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## **Development of a new powertrain concept based on the integration of electric generation, energy recovery and storage**

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The present concern in the reduction of CO<sub>2</sub> emissions occasioned by heavy duty trucks is leading to a technological evolution in powertrain electrification as well as to the use of cleaner fuels. Towards this objective, the EU has funded in the frame of the 7<sup>th</sup> framework program the project GASTONE. This is a collaborative project between several private and public companies and institutions: CRF, FTP, Continental, GENTHERM, MAGNA and U. Polit cnica de Valencia targeting the development of a new powertrain concept based on the integration of electric generation, energy recovery and storage with engine system and control strategies. The main features of this beltless engine concept are: The energy recovery from the exhaust gases heat with a cascade approach thanks to the adoption of an advanced thermoelectric generator and a turbo-generator. The integration of a smart kinetic energy recovery system is to substitute the alternator and generate electricity during decelerations. The electrification of the main auxiliaries is by using the produced electric energy. The current average performance in a natural engine is about 38% with this new concept is expected to rise this number by 4%, thanks to the engine improvement by 1% due to the modification of the liquid charge air cooler by 2% from the reduction of the belt drive and gear losses by 1% from the system strategy and management optimization and by 7% from the exhaust heat recovery (thermo-electric generator and turbo-generator).

### **Biography**

Estefania Hervas Blasco is an Engineer from the Politechnical University of Valencia (UPV). She is a PhD student (on optimization of thermal systems consumption) at the Energy Engineering Institute within a team composed by Emilio Navarro Peris and Jos  Miguel Corber n.

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