

***WP.29***

**Retrofleet feedback**

# Context

- From 2016, small companies started to have a more **industrial approach** about retrofit conversion.
- Between 2016 and the publication of the arrêté in 2020, conversion of registered vehicles had to be approved, to **check safety issues and to permit administrative update** (such as the registration certificate).
  - Retrofit conversion was possible with an isolated type-approval (case by case), but there **was no special procedure for large series modifications**, which was a new administrative process.
- Therefore, France decided to put in place a **dedicated procedure to permit series type-approval**.
- **Retrofleet is the first to obtain approval for converting thermal coaches in electric ones**

# Content of the regulation

- Allows national series type-approval of EV conversion of registered ICE vehicles
- Scope: M, N and L category, already registered in France, and SPVs (as motorcaravans, wheelchair accessible vehicles, hearses, ...), on used vehicles registered over 5 years ago
- Only for full EV conversion, no hybrid add on system with remaining ICE engine, no H2 ICE
- Definition of EV conversion manufacturer and installer (to be designated and authorized by the manufacturer)
- Same administrative obligations as manufacturers
- No agreement from OEM requested
- Valid on the French territory

# Technical requirements

Retrofitted vehicles must be compliant with the **same regulations as OEM** :

- Masses and dimensions (UE 1230-2012)
- Specific requirements for the electric power train (UNECE R100.02)
- Electro-magnetic compatibility (UNECE R10.05)
- Braking (UNECE R13)
- Steering equipment (UNECE (R79)
- Motor net power (UNECE R85)
- Audibility (AVAS) & noise emissions (UNECE R51 & R138)
- Odometer (UNECE R39)
- Speed limitation device (UNECE R89)
- Indicators (UNECE R121)
- Heating system (UNECE R122)

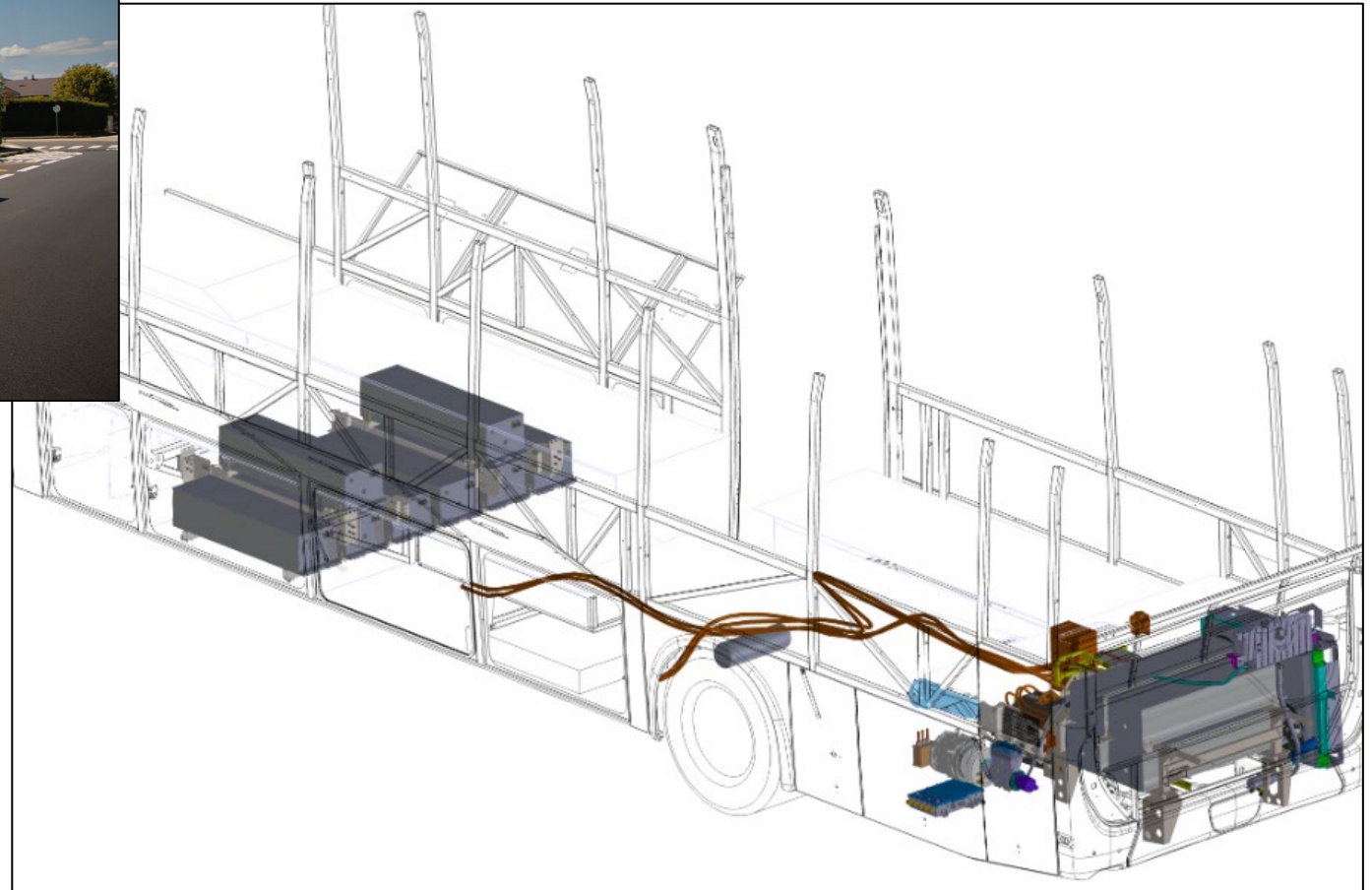
# Technical requirements



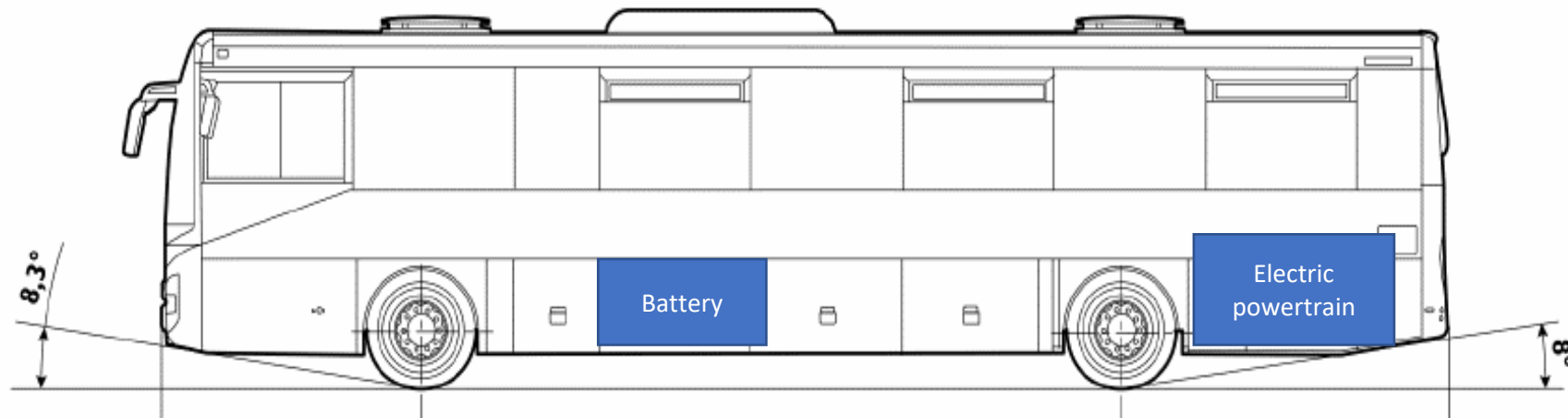
Specific requirements for electric conversion for M3 category :

- Dimensions : no change allowed
- Technically permissible maximum laden mass : no change allowed
- Mass in running order :
  - Total : +/- 20% vs thermal vehicle
  - Front / rear axle distribution : +/- 10% vs thermal vehicle
- Maximum 30 minutes power : 60% ⇔ 100% vs thermal engine

# Retrofleet feedback – Crossway case

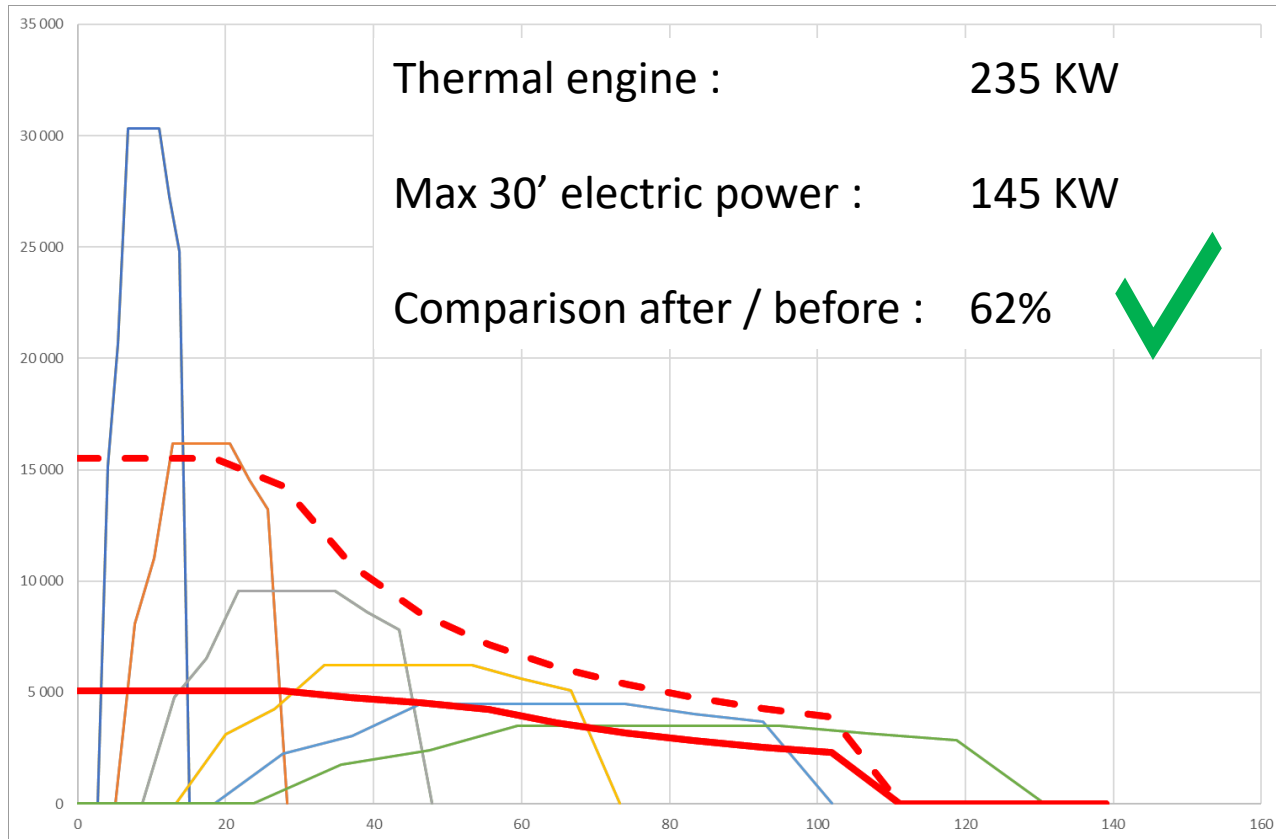


# Mass in running order – Crossway case



	front	rear	Total
Thermal engine	4,2 t 35%	7,7 t 65%	11,9 t
After retrofit	4,7 t 38%	7,6 t 62%	12,3 t
Comparison after / before	+3 % ✓	-3% ✓	+3% ✓

# Electric motor – Crossway case



MINISTERIO DE ECONOMÍA, INDUSTRIA Y COMPETITIVIDAD

DIRECCIÓN GENERAL DE INDUSTRIA Y DE LA PEQUEÑA Y MEDIANA EMPRESA  
SUBDIRECCIÓN GENERAL DE CALIDAD Y SEGURIDAD INDUSTRIAL

E9-85R-00.1407

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Comunicación relativa a <sup>(1)</sup> / *Communication concerning the <sup>(1)</sup>*:

- concesión de homologación / *granted of type-approval*
- extensión de homologación / *extension of type-approval*
- denegación de homologación / *refusal of type-approval*
- retirada de homologación / *withdrawal of type-approval*
- cese definitivo de la producción / *production definitely discontinued*

de un grupo motopropulsor según el Reglamento nº 85 / *of a drive train pursuant to Regulation No. 85.*

Nº de homologación / *Approval No.* : E9-85R-00.1407  
 Nº de extensión / *Extension No.* : ----

1. Marca de fábrica o nombre comercial del motor / *Trade name or mark of drive train:*  
Prestolite TM4 E-Propulsion Systems
2. Tipo del grupo motopropulsor / *Drive train type:* TZ368XSPE300WH
3. Nombre y dirección del fabricante / *Manufacturer's name and address:*  
Prestolite E-Propulsion Systems Beijing Limited  
No 3, Xiaopu South Street, Tongzhou District, Beijing, China.

S.G. DE CALIDAD Y SEGURIDAD INDUSTRIAL (MINETUR). A fecha: 14/11/2016 17:38:18  
 accesible desde [www.minetur.gob.es/aces](http://www.minetur.gob.es/aces), con Código de Consulta y Verificación: 3885\*42-5266683\*QX2753PPJ1



# UNECE Regulations – Crossway case

item	Description	Regulations impacted	Report owner	Crossway Tector €6 by Retrofleet
1A	Noise emissions	UNECE R51	UTAC Approval report	PV UTAC n° 23-01850
1A	AVAS	UNECE R138	UTAC Approval report	PV UTAC n° 23-01581
9A	braking	UNECE R13	UTAC Approval report	PV UTAC n° 23-01582
10A	EMC	UNECE R10.05	UTAC Approval report	PV UTAC n° 23-01587
17B	Speed indicator	UNECE R39	UTAC Approval report	PV UTAC n°23-01583
33A	Indicators	UNECE R121	Retrofleet report	n° RC 33A CRW MD v1
34A	defrost/demist	N/A	Retrofleet declaration	n° DC 34A CRW MD
36A	Heating system	UNECE R122	Retrofleet report	n° RC 36A CRW MD
40	Motor net power	UNECE R85	European communication	E9-85R-00.1407
47A	Speed limoitation device	UNECE R89	UTAC Approval report	PV UTAC n° 23-04946
48A	Masses and dimensions	UE 1230-2012	Retrofleet report	RC MD CRW MD v1




**Centre National de Réception des Véhicules**  
 Autonomie de Linas-Montlhéry - Avenue Georges Bonnet - F-91310 MONTLHERY

**PROCÈS VERBAL D'AGREMENT DE PROTOTYPE**  
**D'UN DISPOSITIF DE CONVERSION ELECTRIQUE**

Il résulte des constatations effectuées à la demande du fabricant

**RETROFLEET**  
 355 voie Gallée -  
 73800 STE HELENE DU LAC - France

que la transformation :

Type de véhicule : CBCW300

Famille de véhicule :
 

3CC7J73MOD100	3CC7N73MOD100	3CB7P73MOD200	3CB7L73MOD200
3CC7J74MOD100	3CC7N74MOD100	3CB7P74MOD200	3CB7L74MOD200
3CC7J75MOD100	3CC7N75MOD100	3CB7P75MOD200	3CB7L75MOD200
3CC7J76MOD100	3CC7N76MOD100	3CB7P76MOD200	3CB7L76MOD200
3CC7K73MOD100	3CC7P73MOD100	3CB7H73MOD200	3CB7M73MOD200
3CC7K74MOD100	3CC7P74MOD100	3CB7H74MOD200	3CB7M74MOD200
3CC7K75MOD100	3CC7P75MOD100	3CB7H75MOD200	3CB7M75MOD200
3CC7K76MOD100	3CC7P76MOD100	3CB7H76MOD200	3CB7M76MOD200

Désignation commerciale : CROSSWAY BY RETROFLEET  
 (le cas échéant)

Référence dossier fabricant : Dossier agrément prototype CBCW300 MOD

présentée aux essais requis par l'arrêté ministériel du 13 mars 2020 comme prototype de la transformation de véhicules usagés pour la famille de véhicules définie par le fabricant conformément à l'article 2 de l'arrêté précité, soumis aux dispositions des articles R.311-1 à R.315-5 et R.321-20 du code de la route et des arrêtés ministériels pris en application, dont l'arrêté précité.

Fait à Montlhéry  
 Le 09/09/2024

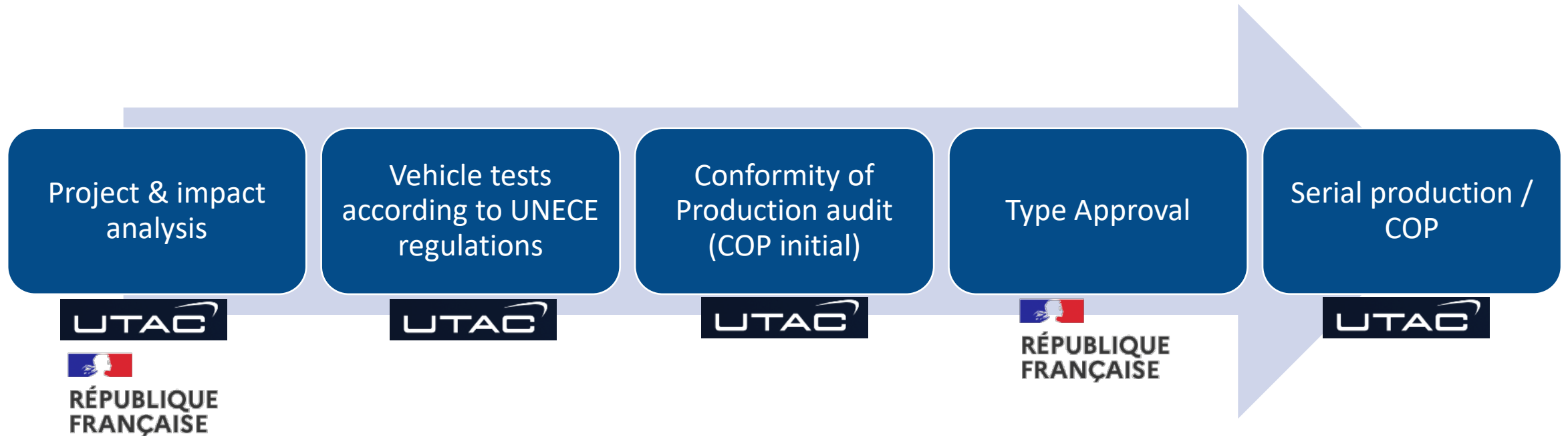
Vu et approuvé sous le numéro PA-0026-23-02  
 A Montlhéry  
 Le 09/09/2024

L'ingénieur Divisionnaire de l'industrie et des Mines  
  
 Gwendolyn QUENTRIC

Pour le Ministre et par délégation,  
 Le Chef du Centre National de Réception des Véhicules  
  
 Jean-Christophe CHASSARD

Note : Recours sous 2 mois auprès du Tribunal Administratif - En cas de contestation relative à la définition des caractéristiques du véhicule, vous pouvez vous adresser à :  
 Centre National de Réception des Véhicules - Autonomie de Linas - Avenue Georges Bonnet - 91310 - MONTLHERY

# Approval process – Retrofleet experience



# French / Italian decrees comparison

item	Description	Regulations impacted	Italian decree (2022)
1A	Noise emissions	UNECE R51	
1A	AVAS	UNECE R138	UNECE R138
9A	braking	UNECE R13	UNECE R13
10A	EMC	UNECE R10.05	<b>UNECE R10 up2date</b>
17B	Speed indicator	UNECE R39	UNECE R39
33A	Indicators	UNECE R121	UNECE R121
34A	defrost/demist	N/A	N/A
36A	Heating system	UNECE R122	UNECE R122
40	Motor net power	UNECE R85	
	Motor power during 30	range 60% <=> 100%	<b>range 65% &lt;=&gt; 100%</b>
47A	Speed limoitation device	UNECE R89	UNECE R89
48A	Masses and dimensions	UE 1230-2012	UE 1230-2012
	Dimensions	no change	no change
	Max laden mass	no change	
	Net weight	+/- 20% vs thermal	
	Front / rear distribution	+/- 10% vs thermal	
69	Sécurité électrique	UNECE R100.02	<b>UNECE R100 up2date</b>
		UNECE R100.02	
	General	+ 5 years	s/o
	Steering	UNECE R79	UNECE R79
	burning behavior		<b>UNECE R118</b>
	general construction		<b>UNECE R107</b>
	lightings		<b>UNECE R48</b>
	Approval of an approval	not defined	authorized after technical & safety analysis