

# H2.City Gold

the hydrogen fuel cell bus for your city



CAETANO

With your city, with your vision





## WE DREAM ABOUT THE FUTURE

**Our will is to improve city transportation and to ensure a better future for urban populations.**

City networks require cleaner, safer and economically sustainable public passenger transport. We continuously work to combine our growth with urban sustainability and to build the future of cities with our partners. This is our best contribution to a future shaped by green mobility solutions worldwide.

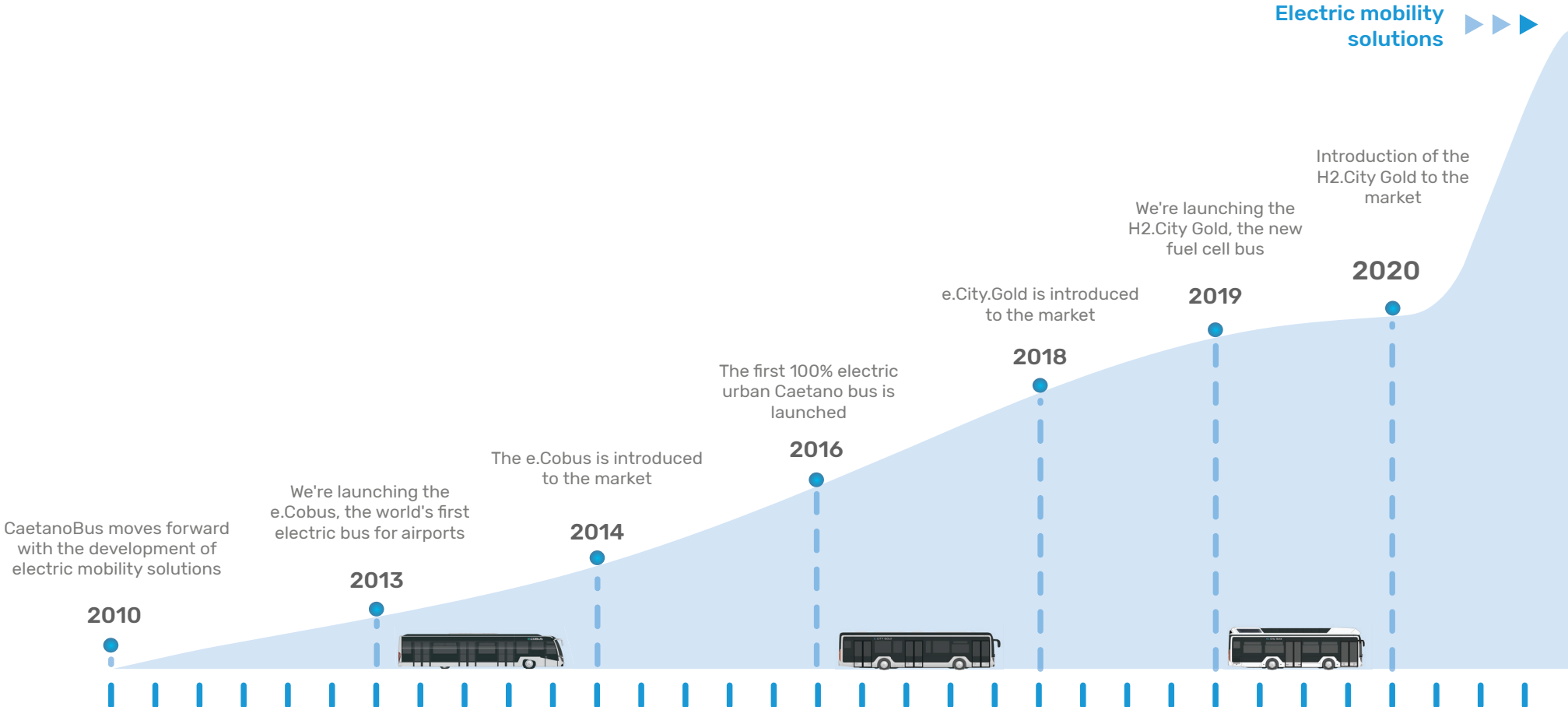


# WITH SUSTAINABLE MOBILITY SOLUTIONS

We began taking the first steps in the development of electric mobility solutions over 40 years ago. Our acquired know-how means we are able to offer a wide range of integrated solutions for greener cities and airports.

With over 70 years in the industry, we combine our experience with our passion everyday to develop innovative and more sustainable solutions.

**We'll continue dreaming and creating a future in which we want to live.**



# H2.CITY GOLD

## Hydrogen in, water out.

The H2.City Gold is the new Caetano electric bus powered by hydrogen. This is an innovative solution that enhances the economic and environmental benefits of hydrogen, moving towards a carbon-free society. We are thereby taking a significant step in the development of zero-emission mobility solutions for public transport.

The H2.City Gold stands out due to its modular design, longer range, capacity, comfort, safety and easy use. Available in LHD and RHD versions with 2 or 3 doors, and certified with a WVTA homologation it easily adapts to any urban environment.

This new bus reinforces our commitment to developing environmentally-friendly transport solutions, complementing the portfolio of Caetano electric buses. The H2.City Gold offers greater flexibility to the operation as there is no longer the need to stop for charging during long journeys. In addition, it has a superior performance as it eliminates the harmful gases, compared with diesel or hybrid buses.

**LONG RANGE - UP TO 400 KM**  
**EASY TO USE**  
**LARGE CAPACITY**



Siemens electric motor



aluminium body



regenerative braking system



Toyota fuel cell









# OUR CHASSIS TECHNOLOGY

The modular design of the Caetano chassis allows the H2.City Gold to have different configurations, optimising the versatility of the specifications.



Low-floor modular design



2 or 3 doors



LHD or RHD



## Fire detection and extinction

A fire detection and extinction system in the roof, motor and rear compartments.



## Anti-Slip Regulation (ASR)

Controls the traction system to stop wheels from slipping when the road is slippery or when the vehicle acceleration is exceeded.



## Electronic stability control (ESC)

Is a computerized technology that improves a vehicle's stability by detecting and reducing loss of traction.



## Hill holder

Helps the start-up on slopes keeping the vehicle stationary for a few seconds, even when the brake pedal is not pressed.

## Anti-lock Braking System (ABS)

Ensures stable braking on all surfaces to prevent the loss of vehicle control.

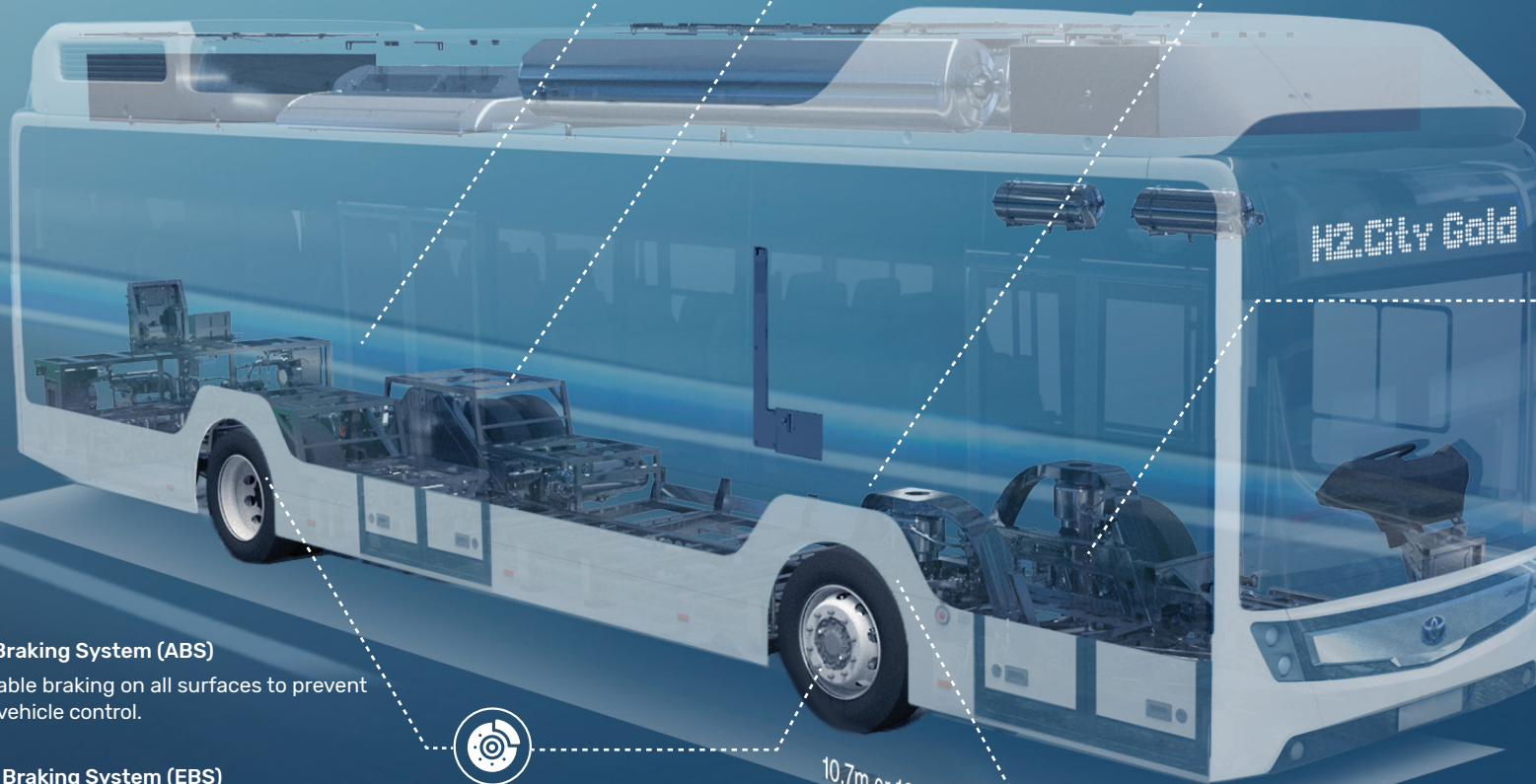
## Electronic Braking System (EBS)

Reads the information of all braking sensors and activates the ABS or the ASR when necessary.



## Electronically Controlled Air Suspension (ECAS)

Ensures greater stability and weight distribution, providing greater safety and saving time and running costs, as it makes the entry and exit of passengers easier.



10.7m or 12m



### Other features:

- Driver Fatigue Warning (DFW)
- Lane Departure Warning (LDW)
- Blind spot sensor
- Collision Warning (FXW and PCW)
- Tyre Pressure Monitoring System (TPMS)
- Electronic Stability Control (ESC/ ESP)
- Headway Monitoring Warning (HMW)
- Speed Limit Information function (SLI)
- Reversing alarm (white sound)
- Intelligent Speed Assistance (ISA)
- Sound pedal signal
- Foot pedal camera
- Pedal usage indicator
- Camera monitoring systems to replace night vision mirrors (CMS)
- Breathalyser with vehicle immobiliser
- CCTV
- Parking sensor



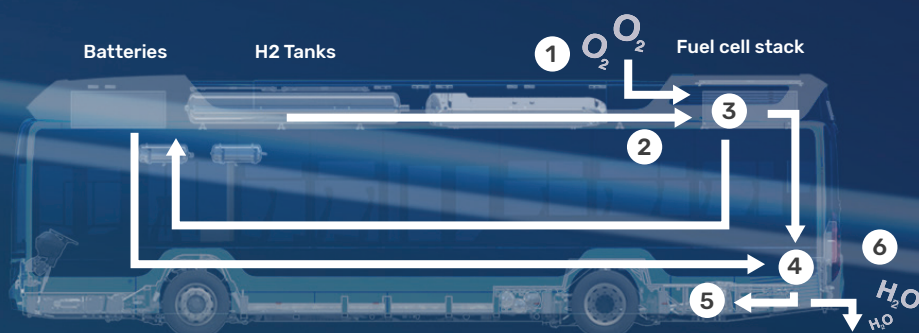
### Always connected

Efficient operation based on data that supports correct decisions for proper planning. The H2.City Gold has a system that sends detailed information in real time to a dedicated platform. It is therefore possible to receive planned diversion alerts, get vehicle performance statistics and range estimates, see energy consumption details and much more. Thus, a complete view of the operation is always available, so that it is as effective as possible.



### Safety above all

We meet different safety requirements so that the driver as well as the passengers can travel safely. In addition to the standard safety systems, it is possible to equip the vehicles with a wide range of options according to each of our customers' requirements. The H2.City Gold is also fitted with hydrogen detection sensors and collision sensors which, in the event of a leak or accident, cut the hydrogen flow out of the tanks.



- 1 Air (oxygen) taken in
- 2 Oxygen and hydrogen supplied to fuel stack
- 3 Electricity and water generated through chemical reaction
- 4 Electricity supplied to motor/auxiliary systems
- 5 Motor is activated and vehicle moves
- 6 Water emitted

<b>60 kW</b> Toyota fuel cell	<b>44 kWh</b> LTO batteries
<b>180 kW</b> Siemens motor	<b>9 minutes*</b> quick refuelling
* estimated	





### Comfort and accessibility for everyone

The H2.City Gold gives its passengers a greater level of comfort and accessibility. The batteries, the hydrogen tanks and the fuel cell stack are located on the roof to optimise the interior space, making it wider. Thus, the H2.City Gold may have different interior layouts, offering a large passenger capacity. It is also possible to choose the location of the ramp in any of the frontal and central doors, reinforcing inclusiveness for all passengers.

### It's a pleasure to drive

The driver's seat has been designed in accordance with the latest ergonomic standards (VDV 234 and ISO 16121) taking into account the driver who will use it every day, maximising comfort and minimising fatigue. The adjustable dashboard and the information showed in the central display can be adapted to different usage needs. The seat allows easy access to pedals, guaranteeing a comfortable, agile and smooth driving experience.





### Easy and intuitive

The H2.City Gold is definitely a user-friendly vehicle, designed to provide a straightforward user experience from the beginning. The similarities to conventional vehicles allows an easy adaptation, so driving the H2.City Gold can be a pleasant experience. Maintenance teams also have their work simplified. Maintenance accesses are strategically located to ensure easy access to key components. As hydrogen is a very light and not visible particle, it is important to offer tools for the maintenance teams. Therefore, by using a color-changing tape it is possible to carry out visual checks for possible leaks, reducing the inspection and maintenance time.

### Environmentally-friendly in every way

We have a commitment to the planet. In fact, the H2.City Gold is made with environmentally-friendly and recyclable materials. We are constantly striving to use new materials and skills that make our buses more sustainable.



### Silence also makes itself heard

The noise in city centres is often deafening. This noise is not only unpleasant, but also entails health problems. Creating quieter urban areas is also a common goal on the horizon for future cities. With its low noise level, the H2.City Gold contributes for peaceful and more pleasant cities.

**Quieter and better cities.**

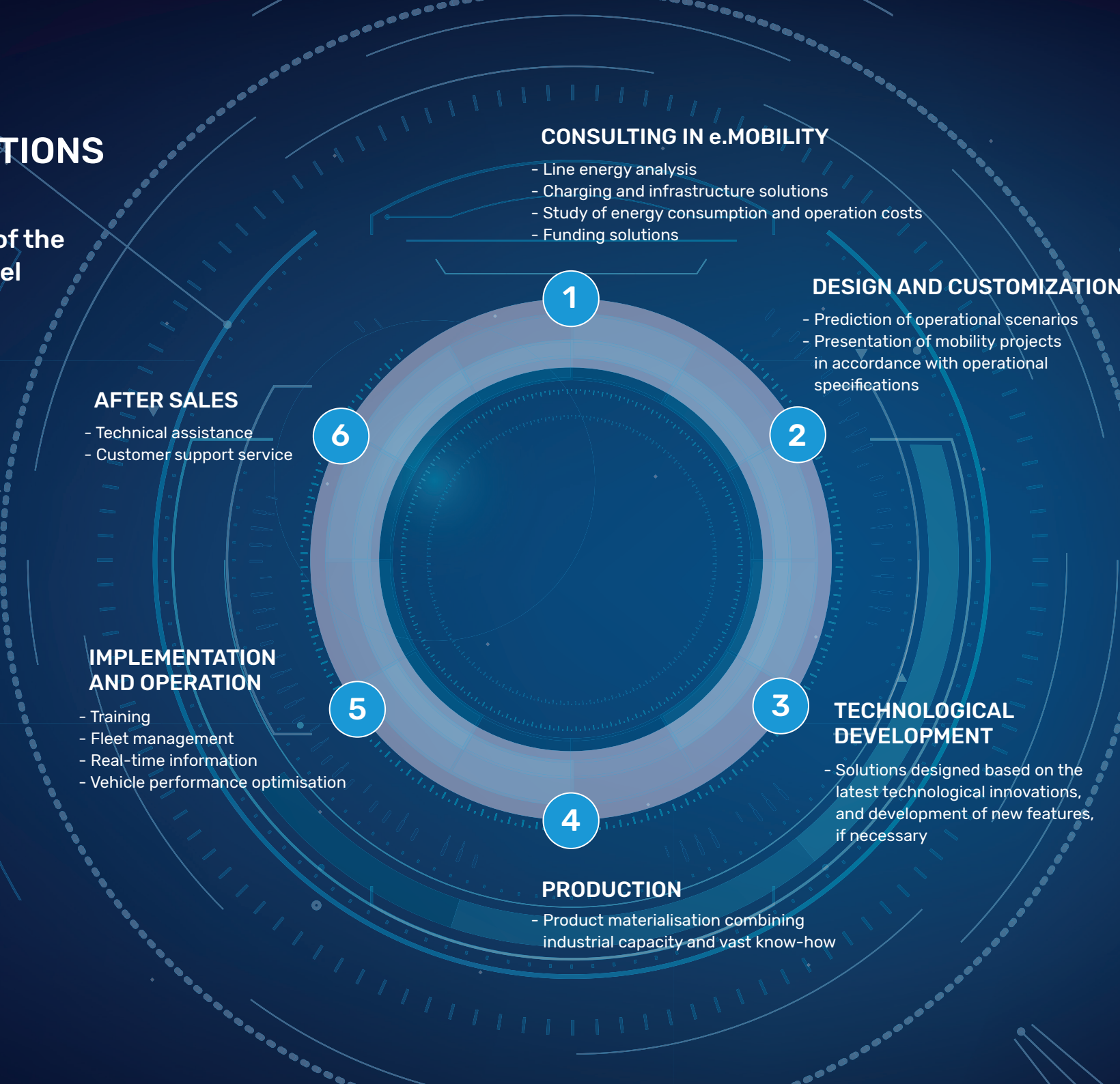




# e.MOBILITY SOLUTIONS

## Partner in the definition of the product and service model

CaetanoBus is an integrated mobility solutions provider. We back every operation from start to finish, designing solutions tailored to each Customer according to their requirements and offering a wide variety of services that create, manage and optimise environmentally-friendly transport solutions.



### 1 CONSULTING IN e.MOBILITY

- Line energy analysis
- Charging and infrastructure solutions
- Study of energy consumption and operation costs
- Funding solutions

### 2 DESIGN AND CUSTOMIZATION

- Prediction of operational scenarios
- Presentation of mobility projects in accordance with operational specifications

### 3 TECHNOLOGICAL DEVELOPMENT

- Solutions designed based on the latest technological innovations, and development of new features, if necessary

### 4 PRODUCTION

- Product materialisation combining industrial capacity and vast know-how

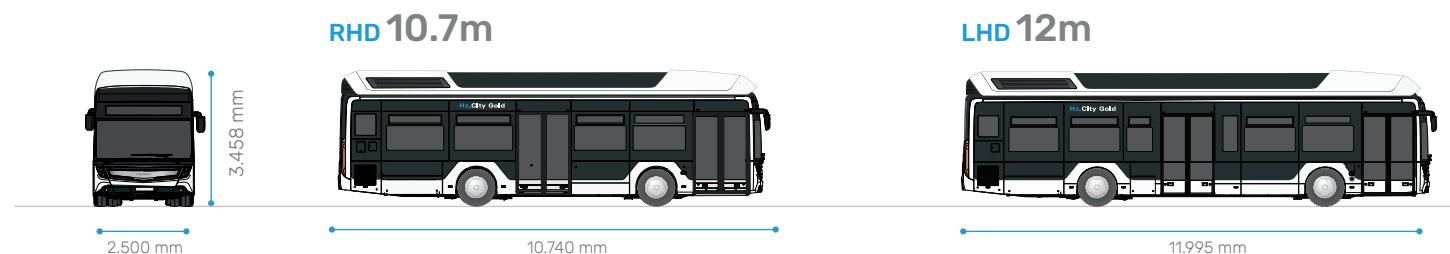
### 5 IMPLEMENTATION AND OPERATION

- Training
- Fleet management
- Real-time information
- Vehicle performance optimisation

### 6 AFTER SALES

- Technical assistance
- Customer support service





<b>Powertrain</b>	Motor - 180 kW - Siemens (permanent-magnet synchronous) Transmission - direct drive transmission (no gearbox)	
<b>Batteries</b>	LTO (lithium titanate oxide)	
<b>Battery charger</b>	CCS Type 2 on the rear OnBoard Charger AC/DC (Optional)	
<b>Fuel Cell System</b>	H2 tanks - type 4 composite tanks: 5 x 312l (máx. 37.5kg; 350 bars) H2 refuel time - < 9 min (In accordance with SAE J2601-2 & SAE J2799 IR) FC Stack Power - 60 kW (Toyota FC Stack) Cold Start at -25° without external energy/plug	
<b>Estimated range</b>	More than 450 km (depending on operating conditions)	
<b>Estimated consumption</b>	From 5.5 kg/100km (depending HVAC system consumption and operation profile)	
<b>Braking System</b>	Electro-pneumatic brake system WABCO EBS 3, incl. ABS and Regenerative braking ESC (Electronic Stability Control)	
<b>Chassis</b>	Low-floor chassis, ladder type, in high strength steel Front and rear towing hook with air plug on the front	
<b>Axles</b>	Front axle - independent suspension, ZF RL 82 EC Rear axle - lowered portal axle, ZF AV 133, for low-floor buses	
<b>Suspension</b>	ECAS 2 - Electronically Controlled Air Suspension with kneeling, automatic level control and manual height adjustment	
<b>Body</b>	Lightweight aluminium body	
<b>Passenger capacity</b>	Up to 64 passengers	Up to 95 passengers (depending on country regulation)
<b>Doors</b>	2 or 3 doors	

\* Manufacturer reserves the right to change product specifications.





CaetanoBus



---

## IMAGINE YOUR CITY WITH US.

At CaetanoBus, we develop innovative and more sustainable solutions to transform cities and improve quality of life within them.

### CONTACT US!

#### CAETANOBUS HEADQUARTERS

Av. Vasco da Gama, 1410  
4430-247 – Vila Nova de Gaia  
PORTUGAL  
GPS: 41°06'52.78"N 8°35'31.62"W

Tel.: +351 22 786 70 00  
Fax: +351 22 786 71 71

E-mail: [caetanobus@caetanobus.pt](mailto:caetanobus@caetanobus.pt) [www.caetanobus.pt](http://www.caetanobus.pt)

Prepared for:

