

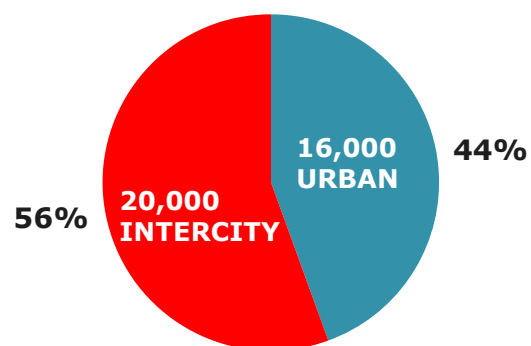


SUSTAINABLE BUS WEBINAR CHALLENGES AND OPPORTUNITIES IN THE INTERCITY BUS MARKET

October 28, 2022

Photo credit: France Hydrogène, Avril 2022

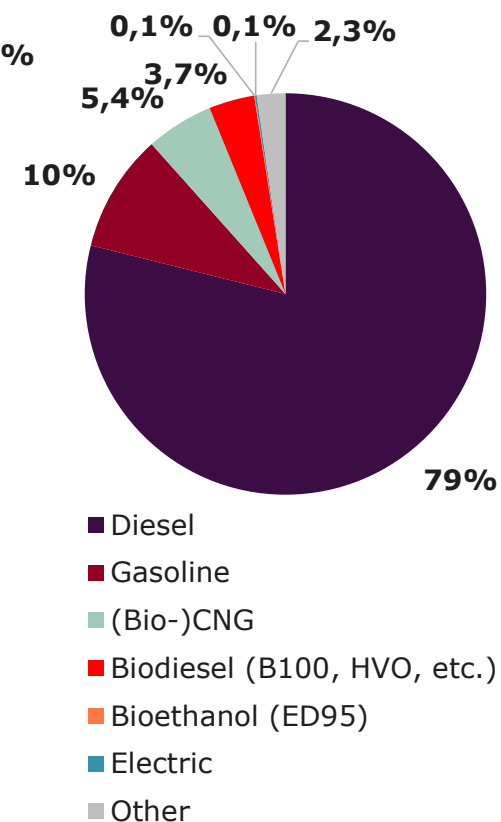
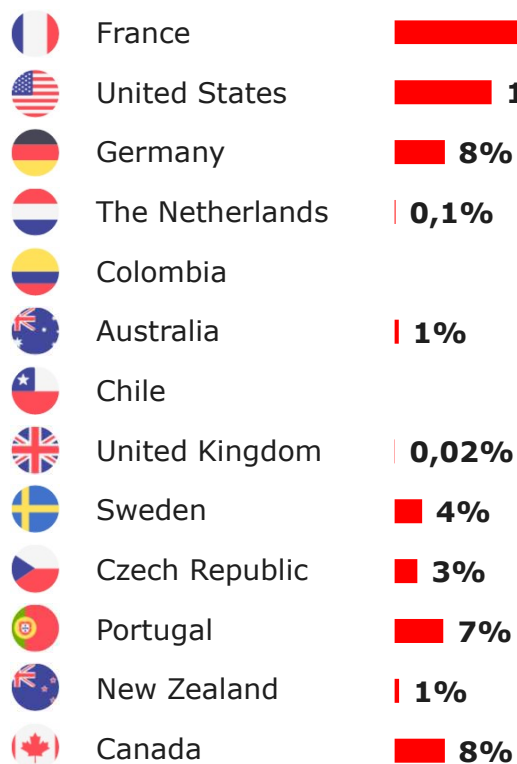
KEY FIGURES



21%

Share of alternative fuels to diesel for intercity operations, including:

- B100
- HVO
- ED95
- (Bio-)CNG
- Electric
- Hydrogen
- Other



EXPERIENCE

4 ALTERNATIVE FUELS TO DIESEL FOR INTERCITY COACHES IN FRANCE

BIODIESEL (B100)

- MAN Lion's Intercity
- Auvergne Rhône-Alpes, France



BIO-CNG

- Scania Interlink
- Nouvelle Aquitaine, France



BATTERY ELECTRIC

- Yutong ICE 12
- Provence-Alpes-Côte d'Azur, France



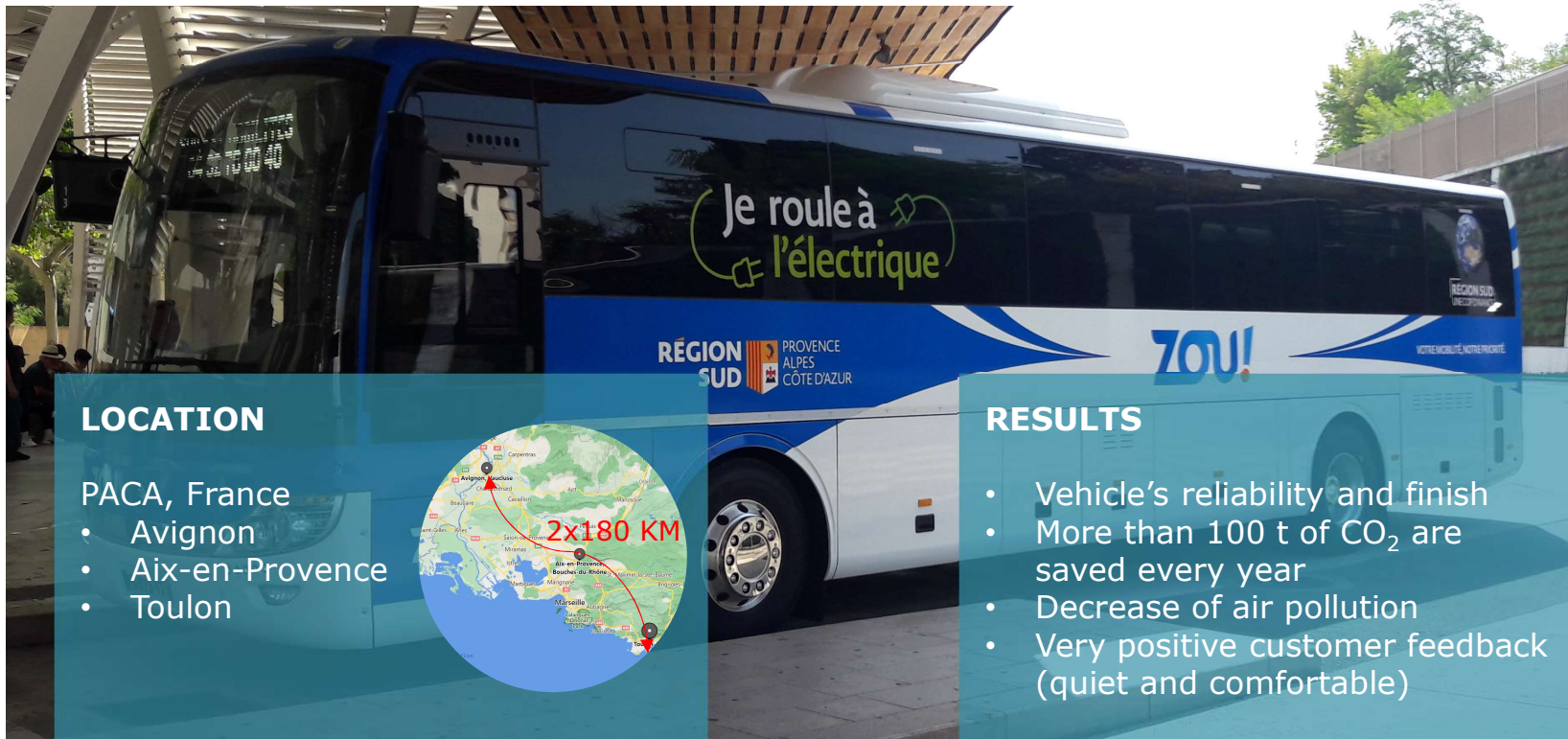
RETROFIT H₂

- Iveco Bus Crossway
- Retrofitted (from Diesel Euro V to Hydrogen fuel cell)
- Normandy, France



CASE STUDIES

LER 19 & 23, EXAMPLES OF FULLY ELECTRIC INTERCITY LINES



LOCATION

- PACA, France
- Avignon
 - Aix-en-Provence
 - Toulon

RESULTS

- Vehicle's reliability and finish
- More than 100 t of CO₂ are saved every year
- Decrease of air pollution
- Very positive customer feedback (quiet and comfortable)

KEY FIGURES

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Yutong ICE 12

2

round trips of 180 km every day (on a single charge)

3

charging locations

4

120 kW-chargers

CASE STUDIES

"NOMAD CAR H₂", 1ST INTERCITY RETROFIT FROM DIESEL TO HYDROGEN



LOCATION

Normandy, France

- Rouen
- Louviers
- Evreux

MILESTONES

Q1 2021

- Completion of the technical, partnership and financial file

Q4 2021 / Q1 2022

- Bus retrofit
- Adaptation of the H₂ station
- Sociological and environmental studies

Q1 2021 / Q2 2022

- Dry run
- Technical approval of the vehicle (CNRV)
- Driver training

2022

- Operation of the retrofitted H₂ bus (Q2)
- Assessment of the sociological study
- Towards a decarbonized H₂ station
- Feedback of the environmental studies
- Analysis of operations

KEY FIGURES

1

Iveco Crossway Diesel Euro V + Hydrogen fuel cell retrofit kit

380 Km
Driven/day

30

hydrogen consumption
in kg per day

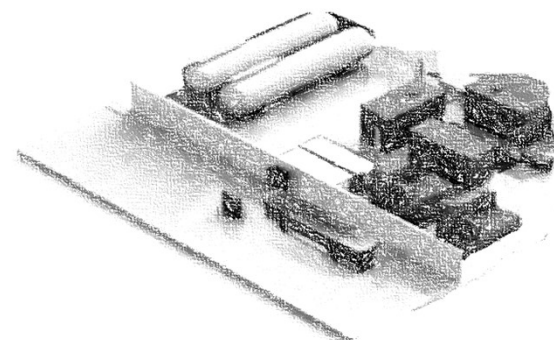
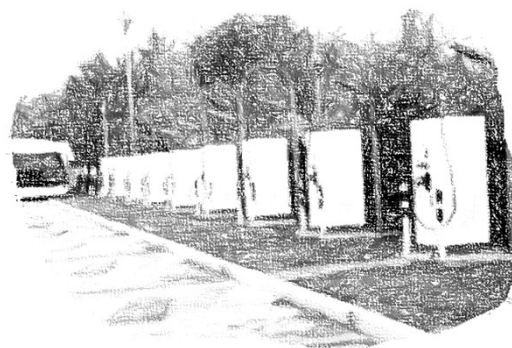
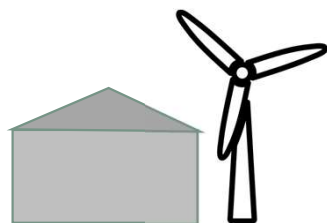
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project partners

MOVING FORWARD

DEPLOYING FOSSIL-FREE INTERCITY FLEET ON A LARGE SCALE

- **Choice locally of a light and efficient Product Energy Infrastructure for biofuel or biogas, electric & H2 with a low carbon footprint from the well to the wheel.**
- **Design properly these new equipments related to these energies with limited space in the Intercity depots .**
- **Obtaining of public subsidies to finance these changes**
- ...etc



QUESTIONS & ANSWERS

