

# Fleet managers' attitude and experience with EFVs



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## Issue

To understand fleet managers' attitudes and experiences towards the electrification of urban logistics fleets.

## Solution

Experience survey carried out with fleet managers before and after the deployment of electric freight vehicles (EFVs) for insights on their experiences and shift of attitudes.

## Results & benefits

The respondents are very satisfied with the overall experience of running EFVs and the low maintenance requirement was welcome, although some are concerned that the range of EFV is a limiting factor resulting in little operational flexibility.

## Context

A reliable and low-maintenance fleet would greatly reduce the workload of fleet and depot managers, and increase the likelihood of further freight electrification. Their experiences and attitudes are therefore important to understand lessons learnt on the FREVUE project and possibilities for future deployment of electric freight vehicles.

The areas we studied included the experiences and lessons learnt from integrating EFVs with existing fleets, daily maintenance, operation and charging experiences, and key factors to the successful implementation of EFVs from a fleet and depot managers' point of view. In addition, we also try to understand whether infrastructure is a limiting factor for future EFV deployment.

## Method

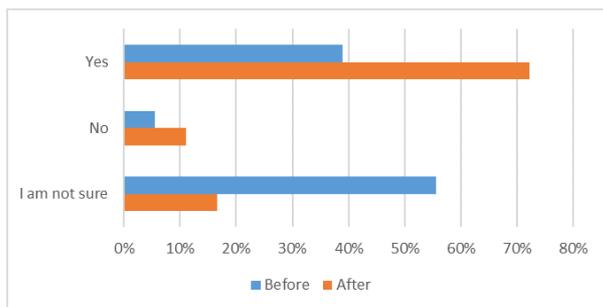
The primary research method was the use of an experience survey before and after the deployment of the electric freight vehicles, mainly based on questionnaires, with follow-up telephone interviews with key stakeholders if necessary.

In total, 19 depot and fleet managers responded to the "before" survey, conducted in mid-2014. The median size of their fleet was 75, but it varied significantly at the local level, ranging from 2 to 170. At the time of the survey, most depots already had EFVs in their fleet. The median size of the EFV fleet was 3 and varied locally from 0 to 35.

For the after survey conducted in late 2016, 18 valid questionnaires were received. The median size of the fleet managed by the respondents was then 85, with variations from 4 to 2700 vehicles. The median size of the EFV fleet was 4, and varied from 1 to 43 locally. 84% of respondents were from depots where the gross vehicle weights of FREVUE vehicles was less than 3.5t. 16% of respondents were from depots with EFV gross weights between 3.5t and 10t.

# Results

## Attitudes towards EFVs



There was a marked increase in the percentage of fleet managers who thought EFVs were a viable alternative to ICE vehicles for their urban last mile delivery task, as shown below. In addition, 100% of the respondents in the after survey said that they were in favour of electrification of their fleets, a 22% increase compared to the before survey.

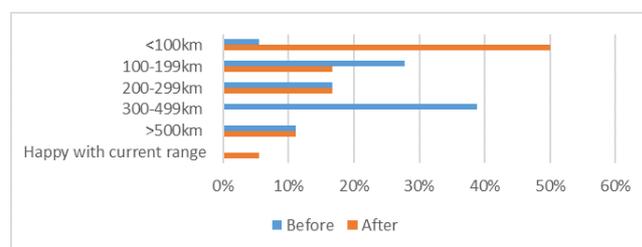
## Operation and maintenance

There were no changes to loading and unloading arrangements for most fleet managers using the EFVs, apart from the need to plug in the vehicles at the end of the delivery round. Some operators, such as Madrid and Milan, used a new cross docking centre to address range limitation, which changed loading arrangements.

56% of respondents optimised delivery routes and schedules for EFVs' operational characteristics. 44% had no operational problems due to range limitation, but the same proportion did, and noted less operational flexibility due to the reduced range. The maintenance of EFVs is much simpler than for ICEs due to the reduced number of moving parts. There is no clutch, no gears to change and most of the vehicles have proven to be very reliable.

## Range of EFVs

As shown in the adjacent graph, managers became more satisfied with their EFVs' range over the project, and their desire for longer range was reduced when they found the vehicles were well-suited to urban logistics.



## Charging and grid constraint

When the fleet managers were asked whether EFV charging time is an issue for their operations, the answer was strongly dependent on their operational model. 66% of the fleet managers who reported that EFV charging time for an empty battery was not a problem for their delivery operations were only charging vehicles at the depot overnight. The other 28% of fleet managers who stated that it was a problem were those whose vehicles had to be charged between delivery roundtrips.

Over the FREVUE demonstration period, it was reported that the electrical grid capacity was a constraint for a number of demonstrators. For example, UPS spent a significant amount of time and money to overcome the grid capacity constraints at their central London depot.

We asked fleet/depot managers whether they agree that electrical grid capacity constraints are a factor at their depot in restricting further EFV deployment and 39% agreed, stating that they had already or are likely to encounter this issue should they want to take on more EFVs. 33% of the respondents thought that they have enough grid capacity at the local level and 11% are not sure about this issue.

## Pros and cons of EFVs

Fleet managers were asked an open question about what they like and dislike most about their EFVs. The responses are categorised in the table below:

What fleet managers liked	No. of responses
Quiet	3
Environmental benefits	3
Easy to drive	3
Low running cost	2
Low maintenance	2
Clean	2
Good sale argument	1
Company image	1

What fleet managers disliked	No. of responses
Battery/Range	11
Loading capacity	4
Pricey	3
Performance of the vehicle	2
Charging time	1
Availability of vehicles	1
Reliability	1

## Barriers for future EFV deployment

Based on the feedback from logistics operators, a total of six factors were summarised as potential barriers for future EFV deployment. Fleet managers were asked to rate them on a scale from 1 to 6 with 6 being the most important and 1 being the least important factor. The results are averaged across all respondents and are shown below:

	Score
Limitations of EFVs, including but not limited to range, charging time, loads, etc.	5.00
Capital expenditure of EFVs	4.43
Costs associated with upgrading depots, charging stations, power networks	3.50
Limitations of infrastructure, for example limited space (hence difficulties to install charging points), lack of grid capacity etc.	3.25
Lack of suitable vehicles and after sale support from vehicle manufacturers	3.23
Uncertainty about the re-sale value	1.83
Other	0.00

## Overall experience of managing EFVs

Overall, more than 85% of respondents rated their EFV experience as good or very good. Looking at the detailed categories, the best rated areas including safety (100% rated good or very good), environmental performance (87% positive rating), running cost (82% positive rating) and maintenance (82% positive rating). Performance of the vehicle, charging experience and integration of EFVs into the existing fleet are rated similarly at 68% good or very good. The worst rated areas including range (50% rated as bad or very bad), available choice of vehicles on the market (50% rated as bad or very bad), purchase cost (44% rated as bad or very bad) and re-sale value (38% rated as bad or very bad). Respondents' opinions on financing options and after-sale support are neutral. There is also significant uncertainty about the resale value of their EFVs, where 40% of the respondents reported that they were unsure.

## Overall experience of managing EFVs

76% reported that there are other conventional vehicles which can be suitably replaced by EFVs at their depots. Fleet managers were then asked if they have any future EFV deployment plan. Based on the FREVUE experience, 53% of fleet managers reported that they would consider EFVs for their next vehicle purchase. 12% of the respondents said they would not consider EFVs and 35% reported that they were likely to consider it.

In addition, 61% of fleet managers reported that the existing infrastructure is not a problem and their depot can easily accommodate more EFVs. However, the remaining 39% gave various reasons, including limited grid capacity and little space for additional charging facilities.

## Lessons learnt & Recommendations

- Before committing to EFVs, logistics companies should consult local grid operators to understand whether the current grid capacity is sufficient for the planned number of EFVs.
- When procuring EFVs, the size of the battery pack should be considered carefully. Some of the operators suggest going for the largest battery capacity because it can be prohibitively expensive to add additional capacity at a later stage. However, there is a trade off between operation flexibility and cost of the vehicle.
- Delivery route and schedule should be optimised specifically for EFVs to consider their operational characteristics.
- For OEM vehicles, the vehicles appear to be very reliable and most of the large manufactures are able to provide quick and effective after-sale support. For retrofitted vehicles, there is a trial and error process which means it may take some time before EFVs start to run smoothly.

## Further information

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