H2020 - FCH-01-5-2020 - Demonstration of FC Coaches for regional passenger transport



Coaches with hydrogen fuel cell powertrains for regional and long-distance passenger transport with energy optimized powertrains and cost optimized design

Questionnaire for Transport operators

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# Introduction

## CoacHyfied and its objectives

The overall purpose of the CoacHyfied project is to present a solution for the challenges of electrification and decarbonization of coaches for public and commercial transport. The project will demonstrate the evolution of the fuel cell (FC) city bus drive systems into the coach sector, considering the special challenges for electrification of coaches regarding range, speed, comfort (air conditioning) and luggage space.

The project will address two coach types, both for the medium range **Regional Coaches** (M3 class II) for regional or intercity transport as well as the **Long-Distance Coaches** (M3 class III) for tourist transport.

## Rationale of this questionnaire

Within the CoacHyfied the overall situation in Europe for the carectaristics of conventional fuelled Regional Coaches (M3 class II) for regional or intercity transport as well as the Long-Distance Coaches (M3 class III) for tourist transport will be aknowledged in order to evaluate the potential of fuel cell (FC) city bus drive system into coach sector deployment. The received questionnaires wont be publiced, thus the data provided by the responde will be used in order to prepeare the Deliverables 5.1.Establishment of estimated technical charectaristics and performance for FC electric regional and long-distance coaches & 5.2. Analysis of existing market.

# Questionnaire

*Please fill the required information bellow each specific question. If information is not applicable, leave the field blank or include n/a.*

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| --- |
| *Information about responder* |
| *Entity* |  |
| *Place of register* |  |
| *Field of operations* |  |

1. What type (and number) of coaches do you operate? *(e.g. (M3 class II), (M3 class III), long-distance, intercity etc.). What is the average age of the fleet?*

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| *e.g. 15 M3 Class II Intercity buses; 20 M3 class III long-distance buses. Avg. Age 6,4 years.* |

1. What is the usual (average) mileage (km) of coach unit per day/per year? (min/max mileage of operator coach units)

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| *e.g. the average mileage of Intercity bus is 300km per day and 98 000km per year with 90% availability.* |

1. If the foreseen daily routes exceed the coach range, what is the available refuelling time between routes?

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| *e.g. the average daily route per intercity bus is 500km and the refuelling is performed after 300km. The refuelling time between the routes is approx. 2 hours.*  |

1. How many hours does it is used to perform transport operations, and no-transport operations (e.g.) waiting in between of routes and or performing the technical routes (routes without passengers).

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| *e.g. Intercity bus operates in transport mode for 7 hours. Afterwards it is drives to refuelling station that is located 5km away from the bus depot.* |

1. Is the bus refuelling taking place at depot or other filling station i.e. commercially available filling station network?

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| *e.g. The coaches are refuelled at nearby filling station that is located 5 km away from depot.*  |

1. If new coach units were obtained what would be the preferred characteristics (length, width and height) does the routes have any specific restrictions that must be considered?

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| *e.g. at least 11 meters length, 2.5m width, 3.3m. height.* |

1. Is there a specific requirement for luggage compartment capacity (m3) for coach bus?

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| *e.g. the luggage compartment must have at least 4m2 capacity.* |

1. What is the current average seat (standard, without optional extras) capacity for coach unit in operation?

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| *e.g. Currently units with 1/47 and 1/55 seats are used.*  |

1. Are there specific technical requirements that should be met in order for operator to choose between available coach buses in the market?

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| *E.g.* *Secondary water retarder (SWR).* |

1. Are there specific equipment requirements that should be met in order for the operator to choose between available coach buses in the market?

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| *E.g., Special use area for wheelchair / baby buggy / bicycle.*  |

1. What is the priority of special use area usage (please identify from 1 (lowest priority) 5 (highest priority)).

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| --- | --- | --- |
|  | Priority (1-5) | Comments |
| Special area for wheelchair |  |  |
| Baby buggy |  |  |
| bicycle |  |  |
| Other (please specify) |  |  |

1. What is the practice of the operator to operate the existing fleet. (i.e. Full-service rent, units obtained on loan, lease, own-resources).

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| *e.g. Currently all coaches are 100% owned by the operator. The fleet was obtained with lease.* |

1. If new units would be obtained by the operator, what financial scheme would be preferred? (e.g. full-service rent, loan, own-resources).

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| *e.g. It is foreseen that full-service rent agreement will be evaluated in order to obtain new units whereas cost per 1km would be specified.*  |

1. Would the operator require the service authorisation for all internal maintenance and repair to use own workshops?

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| *e.g. It is the usual practice, thus not a must.* |

1. Would the operator be interested to retrofit (modernize) the existing fleet (replace the combustion engine with fuel-cell & hydrogen system?

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| *e.g. Retrofitting of existing units could be an option, thus we are not able to operate units that are older than 7 years, therefore the retrofitted units could be used only for a limited time.*  |

The project will address two coach types, both for the medium range **Regional Coaches** (M3 class II) for regional or intercity transport as well as the **Long-Distance Coaches** (M3 class III) for tourist transport. Please fill the table about relevant aspects that FCE-coach should be suitable for:

|  |  |  |
| --- | --- | --- |
| Aspect | Suitable for operator (yes/no) | comments |
| Coach should be able to operate for at least 350km between refuelling |  |  |
| Coach should be equipped with spare wheel |  |  |
| WIFI availability |  |  |
| Power outlets for each row |  |  |
| Light option for each seat |  |  |
| Separate climate (AC) opportunity for each seat |  |  |
| Towing possibility |  |  |
| Max speed 100km/h |  |  |
| 55 to 63 seats |  |  |
| Annual mileage of 80 000km |  |  |
| Would the operator evaluate the potential to obtain the buses on ”full-service rent” agreement. |  |  |