create dedicated bus lanes.
The terminus will be located in Piazza Marconi in Bergamo, near the railway station, and in Via Corrado Alvaro in Verdellino, near the Verdello-Dalmine railway station, ensuring excellent intermodality. The depots for storage and maintenance will be in Osio Sopra (TBSO-Locatelli area) and in Bergamo, in Via Gleno (ATB depot).

A microsimulation study has estimated an average speed of 25 km/h, a key parameter for defining an efficient service divided into three modes:
• Winter school service
• Summer
• Public holiday



The entire system will cover 839,529.7 km per year, offering citizens a valid alternative to private cars. One of the strengths of the project is the intelligent traffic light prioritisation system: traffic lights will detect the arrival of buses, activating the priority phase to maintain regular service.

Recharging will take place both at the terminals and in the depots using two technologies:
• 540 kW Opportunity Charging, with pantographs at the terminals and in the two depots
• 120 kW night-time charging at depots, with a roll-up system to optimise space.

With 15 articulated electric buses, the e-BRT system will reduce CO_2 emissions by 780 tonnes per year. In addition, the depots will be equipped with solar panels, cutting a further 183 tonnes of CO_2. Thanks to priority lanes on over 73% of the route, the service will be faster, reducing congestion and pollution.

The project is part of the PUMS (Sustainable Urban Mobility Plan) strategy of the Municipality of Bergamo, promoting eco-friendly mobility and improving the quality of urban life. ‘e-BRT Bergamo-Dalmine-Verdellino is not just transport, but a concrete step towards a more modern and sustainable city.

Multisite

Services offered by Artelia Italia

The Multisite sector specialises in the management of projects with framework agreements. These contracts, which involve a series of numerous interventions distributed throughout the country, require a highly adaptable, responsive and strategic approach.

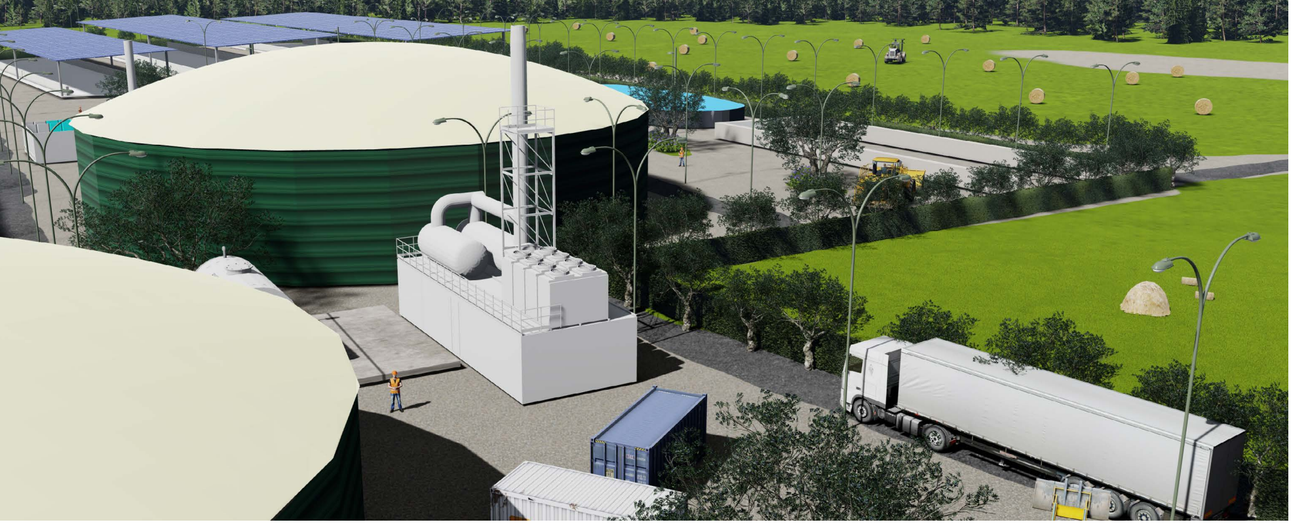
The simultaneous management of multiple projects requires a global vision that allows for the coordination of resources, timelines and objectives in order to optimise operational efficiency. In this context, a flexible approach is essential, capable of quickly managing emergencies, unforeseen events and changes during the course of the project, while always meeting quality standards without compromising economic sustainability.

Furthermore, communication and continuous dialogue with the client are essential tools for building a solid relationship focused on achieving shared objectives. Only through an integrated and well-planned approach can Artelia Italia meet the challenges of this constantly evolving sector.

Carlo Redivivo
Business Unit
Manager of Multisite

The challenges of the multisite sector focus on the coordination of projects that must meet criteria of quantity first and quality second. The simultaneity of the interventions and their short duration require lively, attentive management and constant monitoring to ensure that each project proceeds smoothly. The primary objective is to balance responsiveness and compliance with standards, ensuring that every customer request is met in a timely manner.

However, the challenges do not stop there: in the future, it will be essential to increasingly integrate digital technologies and advanced monitoring systems to optimise project management and improve operational efficiency. In addition, customer expectations are evolving towards ever greater customisation, while environmental regulations and sustainability challenges will require continuous adaptation of authorisation practices and industry strategies.



Biomethane And Biomass Plants

CLIENT	RETINA HOLDING S.r.l.
LOCATION	Caserta
TIME PERIOD	2024-2026
ACTIVITIES CARRIED OUT BY ARTELIA	Works Management, Works Manager, Safety Coordinator during the Design Phase (CSP) and Execution Phase (CSE), Project Management
ARCHITECTURAL DESIGN	TECHBAU

The project involves the construction of six plants for the production of biomethane from biomass and organic by-products. The plants will be located on areas of approximately 4 or 5 hectares each, classified as agricultural zones, and will have a production capacity of 500 Smc/h of biomethane each, intended both for injection into the SNAM national network and for energy self-consumption. The initiative is part of a context of promoting energy sustainability and the valorisation of livestock waste in accordance with European environmental protection legislation.

The project aims to:

- Reduce greenhouse gas emissions: the production of biomethane from renewable sources allows for a significant reduction in CO_2 compared to traditional fuels.
- Enhance the value of livestock waste: the treatment of waste in anaerobic digesters allows biomethane and digestate to be obtained, reducing the environmental impact and improving the management of agricultural waste.
- Promote circular economy: the residual digestate will be used as organic fertiliser, returning useful material to agricultural land.
- Creating local economic opportunities: the supply of biomass and the management of the plant will encourage the development of a local economic network.

The plant is divided into several operational sections:

1. Biomass preparation:
- Liquid matrices (manure and slurry) are managed in special tanks with a capacity of 427 m^3 each.
- Solid matrices (lignocellulosic residues) are treated in a rectangular tank measuring 30x20x4.5 m.

2. Anaerobic digestion:
- Two main digesters with a total capacity of approximately 16,000 m^3 process the biomass at 42 °C.
- The resulting biogas is then stored in special gasometers and purified.

3. Biomethane production and upgrading:
- The biogas is treated through a membrane system, which separates methane from CO_2 with high efficiency.
- The extracted CO_2 is liquefied and stored for possible reuse.

4. Digestate management:
- The digestate is separated into solid and liquid fractions.
- The liquid fraction is used for controlled spreading on agricultural land or further treatment.
- The solid and liquid parts are stabilised in tanks approximately 200 m long using a robotic system for the production of organic fertilisers.

5. Storage and distribution of biomethane:
- The biomethane is compressed and sent through pipes to the network or to cylinder trucks.

6. Auxiliary energy production:
- A 1 MW photovoltaic plant will provide clean energy for the operation of the plant.

The project is designed to minimise environmental impact through innovative technologies that guarantee:
- **Odour reduction:** all tanks are hermetically sealed.
- **Operational safety:** remote monitoring and control systems ensure optimal operation and accident prevention.
- **Waste management:** the digestate is transformed into a useful product for agriculture, reducing the use of chemical fertilisers.

The plants represent an advanced model of sustainable energy production, combining the valorisation of agricultural by-products with environmental protection. The initiative will contribute to the energy transition, improving the energy autonomy of the territory and promoting sustainable agricultural practices.

Hydrogen Refuelling Station (HRS) - Piacenza

CLIENT	EDISON S.p.A.
LOCATION	Piacenza
TIME PERIOD	2023
ACTIVITIES CARRIED OUT BY ARTELIA	Basic engineering for permitting

Artelia Italia has consolidated its engineering experience in decarbonisation by collaborating with Edison on the design of advanced plants for the production and distribution of green hydrogen. The partnership has led to the construction of three refuelling stations for hydrogen-powered vehicles, equipped with electrolysers, medium-pressure storage systems and distribution plants.

Artelia Italia's approach covered all phases of the project, from technical and economic feasibility studies to support with authorisations, with a particular focus on safety and process engineering.

A significant example is the hydrogen refuelling station in Piacenza, designed to blend harmoniously into the urban environment. The plant was built in an area adjacent to an existing fuel station, ensuring safety and environmental compatibility.

The project is divided into two main areas:

- Production and storage: The plant uses a 1 MW electrolyser, powered by renewable energy, to produce hydrogen through electrolysis. The storage facility has been designed in compliance with fire safety regulations (Ministerial Decree 23/10/2018) and includes a 30 cm thick and 3 m high reinforced concrete fence to ensure maximum safety.
- Supply: although the station was designed primarily for refuelling heavy-duty vehicles, it can dispense hydrogen at 350 and 700 bar, meaning it can also refuel light-duty vehicles.

Artelia Italia has developed a cutting-edge fire prevention system that complies with current regulations, ensuring safety at every stage of the plant's operation. The engineering approach has made it possible to integrate hydrogen technology into an urban environment in a safe, efficient and reliable manner, while complying with all regulatory requirements.

Thanks to its collaboration with Edison, Artelia Italia has been able to apply its expertise in the design of hydrogen plants, creating cutting-edge solutions for sustainable mobility.

The Edison HYMOT project is a replicable model for the development of hydrogen mobility, promoting the decarbonisation of transport and the spread of alternative fuels.

With this project, Artelia Italia strengthens its leadership in hydrogen plant engineering, contributing to a sustainable energy future. The synergy with Edison will result in a plant that meets current needs and paves the way for the energy transition, demonstrating the potential of green hydrogen as a key resource for tomorrow's mobility.

Hydrogen Refuelling Station (HRS) - Malpensa

CLIENT	EDISON S.p.A.
LOCATION	Malpensa – Varese
TIME PERIOD	Settembre 2024 - Giugno 2025
ACTIVITIES CARRIED OUT BY ARTELIA	Technical-Economic Feasibility Study (TEFS), Permitting

Artelia Italia developed the Technical-Economic Feasibility Study and Permitting for the new production and distribution plant, a state-of-the-art facility covering approximately 14,000 square metres. This initiative, strongly supported by Edison S.p.A. and S.E.A. S.p.A., is strategically located to serve the Malpensa Cargo City area, a crucial hub for freight transport. It is not just a refuelling centre, but a concrete driver of change, focused on the production and distribution of green hydrogen, developed to chart a path towards cleaner and more sustainable logistics. This project represents a further evolution of the existing Masterplan, demonstrating the joint commitment of Edison and S.E.A. to integrating innovative solutions for reducing emissions and decarbonising airport freight logistics, with a particular focus on sustainable hydrogen mobility.

At the heart of this complex system, designed and developed by Artelia Italia, is a 1 MW electrolyser capable of producing up to 432 kg of H_2 per day, ensuring a constant supply. The plant includes a multifunctional building with a 44 m^2 refreshment area and a large technological area for refuelling systems, ensuring maximum efficiency and safety.

The refuelling station has a storage capacity of 456 kg of H_2 at 500 bar and 37 kg of H_2 at 900 bar and is equipped with a canopy with dual-pressure dispensers (350 and 700 bar). The 1,490 m^2 technology area, surrounded by sturdy splash walls, houses the electrolyser, low-pressure buffer, panels, valves and a compression and storage system, with provisions for future expansion in terms of both production and compression and storage, demonstrating the forward-looking vision and growth prospects of hydrogen mobility development.

The distribution system includes two loading/unloading bays for cylinder trucks and two dispensers capable of serving up to 20 heavy vehicles (trucks or buses) and up to 40 light vehicles. A 226 m^2 single-storey service building, designed using modular technology, houses users and operators. The new 5,000 m^2 yard, designed for heavy loads, includes refuelling areas with industrial flooring and 13 new parking spaces.

The infrastructure is completed by 2,700 square metres of accessible pedestrian paths and 3,400 square metres of unpaved areas with draining paving, in line with the required regulations. This project fits perfectly into the existing context, demonstrating exceptional synergy with the Masterplan's provisions. The changes do not involve any increase in traffic flows or land consumption, emissions or noise. On the contrary, the project brings benefits and reductions in impacts that exceed the Masterplan's expectations, contributing to an overall improvement in terms of the environment and sustainability.

The initiative, supported by S.E.A., Edison and Artelia Italia, is a key pillar in the decarbonisation of the transport sector, a crucial objective for the EU's climate and environmental commitments. Increasing the use of green hydrogen is essential not only to reduce CO_2 emissions, but also to improve quality of life by minimising pollution from fossil fuels and reducing the environmental impact of freight transport.

TurnKey

Services offered by Artelia Italia

With its TurnKey service, Artelia Italia provides comprehensive support to its customers, from the initial technical and administrative analysis to the final use of the product created through the project, making available all the experience of Artelia Italia and the Group. The TurnKey service, which covers all areas of investment, covers all phases of the project from technical and administrative due diligence to the administrative, design and construction phases, including the completion of the work.

Artelia Italia does not act as a contractor or general contractor. The aim of the service is to suggest the best way for the customer to achieve their objective, within the scope indicated by the customer, with a construction phase that represents the natural evolution of the design, budgeting and procurement phases, rather than a phase aimed at maximising profit, which generates delays and extra costs.

A proactive partner and consultant who works with the client to study, propose and analyse methods and solutions to improve the quality of execution, reduce project completion times, eliminate rework between designers and contractors, and seek to introduce or improve processes to achieve savings that are not visible in the traditional 'designer' or 'contractor' formula.

Roberto Bonini
Business Unit Director
Turnkey Sector

"Anything one man can imagine, other men can make real."
-Jules Verne

Artelia Italia has always supported every customer's vision, thanks to our expertise, the experience of the Group and the added value of the people involved in the projects. TurnKey is the ideal partner for implementing projects, finding new challenges and growing with the customer. TurnKey believes that it is not enough to execute part of the project, but to be part of the customer's future and accompany them when the project comes to life. In an increasingly technological world, we see many players ready to respond. To achieve this, we need to listen to the customer's needs, guide them in managing information and stakeholders, creating new paths and contributing to the customer's vision, without limits, while maintaining the pioneering spirit of mankind.

DeA Capital Via Curtatone & Via dell'Arte

CLIENT	DeA Capital Real Estate SGR S.p.A
LOCATION	Rome Via dell'Arte / Rome Via Curtatone
TIME PERIOD	2024-2025
ACTIVITIES CARRIED OUT BY ARTELIA	In Rome, Via dell'Arte: Energy Audit and Due Diligence for feasibility assessment. In Rome, Via Curtatone: Energy Audit and Due Diligence for feasibility assessment, Engineering Services (design and any SCIA VVF paperwork), Project Management, Construction Management, Works Management. Health & Safety, Supply of electric charging stations.

DeA Capital Real Estate SGR S.p.A., a management company with over 50 mixed-use real estate funds, including offices, has launched a project to offer its customers the possibility of charging their employees' and visitors' electric cars during working hours. To assess the feasibility of the initiative, the company turned to Artelia Italia, commissioning it to carry out an energy audit on the buildings involved.

The analysis aimed to verify the available power of the buildings compared to current consumption by studying the technical documentation and the condition of the systems. The data collected revealed an installed power of 2 MW, with a residual available power of approximately 800 kW, sufficient to evaluate the installation of charging infrastructure. The audit also identified application scenarios based on electricity supply costs and different hourly rates.

At the same time, a market study was conducted on the state of electric mobility in Italy, with a particular focus on existing charging infrastructure and the dynamics of electric vehicle use. This provided the client with an up-to-date overview to assess the possible integration of charging stations in its properties.

Following the analyses conducted, the client asked Artelia Italia to carry out a due diligence exercise to exploit the surplus power available and develop new lines of business. Among the options identified, the possibility of equipping the parking spaces with electric charging stations in the underground car parks of the properties in Via Curtatone and Via dell'Arte in Rome was evaluated.

Following the positive results of the due diligence, DeA Capital Real Estate SGR S.p.A. appointed Artelia Italia to manage the project for the property in Via Curtatone 3, Rome, entrusting it with:

- Design and administrative procedures
- Project & Construction Management
- Works Management and Safety Coordination
- Supply and installation of charging stations

The building in Via Curtatone will be equipped with 15 22 kW wallboxes, distributed over two underground floors, marking a concrete step towards sustainable mobility and energy transition in the real estate sector.

Data Centres

Services offered by Artelia Italia

The growing demand for digital services makes data centres strategic but energy-intensive infrastructures. Artelia Italia responds to this challenge with an integrated approach that combines multidisciplinary design, advanced technologies and an energy strategy geared towards decarbonisation.

Our interventions cover the entire life cycle of the Data Centre, from planning to operation, with solutions that optimise consumption and reduce emissions: BIM design, CFD simulations, free cooling systems, heat recovery and preparation for integration with renewable sources. Each project includes commissioning strategies, DCIM and BMS systems to ensure sustainability KPIs such as PUE, WUE, ERF and REF.

Artelia Italia adopts international standards (EN 50600, ISO 50001, EED/2023/1791) and is committed to complying with voluntary protocols such as the Code of Conduct and the Climate Neutral Data Centre Pact. For our most demanding customers, we integrate certifications such as LEED and BREEAM, which are internationally recognised for assessing the environmental performance of buildings.

Looking to the future, we explore emerging energy solutions: green hydrogen for backup systems, modular microreactors (SMRs) for off-grid clusters, and artificial intelligence for dynamic load and cooling management.

Artelia Italia is the strategic partner for developing resilient, efficient and truly sustainable data centres, with an advanced engineering vision and a solid foundation in the European energy transition.

Filippo Luraghi
Head of Mechanical
Department MEAD North

Data centres are now a critical infrastructure for Italy's digital development and competitiveness. The primary challenge is to combine high operational performance with a concrete commitment to environmental sustainability and energy responsibility.
At Artelia Italia, we design solutions that reduce the energy and environmental impact of data centres while ensuring efficiency, reliability and flexibility. Thanks to our experience and multidisciplinary approach, we support customers and investors in the transition to smarter, more resilient and future-proof digital infrastructure.
Our contribution to the global energy transition translates into concrete actions aimed at systemic innovation and the creation of lasting value for the local area and the national production system.

Lorenzo Felici - Executive Director

An open and innovative mindset is the key to transforming the world of energy.

In the current landscape, the energy transition represents a crucial challenge to ensure a sustainable future for the next generations. With a presence in over 40 countries and a team of more than 10,000 professionals, Artelia Group is positioned as a leader in addressing this global challenge.

The company offers a comprehensive range of services covering the entire spectrum of the energy system: from production to distribution, storage and end use. Artelia's expertise ranges from strategy to renewable energy generation, energy efficiency and network upgrading, adopting a systemic approach to provide integrated solutions.

In Italy, Artelia actively contributes to the transition to eco-sustainable growth through projects dedicated to renewable energy production and energy efficiency improvement. The company has specialist expertise in LEED and BREEAM certification processes, demonstrating a concrete commitment to promoting environmental sustainability.

Looking to the future, Artelia is exploring innovative solutions such as the integration of artificial intelligence into engineering. This commitment to innovation underlines Artelia's desire to be at the forefront of the energy sector, anticipating the needs of a constantly evolving world.

As Albert Einstein said, 'We can't expect things to change, if we continue doing the same things.' This quote reflects the essence of Artelia's mission in Italy and around the world: to innovate and transform the global energy landscape through sustainable and cutting-edge solutions. As our motto says, 'Designing solutions for a positive life'.

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SPK MORE SRL

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