

# HI-CEPS

Highly integrated combustion electric propulsion system

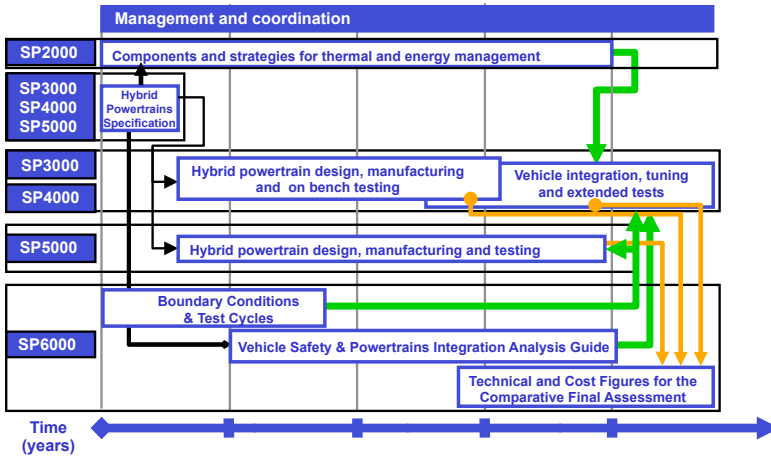


## Motivation and Objectives

Develop 3 different novel series-parallel hybrid e-powertrains adopting standardised common powertrain e-devices, vehicle auxiliaries and dedicated gasoline (SP4000), diesel (SP5000) and NG (SP3000) ICEs with aftertreatment systems for hybrids, adjustable for future fuels.

Combine at vehicle level the environmental friendly issues (fuel consumption, carbon dioxide and noxious emission reduction) with fun to drive characteristics (enhanced performance, driveability & comfort) at acceptable purchasing/operation costs (perceived value).

## Project Plan, Milestones and Deliverables



Fuels and Powertrain

## Technical Approach

- Identification of the right complex hybrid thermal-electric powertrain and auxiliaries architecture for each investigated application (small, mid size and light delivery cars).
- Extended usage of common standardised electric devices for all the different hybrid powertrains.
- Bench and vehicle validation including optimised electric and thermal management strategies.
- Comparative technical and extra costs evaluation considering different ICE typologies (gasoline, diesel and natural gas) including their after-treatment systems.

## Achievements

Main results: investigations of components and strategies for thermal and energy management; HEV powertrain architectures definition and system & devices specs; auxiliaries usage profile and test procedures; HEV powertrain design & prototype realisations, bench test, vehicle integration and in vehicle test; cost analysis tool development; simulation based performance assessment; cost assessment.



Outcome examples coming from the different powertrain SPs

Budget	20 M€	Funding	10 M€
Duration	57 effective months	Start	September 2006
DG	Research / Renewable energies	Contract n°	31373
Coordinator	Vittorio Ravello, CRF	Contact	hiceps@crf.it
Partners	22 partners, among them CRF, Ford, PSA, AVL, Ricardo, FEV, Magna, Eldor, TNO, IFP		
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