



# FIT-4-AMANDA

Future European Fuel Cell Technology: Fit for Automatic Manufacturing and Assembly

**EUROPEAN COMMISSION**

**Horizon 2020 | FCH-01-1-2016 | Manufacturing technologies for PEMFC stack components and stacks  
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## Publishable Executive Summary

**Fit-4-AMandA** focusses on the industrialization of stack production and delivering affordable fuel cell systems in larger quantities to saturate the emerging market/demand. Heart of our project is to build a worldwide new and unique machine which allows serially produce the centerpiece of fuel cell system: the stack. This will revolutionize the way how stacks are produced in future.

The very first stack out of this production will be used in the UPS demonstrator.

Scope of the WP6 (titled: Integration concept for stack components and stack for transport OEM applications) is to determine what the requirements from the end-user, such as UPS, are and how the system can be implemented into a vehicle to fulfill all demands of a UPS delivery vehicle for daily operation. In this project we consider a medium commercial vehicle for parcel distribution (UPS model size P80) with 7,49t gross vehicle weight (GVW). With the retro-fitment of the FC system the vehicle receives a second life as a non-emission vehicle.

Therefore a basic vehicle specification with requirements had to be defined such as:

- i. Vehicle type itself
- ii. Power demand
- iii. Dimensioning of the fuel cell (Space and power)
- iv. Dimensioning (and type) of the battery system (Space and power)
- v. Dimensioning of the electric motor (Space and power)
- vi. Required hydrogen tank capacity and pressure
- vii. Position of the modules inside the vehicle
- viii. Control & Power electronic strategy

This document describes the above mentioned requirements for a fuel cell vehicle for the logistic company United Parcel Service. Within this project a regular diesel UPS delivery van will be converted from its original diesel drive into a full electric fuel cell vehicle (FCEV). After the Fuel Cell integration the prototype vehicle will be a demonstrator and be used in daily operation by UPS for data collection regarding for example: power train performance, energy consumption. The Fuel cell vehicle will neither produce local CO<sub>2</sub> nor arise nitrogen oxide or particulate emissions.

In comparison with a pure electric battery vehicle the Fuel Cell vehicle will have a greater range which results in a higher operational range. Since the battery pack is smaller it will require none or less charging time from a building which can be as well beneficial for UPS and fleet owners. Especially in view of the mandatory measures required to achieve the climate targets and the current political situation with the threat of diesel bans in European cities, a solution with fuel cells range extended drive trains can be a good alternative to pure battery electric powered vehicles that are range limited.