

“Arena del Futuro”, with dynamic wireless power transfer, green mobility is a reality

Brescia, 2 December 2021. After years of intense, in-depth studies, “Arena Del Futuro”, the circuit built by A35 Brebemi with the collaboration of international partners, public institutions and universities, is now a reality. The first tests carried out are demonstrating how ecological transition in the world of mobility is progressing to revolutionary electric charging with dynamic induction.

The construction and technical implementation of the 1,050-metre-long circuit, powered by an electrical power of 1 MW, has in fact recently been successfully completed. From today, “Arena del Futuro” is ready to showcase the efficient innovative technology used in the field. The first vehicles powered with this system have clocked up miles of tests, with more than encouraging results. The DWPT (Dynamic Wireless Power Transfer) system, used by the group of highly specialised technicians belonging to the companies participating in the project, is proving to be the best candidate in giving immediate, concrete answers when it comes to decarbonisation and environmental sustainability needs in the mobility sector. A technology and a use aimed at anticipating, implementing and speeding up the ecological transition by responding to the logic that the world requires in terms of soil conservation and environmental protection.

After this initial period, the third phase of the trial is now getting underway. The first involved and identified the best technology related to road electrification available globally. The second was planned for the physical development of the circuit. The one currently in progress is critical, and concerns verifying performance levels on the important technologies adopted. Thanks to DWPT, electric vehicles can recharge while travelling on wired lanes thanks to an innovative loop system positioned under the asphalt. This technology can be adapted to all vehicles equipped with a special “receiver” that directly transfers the energy needed to charge and travel. The plan is to create a “zero emissions” mobility system since, in the future, electricity will be able to come from a photovoltaic park attached to the circuit, with systems guaranteeing continuity of supply. Advanced connectivity using IOT (Internet of Things) technologies studied on site will guarantee maximum road safety, allowing motorways and roads to become smart and communicate with the vehicles travelling along them. The road surface has been designed and built to make it more durable without altering the efficiency and effectiveness of the inductive charge. Furthermore, the trial will enable the university partners to carefully evaluate the possible great environmental advantages and economic benefits deriving from DWPT and SWPT (or static charging, trialled for stationary or parked vehicles).

This creation is the first example of collaborative innovation for “zero emissions” mobility of people and goods, which today sees the collaboration of A35 Brebemi - Aleatica, ABB, Electreon, FIAMM Energy Technology, IVECO, IVECO Bus, Mapei, Pizzarotti, Politecnico di Milano, Prysmian, Stellantis, TIM, Roma Tre University and the University of Parma, Vigili del Fuoco (Fire Brigade) and Polizia Stradale (Police) taking an extremely concrete and important step with “Arena del Futuro” ready to host the various test phases for this technology, recently cited by the prestigious TIME magazine as one of the 100 most important inventions of 2021.



Profile of project partners

A35 Brebemi-Aleatica motorway

The A35 Brebemi-Aleatica is the direct motorway link between Brescia and Milan, the fastest and safest route between the two cities. Active since 23 July 2014, the infrastructure extends 62.1 km to which the Castegnato toll booth and the ramps for interconnection with the A4 motorway have been added. The motorway can be reached from the city of Brescia via the A4 motorway (taking the exit ramp after Brescia Ovest in the direction of the A35 Milan-Linate), the Tangenziale Sud of Brescia and the SP19 or using the new A21 (Corda Molle). There are six toll booths on the motorway: Chiari Ovest, Calcio, Romano di Lombardia, Bariano, Caravaggio and Treviglio. After passing the last toll booth at Treviglio, you enter the A58 Tangenziale Est Esterna Milano (TEEM), which allows the A35 Brebemi to reach the A1 at Melegnano, the A4 at Agrate, Linate and the Milan Metropolitan Area via two junctions, on the right, Pozzuolo Martesana and on the left, Liscate, which exit respectively onto the SP103 Cassanese and the SP14 Rivoltana. A35 Brebemi has received important international awards, in the US and the UK, as the best infrastructure project financing and the best European project bond.

Aleatica is a leading global operator and developer of transportation assets headquartered in Madrid with annual revenues of c. €570m and ca 2,200 employees worldwide. The company is currently managing 20 concessions (included A35 Brebemi) - 15 highways, 3 ports, 1 light railway line and 1 airport, 5 of which are currently under construction - across six countries in Europe and Latin America: Spain, Italy, Mexico, Colombia, Peru and Chile. Aleatica is wholly owned by the IFM Global Infrastructure Fund, which is advised by IFM Investors, a global institutional with c. EUR 101 billion under management as of March 31, 2021.

ABB

ABB (ABBN: SIX Swiss Ex) is a leading global technology company that energizes the transformation of society and industry to achieve a more productive, sustainable future. By connecting software to its electrification, robotics, automation and motion portfolio, ABB pushes the boundaries of technology to drive performance to new levels. With a history of excellence stretching back more than 130 years, ABB's success is driven by about 105,000 talented employees in over 100 countries. www.abb.com
ABB is the title partner in the ABB FIA Formula E World Championship, an international racing series for fully electric single-seater racecars. It brings together ABB, a global leader in electric vehicle fast-charging with the world's first fully electric international motorsport class, who have a shared commitment to drive progress towards a more sustainable future. The ABB FIA Formula E World Championship is more than a race, it enables us to push the boundaries of technology, which can be transferred from the race track to real-world situations, helping to preserve resources and enable a low-carbon society.

Electreon

Electreon is a global leader in wireless charging technology for a full range of Electric Vehicles (EVs) and has developed a range of solutions to support charging in any mode - parked, slow-moving and driving at speed. The company accelerates the world's transition to electric mobility by leveraging existing road infrastructure and its proprietary wireless charging technology to eliminate range anxiety, lower total costs of EV ownership and reduce battery capacity - making it one of the most environmentally sustainable, scalable and compelling charging solutions available today. For cities and fleet operators, Electreon offers a shared, invisible "Charging as a Service" platform enabling cost effective electrification of public, commercial and autonomous fleets with minimal batteries and smooth and continuous operation.

FIAMM

FIAMM Energy Technology is a multinational company engaged in the production and distribution of batteries for automotive and industrial use. It was established following the separation of the automotive and industrial lead-acid battery business from the FIAMM Group. In order to be close to its customers' needs, FIAMM Energy Technology has numerous sales and technical offices (including Italy, Germany, Great Britain, Slovakia, France, Spain, Dubai, USA, Singapore, Malaysia and China) and a widespread network of importers and distributors, and operates with a staff of one thousand people. For more information on FIAMM, please visit: www.fiamm.com



IVECO

IVECO is a brand of CNH Industrial N.V., a global leader in the capital goods industry, listed on the New York Stock Exchange (NYSE: CNHI) and on the Mercato Telematico Azionario, organised and managed by Italian Stock Exchange (MI: CNHI). IVECO designs, builds and markets a wide range of light, medium and heavy commercial vehicles and quarry/construction vehicles.

The wide product range includes the Daily, a vehicle covering 3.3 to 7.2 tonnes of total weight on the ground, the Eurocargo, from 6 to 19 tonnes, for the heavy segment over 16 tonnes, the Trakker (dedicated to off-road activities) and the IVECO WAY range with the IVECO S-WAY version for on-road missions and the IVECO X-WAY for light off-road missions. It also manufactures quarry-construction vehicles and special vehicles under the IVECO Astra brand.

IVECO employs around 21,000 people and produces vehicles equipped with the most advanced technologies in 7 countries around the world, in Europe, Asia, Africa, Oceania and Latin America. 4,200 sales and service outlets in more than 160 countries provide technical support wherever there is an IVECO vehicle at work.

For more information on IVECO: www.iveco.com

For more information on CNH Industrial: www.cnhindustrial.com

IVECO BUS

IVECO BUS is a brand of CNH Industrial N.V., a world leader in capital goods listed on the New York Stock Exchange and the Italian Stock Exchange in Milan.

A major player in public transport and one of the leading bus manufacturers in Europe, IVECO BUS designs, manufactures and markets a wide range of vehicles to meet all the needs of public and private operators:

- school, intercity and tourist buses;
- standard and articulated city buses, including BRT versions;
- minibuses for all passenger transport missions.

IVECO BUS has extensive experience in alternative energy vehicles and is now able to offer a complete range of vehicles in terms of both compressed natural gas - fully compatible with biomethane - and electromobility, to meet all types of transport needs.

Therefore IVECO BUS is an ideal partner to tackle the many challenges of sustainable mobility.

IVECO BUS employs over 5,000 people in three production units, in Annonay and Rorthais, France, and in Vysoké Myto, Czech Republic. In Italy it is operational at the Brescia plant, where Daily Minibuses are made.

The broad IVECO BUS and IVECO service network guarantees worldwide assistance wherever an IVECO BUS vehicle is at work.

Mapei

Founded in Milan in 1937, Mapei is a world leader in the production of chemicals for the building industry and it has contributed to the construction of the most important examples of architecture and infrastructure on a global level. With 90 subsidiaries in 57 countries and 88 production facilities in 36 different nations, the group employs more than 10,500 people worldwide. In 2019, the Mapei Group posted a consolidated turnover of 2.8 billion euro. The company's success is based on specialisation, internationalisation, R&D, and sustainability. www.mapei.it

Politecnico di Milano

The Politecnico is a scientific-technological university that prepares engineers, architects and designers. The University has always focused on the quality and innovation of its teaching and research, developing a fruitful relationship with the world of business and manufacturing by means of experimental research and technological transfer. Increasingly linked to didactics, research is a priority commitment that allows the Politecnico di Milano to achieve high quality results at an international level and to ensure dialogue between the university and the world of business. Research also constitutes a path parallel to that of cooperation and alliances with the industrial system.

Familiarity with their prospective world of work is a vital requirement for the preparation of students. Being able to relate to the needs of the manufacturing and industrial world and public administration, helps research to follow new paths and deal with the need for constant rapid innovation. Its alliance with the industrial world, in many cases promoted by Fondazione Politecnico and by consortia to which the Politecnico belongs, enables the university to fuel the industries typical of the districts it operates in and stimulate their development.

The challenge being met today projects this tradition with strong local roots out beyond the borders of Italy, in a relationship being developed first and foremost on a European level with the objective of contributing to the creation of a "single market" for professional preparation. The Politecnico is part of several research and training projects, in collaboration with the most qualified European and international universities, from North America to Southeast Asia and Eastern Europe. Today, the push to internationalise sees the Politecnico di Milano part of the European and world network of leading technical universities and it offers many exchange programmes, double degrees and a variety of study courses taught entirely in English.

Pizzarotti

Impresa Pizzarotti & C. S.p.A. was founded in 1910 as a sole proprietorship by Gino Pizzarotti and, since then, it has evolved continually thanks to the entrepreneurial spirit that has distinguished four generations of the Pizzarotti family.

Relentless research into innovation and technological excellence are the cornerstones on which the family has built and continues to grow the group's success story. Since the late fifties, it has consolidated its presence in the building sector, making its name as one of the most important and best qualified Italian general contractors thanks to the realisation of large public works for both state bodies and major private Italian companies. Its commitment and ability to deliver widely diverse projects have also led to renown on foreign markets, where it started to work in the seventies, and it is today recognised as a benchmark in terms of knowhow and construction capacity.

Impresa Pizzarotti & C. S.p.A. realises large-scale projects and projects, having developed diversified competences in various sectors in years of experience. Its range of services include design, construction and also management in concession of works such as transport infrastructures, motorways, railways, tunnels, bridges, dams, hydraulic structures, real estate, hotels, hospitals, prefabs and renovation work, all carried out to fully respect and protect the environment.

Prysmian

Prysmian Group is the global leader in the energy and telecom cable systems industry. With almost 140 years' experience, a turnover of more than 10 billion euro, about 28,000 employees in over 50 countries and 104 production plants, the group boasts a solid presence on technologically advanced markets and delivers the widest range of products, services, technologies and knowhow. It manufactures underground and submarine cables for power transmission and distribution, special cables for applications in different industries and medium and low voltage cables for the construction and infrastructure sector. It also produces telecom cables and accessories for voice, video and data transmission, with a comprehensive range of optical fibres, optical and copper cables and connectivity systems. Prysmian is a public company, listed on the Italian Stock Exchange in the FTSE MIB index.

Stellantis

Stellantis is one of the world's leading automakers and a mobility provider, guided by a clear vision: to offer freedom of movement with distinctive, affordable and reliable mobility solutions. In addition to the Group's rich heritage and broad geographic presence, its greatest strengths lie in its sustainable performance, depth of experience and the wide-ranging talents of employees working around the globe. Stellantis will leverage its broad and iconic brand portfolio, which was founded by visionaries who infused the marques with passion and a competitive spirit that speaks to employees and customers alike. Stellantis aspires to become the greatest, not the biggest while creating added value for all stakeholders as well as the communities in which it operates.

TIM

TIM is the leading group in Italy and Brazil in the ICT sector. It develops fixed, mobile and cloud infrastructures and data centres and offers services and products for communications and entertainment, placing itself at the forefront of digital technologies

The Group uses specialised factories that offer integrated digital solutions for citizens, businesses and public administrations, also in partnership with groups of primary importance: Noovle is TIM's cloud company, Olivetti is its digital hub that focuses on the development of solutions for the Internet of Things, Telsy operates in the cybersecurity sector, and Sparkle creates and provides infrastructure and international services. In Brazil, TIM Brasil is one of the main players in the South American communications market and leader in 4G coverage. The Group has championed environmental protection and social inclusion objectives while developing its business with the aim of achieving a tangible and relevant impact and becoming carbon neutral in 2030. Its Operation Digital Renaissance—the first large free school on the internet—promotes the dissemination of digital skills useful for the development of Italy, while Fondazione TIM supports projects of great social interest. gruppotim.it

Roma Tre University

Founded in 1992, Roma Tre is one of the youngest Italian universities. Its 'youth' is also a strength that has been and continues to be a forceful driver for its rapid, dynamic growth, which sees the university now able to boast some 34,000 students from all over Italy. Its 12 departments offer 76 degree courses, including three-year bachelor's, five-year master's and five or six-year integrated master's degrees, 24 research doctorates and 43 post-graduate courses.

The many strengths on which the prestige of its large student and scientific community is based include the consistency of its courses accompanied by attention to new methodologies and communication languages; its openness towards the international community thanks to the Erasmus programme, numerous double and joint degrees and important international research; the recognised "Excellence" of 4 departments in particular (Law, Engineering, Mathematics and Physics, and Science) and its commitment to issues of environmental sustainability and eco-sustainable design.

Roma Tre's founding values include the promotion and organisation of international research, higher education and the development and dissemination of knowledge, environmental protection, international solidarity, gender equality, and the recognition and motivation of merit. The university's teaching and research constantly interact across disciplines to address a global world and thus promote the updating and enrichment of knowledge, and combine with third-stream activities as a vehicle for technological transfer and local development. The international dimension is a strategic element for the university, which, among



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others, adheres to the inspirational principles and instruments of the Magna Charta Universitatum and to the European Research and Higher Education Area, embracing its principles and tools.

Parma University

Parma University is a state university with a millenary history, having been founded during the 11th century, and its primary activities are education, research and third stream, namely the transferral of knowledge to the community. Today it has over 30,000 students and approximately 1,700 members of teaching, research and technical-admin staff.

Its many student services, attention to quality education, innovation, research and the needs of the labour market make it one of the most important and well-known universities in Europe.

Its complete range of 96 courses include three-year bachelor's, five-year master's and five or six-year integrated master's degrees, doctorates, specialisation schools and advanced specialisation courses.

Internationally relevant scientific research is carried out at the university and excellences include discoveries regarding mirror neurons in the neuroscience sphere, research in the field of information engineering that led to the conception of autonomous (driverless) vehicles, and research in the fields of mathematics and food.



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