



H2 Transdev

Sustainable Bus, 14 Oktober 2021

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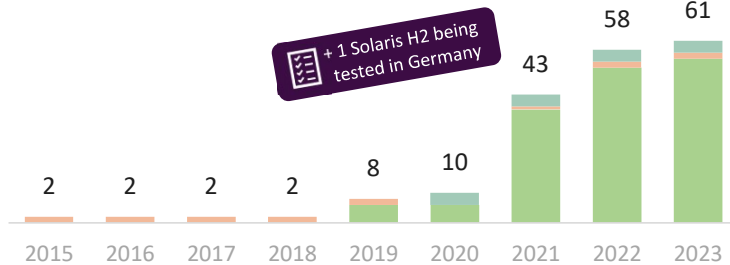


Transdev Group

Hydrogen references

Hydrogen bus & coach fleet evolution

(based on vehicle orders and ongoing deliveries to date)



- By the end of 2021, Transdev Group will be operating 43 H₂ vehicles
- 3 hydrogen technologies are being tested:
 - Hydrogen bus with dominant fuel cell (100% FC)
 - Retrofitted¹ hydrogen bus (H₂ Retrofit)
 - Electric bus equipped with an hydrogen range extender (H₂ REX)
- 2 main bus makers account for most of Transdev Group fleet including a new French player: Solaris and Safran

The fleet in detail

Location	Bus OEM	Technology	Units	Operation
Lens	Safran	H2 REX	6	Nov. 2019
Toulouse	Safran	H2 REX	5	Q4 2021
Auxerre	Safran	H2 REX	5	Sep./Oct. 2021
Normandy	IVECO BUS	H ₂ Retrofit	1	2022
Rouen	YANVEOL	100% FC	14	Sep. 2022
Fos-sur-Mer	?	100% FC	3	2023
Eindhoven	VBL APTS	H ₂ Retrofit	2	2015-2019
HWGO	VBL SOLARIS	H ₂ REX & 100% FC	24	2020 2021
Sandviken	SOLARIS	100% FC	2	Autumn 2021
Auckland	GBV	H ₂ Retrofit	1	Mar. 2021

« NOMAD CAR HYDROGÈNE »

PROJECT GENESIS: THE H₂ COACH DOES NOT EXIST

Decree from March 13, 2020 on the conditions for converting vehicles with internal combustion engines (ICE) to battery or fuel cell electric engines for Euro 5 vehicles over 5 years old.

Retrofit, what is it? Here, the diesel engine of an IVECO Crossway coach is replaced by a hydrogen electric motor (via a fuel cell)



- (1) H₂ tank
- (2) Fuel cell
- (3) Batteries
- (4) Electric motor
- (5) Transmission

Key data

30 Kg H₂/day
Coach consumption

380 Km
Driven / day

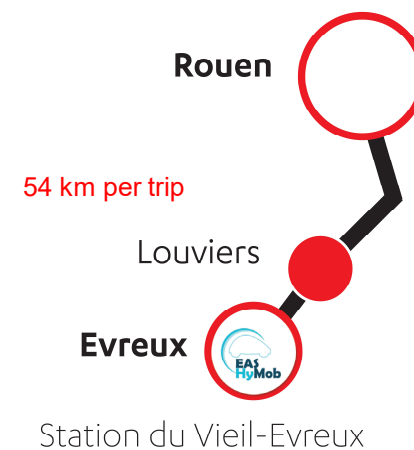
365 days / year

THE COACH: CROSSWAY IVECO

Transdev Fr operates some **1750 vehicles** in Normandy in particular the most common: 580 Crossway and 200 Euro 5.

Objective: **industrialize the retrofit and generate economies**

THE IDEAL LINE FOR THE EXPERIMENT:



"NOMAD CAR HYDROGÈNE"

THE EXPERIMENT

The partners associated with the project:
Scientific, sociological, technical, trainers,
security, legal, financial, energy...

A UNIQUE GOVERNANCE

6 Thematic committees

1 Steering committee



Shared data



automotive
engineering



Votre partenaire pour un transport durable



Calendar

Q1-2021

- **Completion** of the technical, partnership and financial file

Q2/Q3-2021

- **Bus retrofit:** technical and administrative
- **Adaptation** of the Eas-Hymob station in Old Evreux
- **Sociological** study
- **Environmental** studies

Q4-2021

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

2022

- **Operation** of the retrofitted H₂ bus from Q2 onwards
- **Assessment** of the sociological study (open source data)
- Towards a **decarbonized H₂** for the refueling station
- **Feedback** of the environmental studies
- **Analysis** of the H₂ bus operation





THANK YOU

