

COLLABORATIVE INNOVATION



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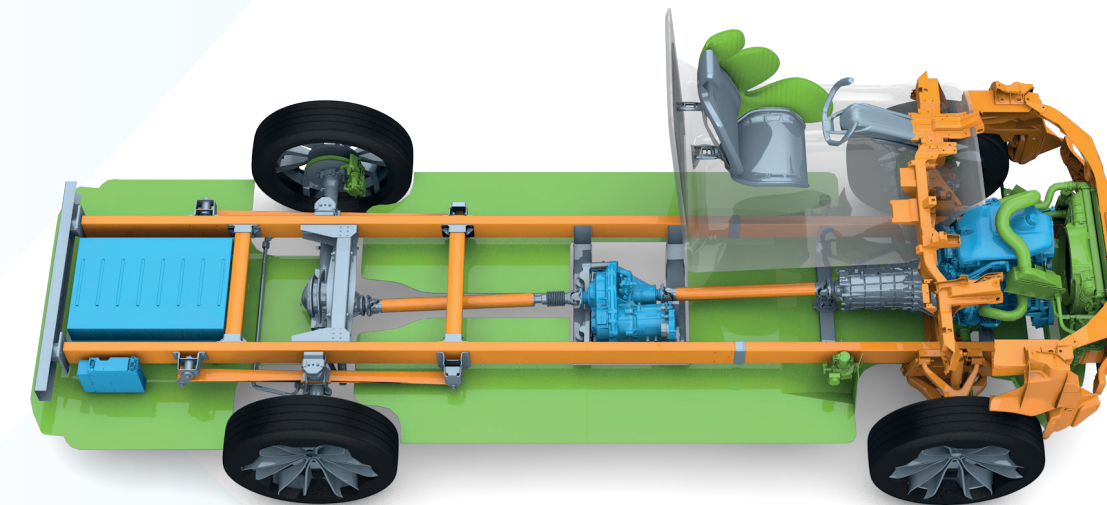


IVECO DUAL ENERGY A TECHNOLOGY CONCEPT

To meet the needs of increasingly sustainable mobility, responsibly combining economic growth with environmental protection, Iveco is committed to research new technological solutions every day. This innovative context has resulted in Iveco Dual Energy, a technological concept that envisions possible future scenarios to meet the needs of an ever evolving world of transport.

Iveco Dual Energy proposes extremely flexible technology for light commercial vehicles, capable of switching to the most appropriate source of energy depending on the vehicle's mission.

The "Dual Energy" definition reflects a system that relies on the use of two types of traction: one is exclusively electric, in order to ensure zero local emissions and low noise levels, the other is hybrid (thermal-electric), and fits long journeys and extra-urban missions, in order to reduce fuel consumption and CO₂ emissions by up to 25%.



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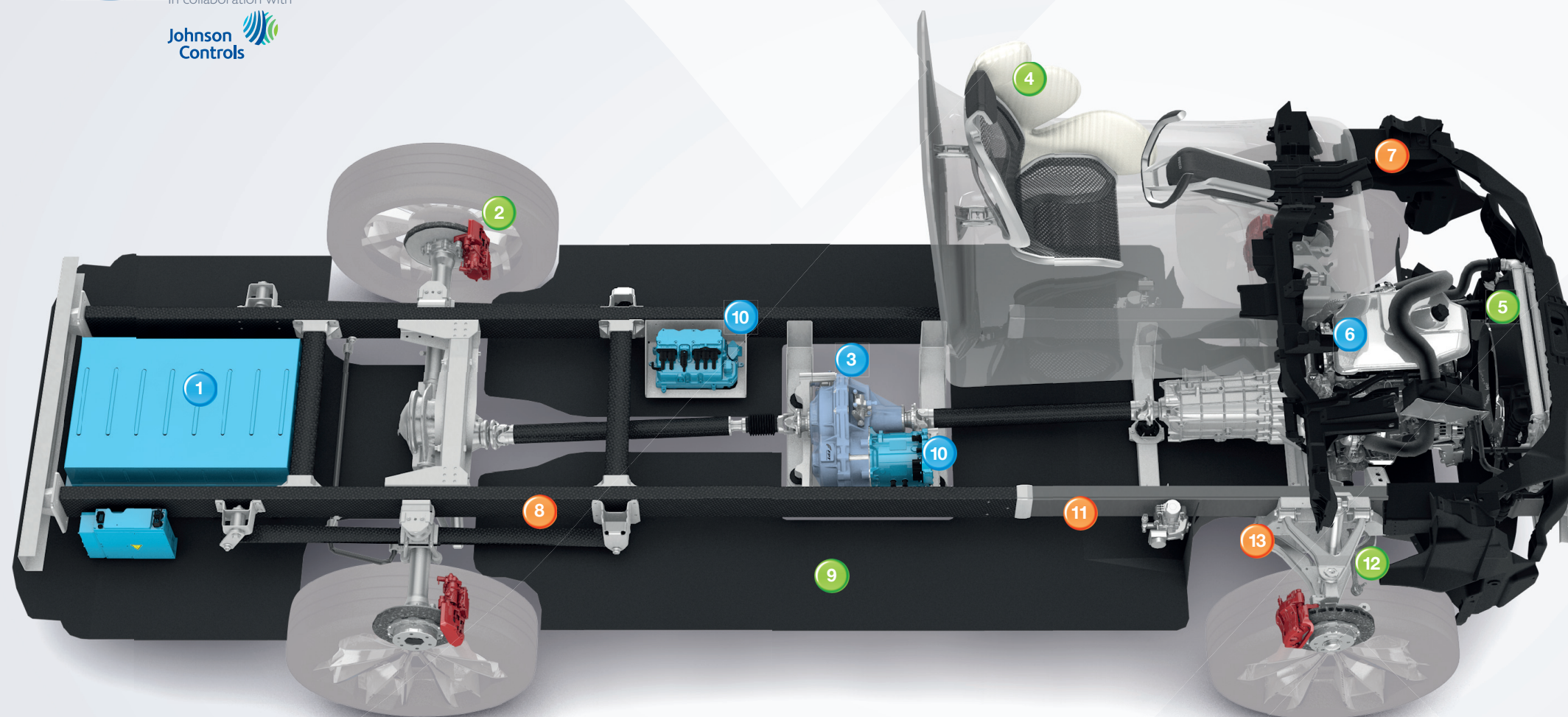
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IVECO DUAL ENERGY

A THREE CLUSTERS ORGANIZATION

In defining this new concept of light commercial vehicle, Iveco's research has focused on three guiding principles characterizing "Dual Energy": clean, light and smart.



Fuel efficiency and lower emissions are major drivers for the productivity of commercial vehicles. Iveco Dual Energy configuration proposes technological solutions capable of managing a wide range of missions, with high flexibility in vehicle use and without compromising performance. Thanks to a balanced use of electric and hybrid traction, the environmental impact is reduced.



Vehicle performance is the result of the combination of single systems, and possible synergies among different systems are fundamental to design and achieve efficient solutions. The Iveco Dual Energy concept permits, for example, a perfect integration between the steering and the electric brakes on the one hand, and the safety systems on the other.



Optimal load capacity and efficiency are key factors in the performance of a commercial vehicle. To reduce weight whilst also improving vehicle dynamics, it is fundamental to use increasingly lighter materials and integrate more functions in one component. Iveco Dual Energy meets these requirements thanks to the use of materials presenting high mechanic performances and limited weight. Furthermore, the design limits the number of components and integrates different functions.

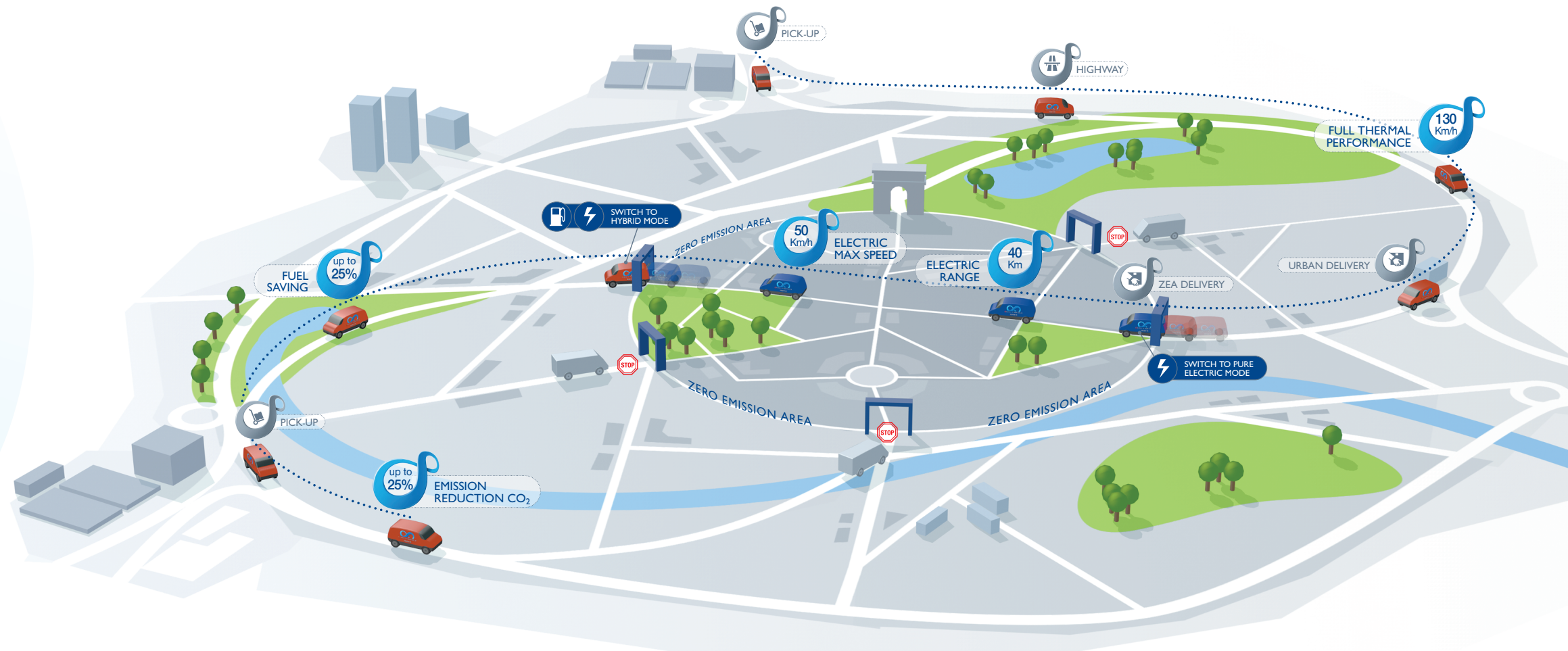
FROM HIGHWAY TO DOWNTOWN

A MISSION WITH IVECO DUAL ENERGY

Vehicles have different missions every day; itineraries may be urban or extra-urban, with straight or more winding roads, and loads may be different depending on what vehicles carry. The Iveco Dual Energy configuration, enabling immediate traction switching, depending on the type of itinerary and its conditions, is an important innovation towards an increasingly environmentally friendly mobility. Flexibility is its main characteristic.

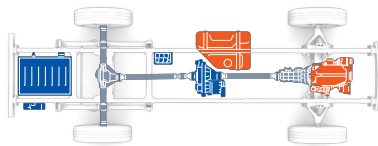
The Iveco Dual Energy technology operates in few steps: fuel chemical energy is converted into mechanic energy for motion, whereas kinetic energy, which would be dispersed during braking or vehicle deceleration, is recovered and converted into electric energy to be stored in the battery. If necessary, this energy becomes available for electric traction.

The hybrid system is the most appropriate for energy efficiency in extra-urban roads. Compared to a Diesel engine, this system ensures a reduction in fuel consumption and in emission of CO₂ up to 25%. The electric system is indicated for urban, low speed or traffic areas, with a maximum speed of 50 km/h. Then, these two traction systems make one vehicle suitable for “last mile” management in zero emission areas, whilst ensuring the best performances for extra-urban activities.

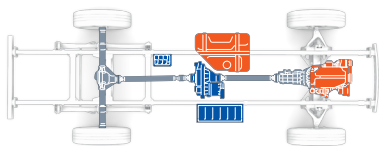


FLEXIBILITY FOR INNOVATION DELIVERY TO PRODUCT
IVECO DUAL ENERGY RECONFIGURABILITY

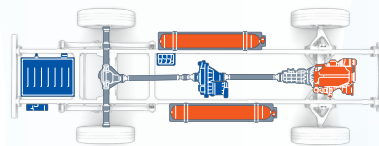
The Iveco Dual Energy chassis provides a natural coupling to answer the needs of urban mobility evolution. The Iveco Dual Energy architecture is highly flexible. On the same chassis basis it is possible to manage different motion architecture approaches and switch equipment for different missions.



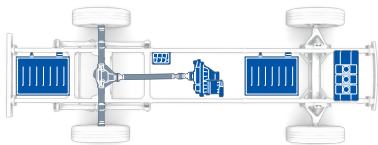
DUAL ENERGY HYBRID
AND ELECTRIC TRACTION



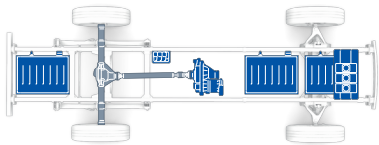
MILD HYBRID



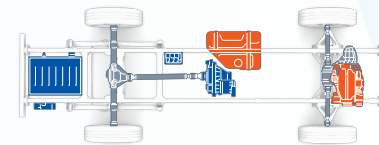
DUAL ENERGY
with NATURAL GAS ENGINE



ELECTRIC TRACTION

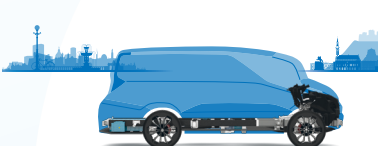


ELECTRIC TRACTION
EXTENDED RANGE



TRANSVERSAL ENGINE with
REAR ELECTRIC DRIVE FOR
e-4WD ON DEMAND

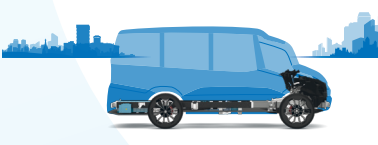
The chassis can host a range of possible “Dual Energy” traction solutions and represents an Iveco patented approach.



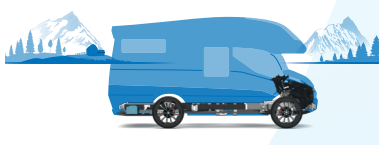
VAN
In a urban environment



CHASSIS CAB
Across the construction sites



SCHOOLBUS
For daily mobility



CAMPER
For leisure time

We can couple different missions with different tractions.

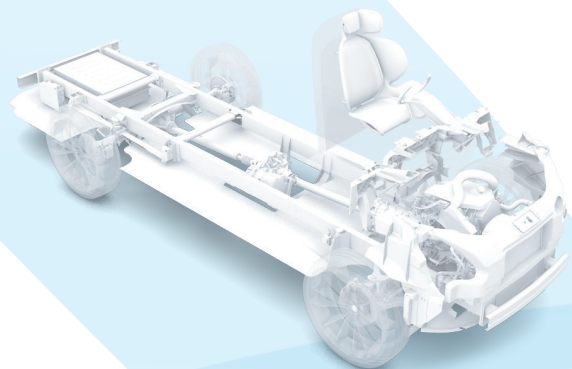
INTRODUCING IVECO DUAL ENERGY TECHNOLOGY ELEMENTS

A COLLABORATIVE INNOVATION PROJECT

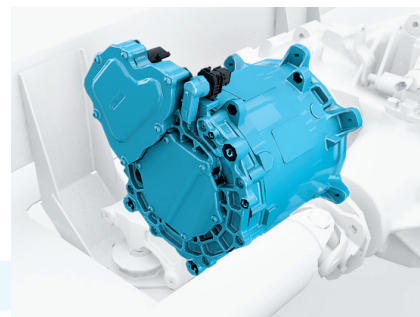
Iveco strives to achieve sustainability by offering products and services for the sustainable mobility of people and goods.

To this goal, Iveco has developed an Open and Collaborative Innovation Model which drives change through the cooperation of leading partners, who commit to sharing ideas, competence, and passion.

The technology concept Iveco Dual Energy is the result of a cooperative laboratory aiming at a possible common future.



An electric motor generator with high torque and power. Small and electronically controlled by an inverter that ensures that the powertrain is reliably supplied to meet the various requirements. It represents a flexible platform fully integrated with the vehicle architecture.



Developed in collaboration with



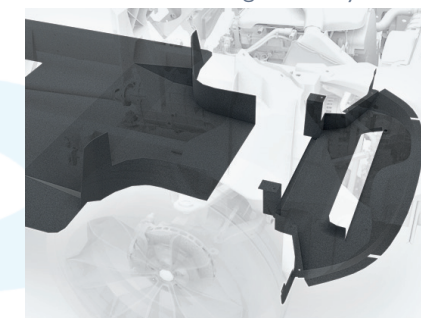
A ultra-lightweight, full brake-by-wire, electrically operated electrohydraulic system. All wheels are equipped with ultra-lightweight carbon-ceramic discs. It enables the adoption of full regenerative braking and it interfaces with ADAS systems for the overall enhancement of safety performance.



Developed in collaboration with



The use of unconventional surfaces for heat rejection enables a synergy between aerodynamic and cooling performance. The overall advantage results from a reduced vehicle front opening and the consequent enhancement of drag efficiency.



Developed in collaboration with





Introduces the protection shield concept already known in sports contexts in an automotive application. Ergonomics, mechanics and electronics are combined to realize complex shapes and high inflating pressure in order to ensure the requested level of protection when activated.



Developed in collaboration with



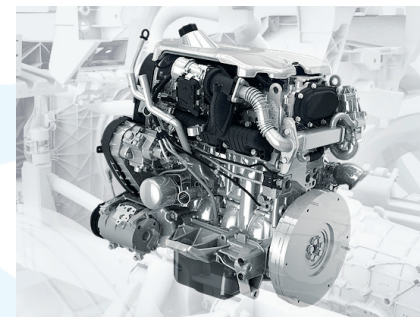
Two cooling loops with two levels of temperature for engine and other parts heat rejection needs. This system enables more flexibility in cooling electric drives and reduces fuel consumption whilst improving engine efficiency with cooler inlet air.



Developed in collaboration with



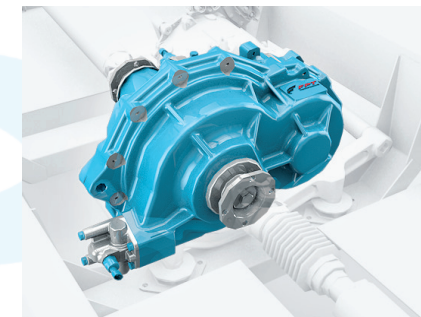
The FIA, a 4-cylinder, 2.3 liter Common Rail engine, delivers optimum efficiency and minimum oil consumption. It features a second generation Common Rail injection system, allowing the achievement of maximum torque and top power with minimum levels of fuel consumption.



Developed in collaboration with



A multi-modal gearbox, designed for minimum power loss in all operating modes. It governs the flows of mechanical and electric power in the vehicle to ensure the best performance and fuel efficiency levels.

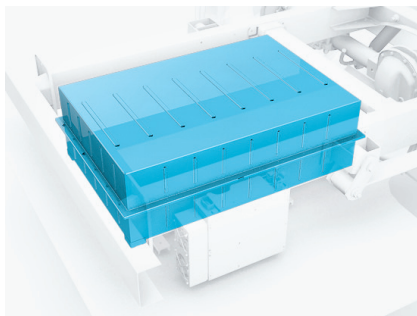


Developed in collaboration with



LI-ION TRACTION BATTERY

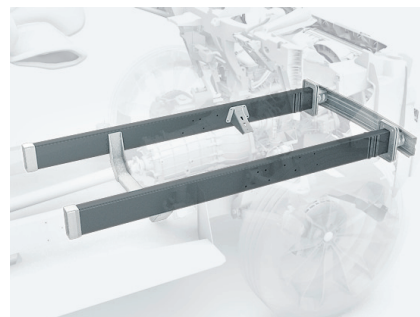
A highly efficient solution to store electric energy in a compact design with high power density. It fits the Iveco Dual Energy perfectly and it ensures the best energy efficiency performance whilst allowing the highest reliability with the compliance of the fast charge capability.



Developed in collaboration with 

AHSS & MULTIFUNCTIONAL CHASSIS

The use of Advanced High Strength Steel with high mechanical properties enables large energy absorption and reduces the volume of steel used, thus reducing weight whilst improving performance and stiffness.



Developed in collaboration with  
A company of CLN GROUP

INTEGRATED PLASTIC MODULES

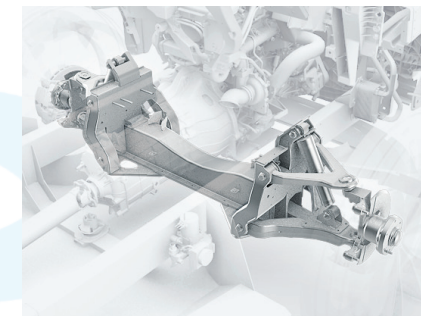
Plastic-made components reinforced with composite material fibers. New archetypes are developed that integrate multiple functions in a single component, thus assuring load resistance to missions and weight reduction. Performance-based design.

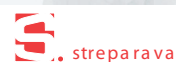


Developed in collaboration with 

MULTI-MATERIAL FRONT SUSPENSION

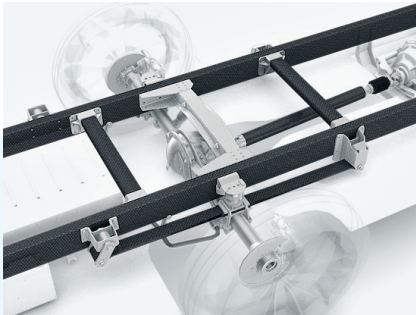
An optimized component that enhances comfort and reduces weight whilst increasing payload thanks to high strength steel and composite materials performance.



Developed in collaboration with 

FIBER COMPOSITE MATERIAL COMPONENTS

The use of technological processes based on the combination of different materials to form a fiber composite results in components that set new standards of light weight and performance for key structural components such as chassis, suspension and propshaft.

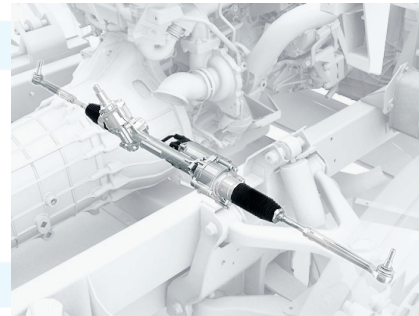


Developed in collaboration with

 **xperion**

ELECTRIC POWERED STEERING

Designed for a smart use of energy. It reduces assist force and electric current draw when the system is not operating. It is key to the steering system electric control for enhanced functionalities such as drive assist support, reverse driving, and automatic parking.



Developed in collaboration with

 **ZF Lenksysteme**

AND ON TOP OF THAT...



IVECO