

Motivation and Objectives

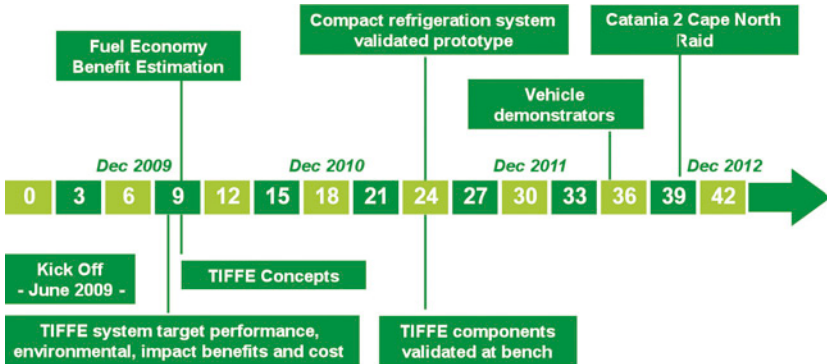
The objective of TIFFE is the reduction of vehicle fuel consumption of about 15% in real use by developing a new Integrated Thermal System which is able to enhance the heat rejection and management in passenger cars and light commercial vehicles (LCV).

The concept is based on the integration of engine cooling, air conditioning, battery cooling (in case of hybrid) and on the development of a new generation of coolant fluid (nanofluids) and heat exchangers.

The technologies will be demonstrated on **an hybrid Light Commercial Vehicles and on a small passenger car with Stop&Start**. They will be fully tested and validated following the standard procedures followed by a road test from Catania (I) toCape North (N).

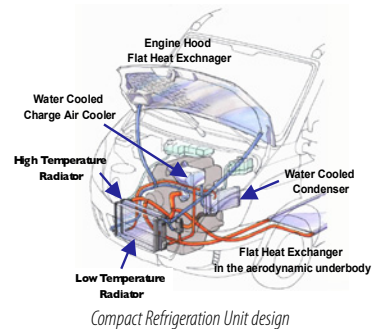
Project Plan, Milestones and Deliverables

The figure summarizes the major project milestones and outcomes.



Technical Approach

- Development of a vehicle heat rejection system.
- Design, develop and realization of a compact refrigeration unit able to act also as heat pump.
- Development of nanofluids to enhance the heat transfer
- Development and realization of planar heat exchangers as body panels to enhance the heat rejection.
- Implementation of the systems, test and validation on a
 - Hybrid Light Commercial Vehicle and a
 - Passenger car with S&S.



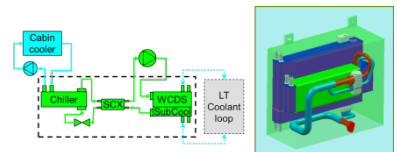
Achievements

The major expected results are:

- A new vehicle thermal system improving the heat rejection and the fuel economy both for LCVs and passenger cars,
- A compact refrigeration unit liquid cooled and integrating condenser, chiller and internal heat exchanger.

The system includes:

- Powertrain cooling (water cooled, charge air cooler, ...),
- Subsystems cooling (battery, generator, electronics...),
- Air conditioning system,
- Heat rejection,
- Energy saving controls.



Budget	3.6 M€	Funding	2 M€
Duration	42 months	Start	June 2009
DG	Research / SST	Contract n°	233826
Coordinator	Carloandrea Malvicino, CRF	Contact	carloandrea.malvicino@crf.it
Partners	CRF, Ford, Mafrow, SINTEF, Braunschweig University, DENSO TS		
Website	www.tiffe.eu		