
Irizar e-mobility
for a better life
Irizar ie truck

Irizar Group

Irizar is a business group with an international presence whose business is focussed on the passenger transport, electromobility, electronics, electric motors and generators, connectivity and energy sectors.

The Irizar Group consists of seven companies (Irizar, Irizar e-mobility, Alconza, Datik, Hispacold, Masats and Jema) with production operations in 13 production plants in Spain, Morocco, Brazil, Mexico and South Africa in addition to their own R&D centre whose purpose is applied research and technological development of products and systems for the Group.

Irizar, S. Coop is the parent company of the Group and its central headquarters is located in Ormaiztegi (Guipuzcoa, Spain) where Creatio, the Group's Research and Development Centre, is also located.

Founded in 1889, today, the Irizar Group is well-established with more than 3,500 employees and an aggregate sales volume exceeding 800 million euros. It is geographically and industrially diversified, continuously growing and firmly committed to the brand, technology and sustainability.

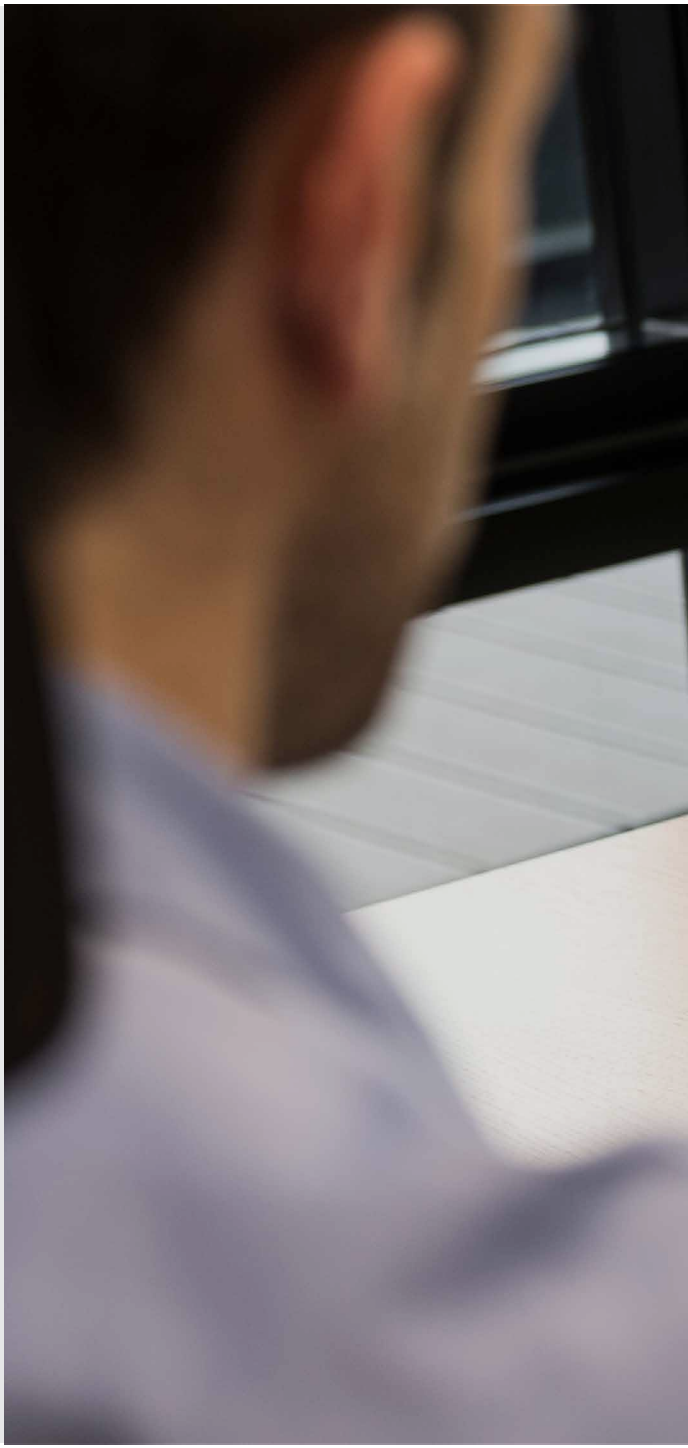
Technology and innovation

The innovation and knowledge provided by the Group's companies are the pillars on which Irizar promotes mobility in cities, promoting the use of the bus as the best alternative for the mass transport of people in urban environments. The technological capacity of the Irizar Group and the collaboration with the best research centres enables us to offer top-level products, services, and turnkey solutions, positioning ourselves as a technological leader for European electromobility.

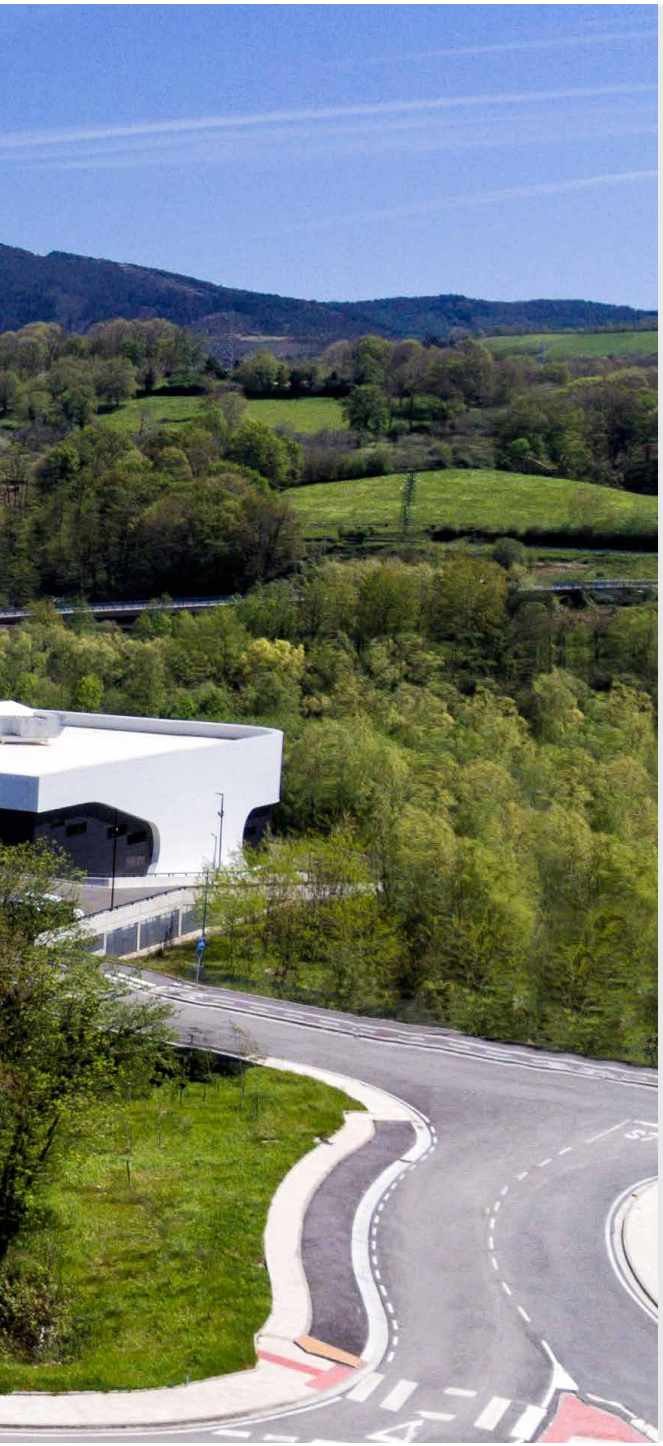
Irizar, coach and bus manufacturer; **Hispacold,** producer of climate control equipment; **Jema Energy**, specialised in high-end power electronics; **Datik,** technology company offering smart transport solutions; **Masats,** dedicated to accessibility and PMR systems; **Alconza,** dedicated to electrical motors and generators for the marine, hydraulic and special purpose industrial generation sectors and **Creatio** R+D Centre have joined forces to promote the development of zero emissions urban vehicles and their major components and systems.

These companies, provide comprehensive, independent, and proprietary technology capable of solving all aspects involved in the design and development of products and systems, in compliance with all European regulations. As such, the range of Irizar's zero emissions and e-mobility products are based on first-class reliable technology, developed in Europe, with cutting-edge design that incorporates pioneering technical features in the sector and which have been thoroughly tried and tested by European city operators since 2014 with satisfactory results.

The Irizar Group is currently actively involved in major European projects for the future electrification of cities and public transport. These projects relate to driverless vehicles, improvements in energy storage systems, energy efficiency, standardization of charging systems, connectivity, big data, artificial intelligence, etc., which are basic for the implementation of a new transportation concept.



Irizar e-mobility: the first European electromobility plant



Leading the change transition

Irizar e-mobility offers comprehensive electromobility solutions for cities, both in terms of manufacturing zero emissions 100% electric vehicles, and in terms of manufacturing and installing the major infrastructure systems necessary for charging, traction, and energy storage, all with the application of the Group's completely European technology and with Irizar's warranty and service quality.

Our product range includes 10.8m and 12m city buses, which have been operating since 2014 in various European cities, 15m buses, articulated buses, and other electric vehicles to service cities, as the Irizar ie truck, all zero-emission.

All with the clear objective of providing the operator with an additional advantage, by being the sole interlocutor in all phases of the project, including detailed advice, comprehensive vehicle care, and customized after-sales service, repair and maintenance (R&M).

Green energy factory

We have a new manufacturing plant of 18,000 m2 designed exclusively for electromobility. An innovative and state-of-the-art plant which is open to knowledge and talent that generates wealth and employment.

The construction used innovative elements and cutting-edge solutions with a special emphasis on those concepts that define eco-sustainability. It includes a warehouse and domestic hot water heating system that works by using the sur-plus steam from a company located in the adjoining plot.

We generate all the energy consumed by this plant, which makes it the first fully sustainable plant in Europe.

For a better life

Because we want to contribute to building a better world

Zero direct emissions

Our electric vehicles eliminate tons of emissions into the atmosphere each year.

Noise reduction

The electric technology makes the noise of the combustion engine disappear, which means there are no exterior sound emissions to annoy pedestrians when the bus is stopped and starting (0 dBA). When driving the noise pollution of the Irizar ie bus is 20%.

Green energy factory

We generate all the energy consumed by this plant, which makes it the first fully sustainable electromobility plant in Europe.

Eco design

We carry out continuous research and development of new bus manufacturing technologies and new materials, which means that we are positioned at the forefront of ecodesign in our sector with environmentally sustainable products.

Eco efficiency

We are making progress in energy efficiency, in optimising waste management and in reducing the environmental impact caused by our business activities and products.

Eco innovation

We are continuously vigilant in our innovation projects in order to replace materials and technologies with new ones that are more environmentally friendly and by using lighter materials and technology to reduce consumption and toxic gas emissions.

Towards an EDP

We are the first company in the world in the sector to begin a project of Environmental Product Declaration which will provide it with data on the impact on global warming and depletion of resources, energy consumption of fossil or renewable resources, pollutant emissions in the manufacture or content of dangerous substances, etc.

Commitment

We promote Responsible energy consumption and encourage the commitment of all our personnel regarding these aspects of environmental, social and economic sustainability.

Recyclability

The manufacture of the vehicles prioritizes the disassembly and recyclability of its components. Vehicle recyclability and recoverability rates are above 90% according to ISO 22628.

The bus has a longer service life and lower maintenance needs.

The inverters and the rest of the components of the ie bus's traction system have a service life that is equal to or greater than that of the bus; however, this is not the case for combustion vehicles.

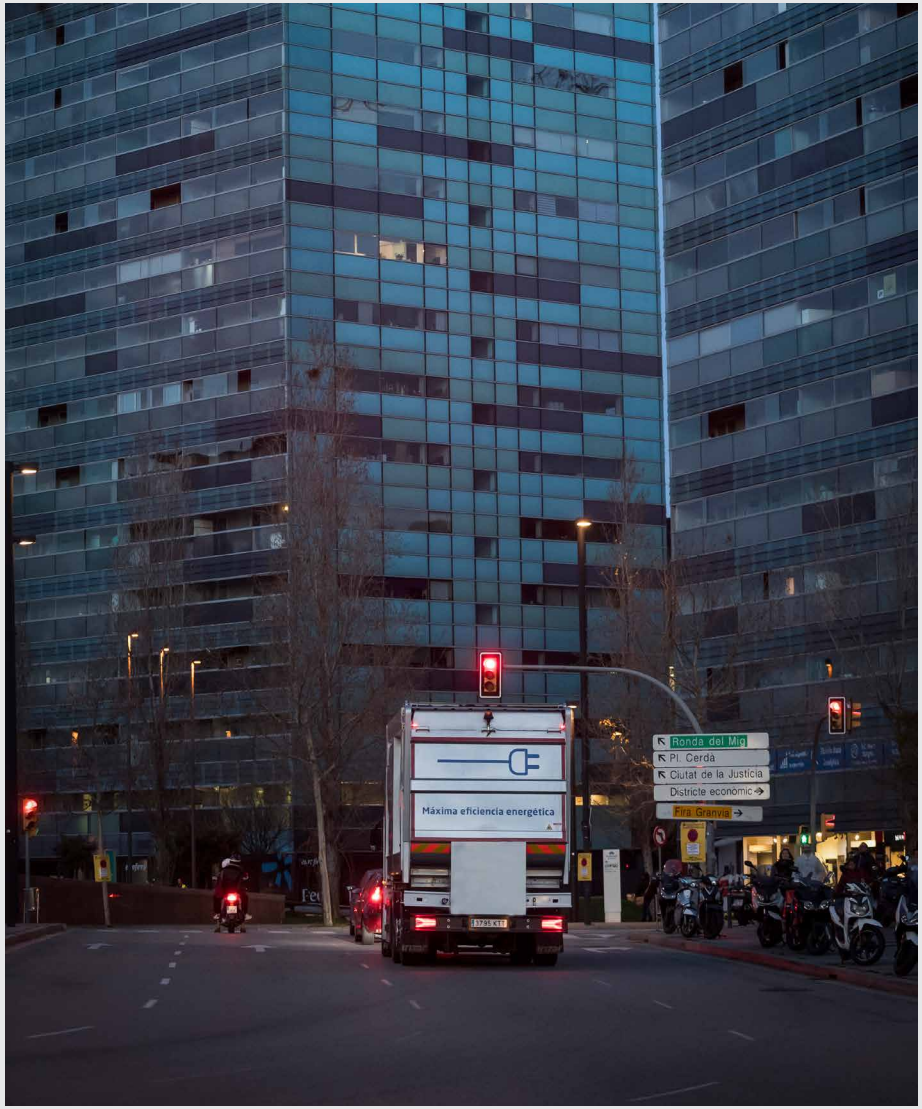
Turnkey solutions

Supporting the customer from start to end

We offer totally customized turnkey projects, designed and created to meet customer needs.

The service network is still in the process of expansion and it is currently possible to locate an approved Irizar warranty workshop in all places where its vehicles operate.

At Irizar e-mobility, we have decided to establish an exclusive and high-quality after-sales service in cities using our electromobility solutions, which offers personalised R&M (repair and maintenance).



Irizar systems and components

The Irizar Group's technological capacity enable us to offer first-rate products and services with European technology.

- ***Self-made batteries***
- ***Electric drive system***
- ***Charging systems***
- ***Air conditioning system***
- ***Software development systems***
- ***Driver assist system***

The Irizar ie truck

Silent and Zero Emissions

Power versatility

The global vision of the electrification of cities and the search for synergies with freight infrastructures together with the technological capability created in the Group has allowed us to extend our range of products to industrial vehicles for cities.

The Irizar ie truck is a 100% electric truck which responds to different market needs and enables it to move around cities and urban environments without generating atmospheric or acoustic pollution. The result is a cleaner city and more sustainable environment for citizens.

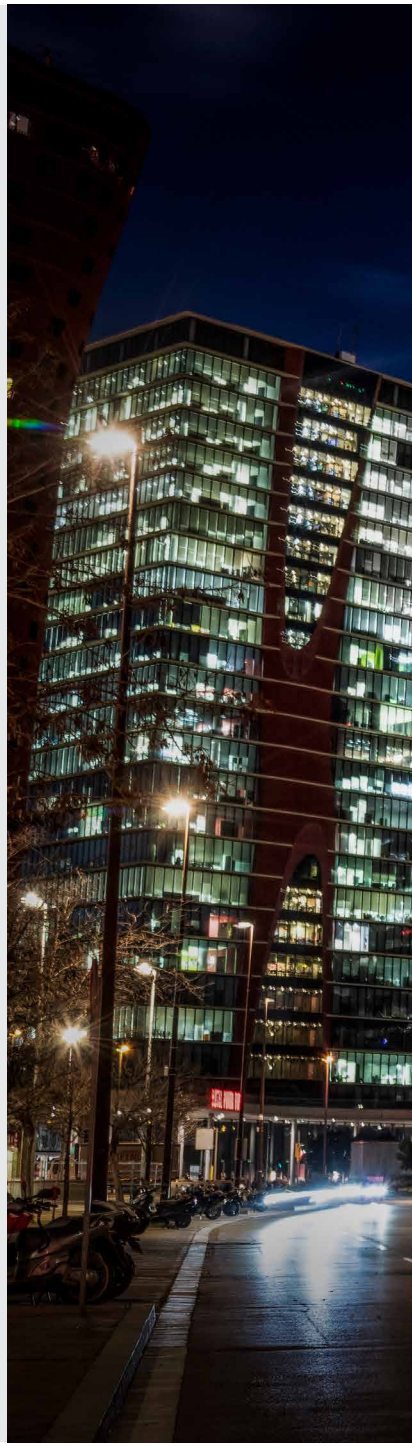
The design, an indisputable icon of all Irizar brand products, is one of the main attributes of this truck, making it an attractive and accessible vehicle with unconventional aesthetics.

It incorporates group technologies already used in our electric buses: electric drive, energy storage, and operating electronics.

A quieter and cleaner environment

Being a respectful vehicle environmentally can access the areas of low emissions from cities.

Its low noise level allows work to be carried out early in the morning or at night.




irizar
E

An accessible vehicle

Made for you

Access to the cab is via a single accessible step, which provides safe transit for drivers and passengers. With a 370 mm step, the ie truck has the lowest access height currently on the market.

The cabin has passenger seats that can be folded, so they can be put away to clear the aisle from obstacles. In this way, it guarantees a safe and fast working day. We have designed a quick opening inwards door, which enables worker access regardless of any obstacles in the streets.

The ie truck has unsurpassed direct vision due to the low position of the seat and wide front, side, and door windows.

It guarantees an optimal field of view, as well as ergonomic accessibility to all dashboard controls and displays.

Designed exclusively for the city

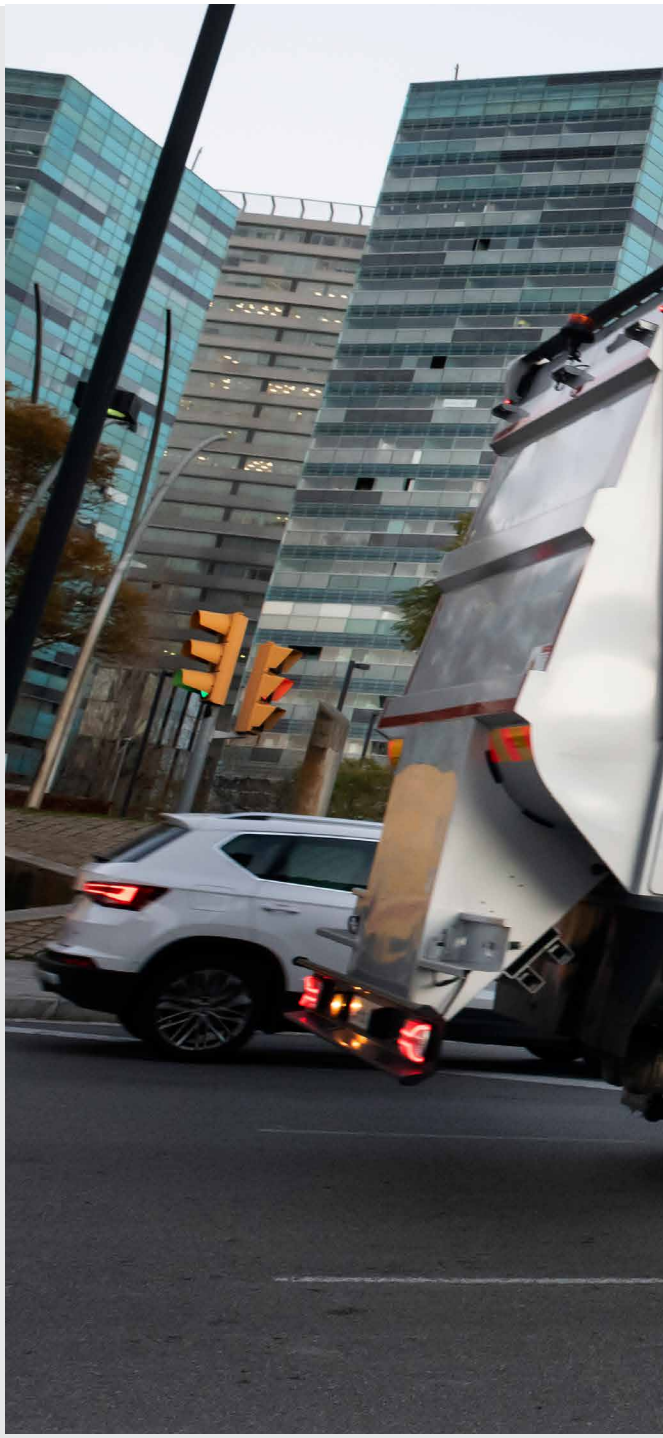
Up to 18 tons of load capacity

Both the chassis and the cab are designed by Irizar which offers great integration flexibility.

It is a vehicle that may be used in unlimited applications, for either waste collection and urban distribution.

The Irizar ie truck admits up to 18 tons of charge.

It adapts to all types of bodywork existing today with hardly any adaptation.




BAR IMUE


irizar

First application, waste collection

Given the urban vocation of the ie truck, we understand that waste collection is an ideal application for this type of vehicle.

The first tests have already been carried out in cities such as Barcelona, Pamplona and Vigo.

The Irizar chassis, version 6x2 of 8 meters long, has a 18-tonne carrying capacity.

It incorporates a CNG range extender which allows it to operate in electric mode in cities and the possibility of increasing its range with a natural gas engine.

Zero emission versions

Versions with zero emission electric motors are available.

Energy management and storage

In house battery manufacturing

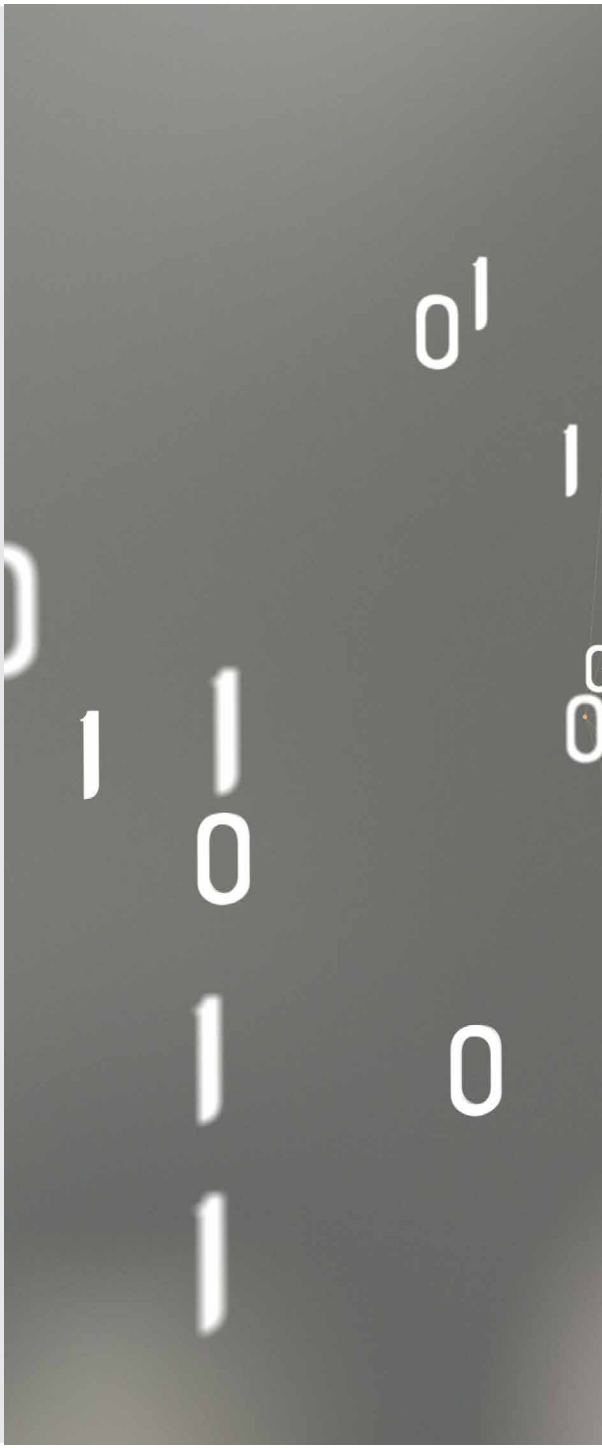
Our energy management and storage solutions, developed and manufactured in our Aduna plant (Guipúzcoa), are designed to cover the needs of today's European market and to offer the best solution for each of the operator's requirements.

We offer different modular solutions, based on Lithium-ion technology.

Our battery packs comply with the latest European regulations on electrical, thermal and mechanical safety: R100.v2, R10.v5 and UN38.3.

We work with customers to study their needs so that we can provide the best solution within our range of different types of pack.

Our battery pack is highly recyclable. We offer a second life to them, allowing their reuse once their useful life cycle is completed in our vehicles, making it as a storage element in the electric vehicle recharging infrastructures.



Irizar charging solutions

We offer a range of charging options to provide solutions to the different conditioning factors of our clients face in terms of power limits, as well as space and operating restrictions.

To carry out the charge, the operator connects the charger by means of a combo hose 2 to the truck or through a pantograph. It allows vehicles to be charger slowly and is available from 50kW to 150 kW, both in outdoor and indoor models.

The irizar intelligent charging system Is a control centre that efficiently manages all the charging conditions/restrictions in the depot. The system identifies the different charging requirements of each vehicle in order to optimise the total power required.

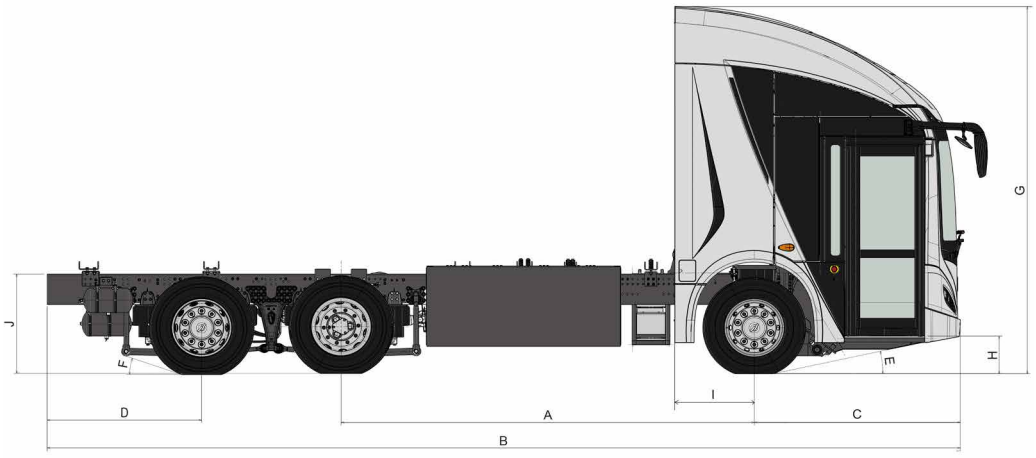
The Irizar Group's charging solutions are interoperable in accordance with ISO 15118, DIN70121, OCPP 1.6 CE mark, EMC 61000-6-2, 61000-6-4, IEC 61851, IEC 61000.

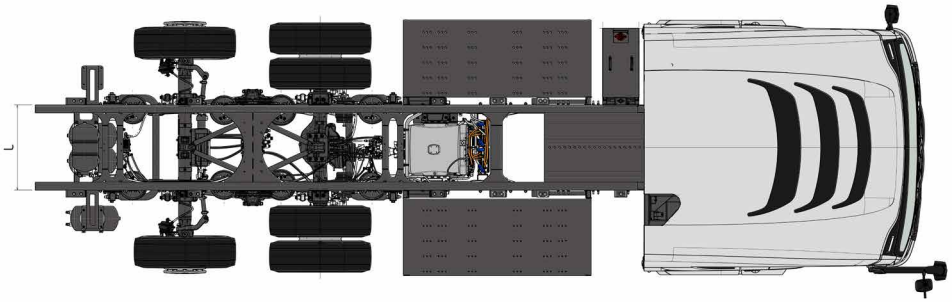
CNG range extender option

For those intercity applications we provide the option to include a range extender that allows to extend the work activity with an engine that works with compressed natural gas.

Technical specifications Irizar ie truck 6x2

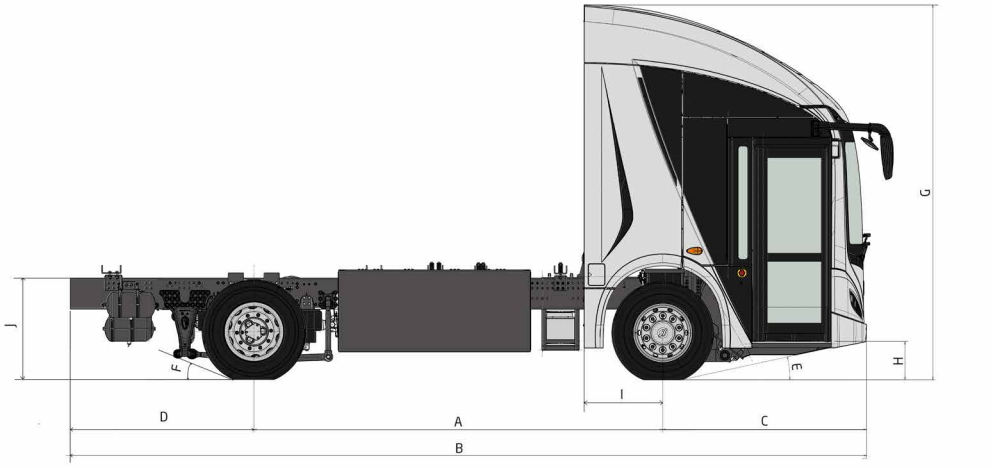
A - Distance between axles	3.150 mm	4.000 mm	4.500 mm
B - Total length	7.900 mm	8.500 mm	9.200 mm
C - Front overhang	1.995 mm	1.995 mm	1.995 mm
D - Rear overhang	1.010 mm	1.170 mm	1.355 mm
E - Approach angle	11º	11º	11º
F - Departure angle	15º	15º	15º
G - Maximum cabin height	3.665 mm	3.665 mm	3.665 mm
H - Cabin access step height	370 mm	370 mm	370 mm
I- Distance front axle / rear wall Cabin	770mm	770mm	770 mm
J - Chassis stretcher to floor height	992 mm	992 mm	992 mm
K - Maximum cabin width	2.540 mm	2.540 mm	2.540 mm
L - Chassis stretcher width	850 mm	850 mm	850 mm

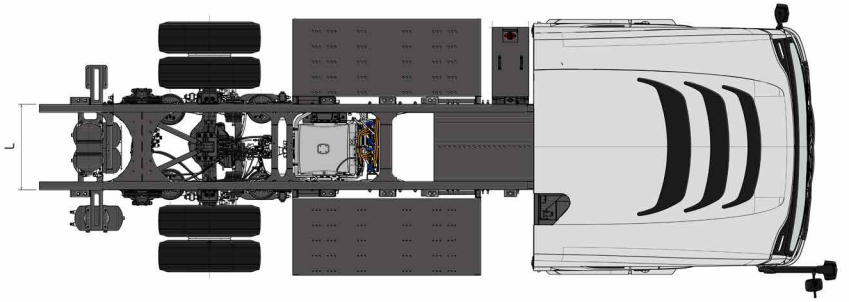




Technical specifications Irizar ie truck 4x2

A - Distance between axles	4.000 mm	4.500 mm
B - Total length	7.390 mm	7.890 mm
C - Front overhang	1.995 mm	1.995 mm
D - Rear overhang	1.355 mm	1.355 mm
E - Approach angle	11°	11°
F - Departure angle	15°	15°
G - Maximum cabin height	3.665 mm	3.665 mm
H - Cabin access step height	370 mm	370
I - Distance front axle / rear wall Cabin	770 mm	770 mm
J - Chassis stretcher to floor height	992 mm	992 mm
K - Maximum cabin width	2.540 mm	2.540 mm
L - Chassis stretcher width	850 mm	850 mm





Cabin	
Type	Low cabin with single access step (370 mm)
Driver's seat	Ergonomic seat with pneumatic suspension. Adjustable lumbar support. 3-point safety belt
Passenger seat	Individual, foldable to have more room for driver access. 3-point safety belt (optional capacity for up to 2 additional seats)
Climate Control	Electric climate control (heating/air conditioning)
Door	Swinging, pneumatic opening with anti-entrapment sensors (sensitive edges and optional photocell)
Camera mirrors option	Yes
Powertrain	
Type	Synchronous electric motor with permanent magnets. MNH-02803A-I127N
Nominal power	230 kW
Nominal torque	2,360 Nm
Energy Storage System*	
Batteries technology:	Lithium-ion
Slow charging NMC	
• ***Max. installed power:***	until 400 kWh (depending on customers needs)
• ***Charging power:***	until 100 kW
Fast charging NMC Nano (with range extender)	
• ***Max. installed power:***	until 120 kWh (depending on customers needs)
• ***Charging power:***	ntil 300 kW
Axes	
Front axle	Irizar 9Tn
Tractor axle	Irizar 13 Tn
Rear steering axle	Irizar 8 Tn
Rims	11.75x22,5 (Front) / 9.00 x 22,5 (Rear)
Tyres	385/55-22.5 (Front) / 315/70-22.5 (Rear)
Suspension	
Front suspension	Pneumatic
Rear suspension	Pneumatic

Brakes	
Service brake	Pneumatically operated discs
Electric brake	With energy regeneration for battery recharging
Active safety	ESP, AEBS and LDWS (Lane Departure Warning System)
Performance	
Maximum speed (km/h)	93 km/h / Self-limiting at 85km/h
Maximum slope	16% at 29Tn (at start-up)

Security and regulation
Compliance with R29 regulation
Driver´s seat according to ISO16121, VDV234 y EBSF
Creepage and Hillholder function
Hillholder function: keeps the bus stopped when it is on a hill for a few seconds so that it does not go backwards
Eco-mode: intelligent management of air conditioning once the vehicle is switched of
AVAS (Acoustic Vehicle Alerting System) integrated according to R138 regulation

Irizar e-mobility

for a better life

Erribera industria gunea, 1
20150 Aduna
Gipuzkoa | Spain
T +34 943 847 847
www.irizar-emobility.com