

COSIVU

Compact & smart drive control unit for FEV

Fraunhofer ENAS, Germany
Micro Materials Center

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Project Details

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Project acronym	COSIVU
Project coordinator	Fraunhofer ENAS (acting)
Challenge, Objective, Call of Interest	GC-ICT-2011.6.8e: Electric Drives and Electric Components
Target outcome	Efficient technology platform integrating sensors, communication, control & high power electronics + motor with optional transmission unit into one ultra-compact and reliable smart drive unit
Funding scheme (IP, STREP, CSA)	STREP
Field of application	FEV power train, smart converters, control & sensor units, novel cooling systems, electric motor, transmission unit, system integration
Technologies involved	New converter module architecture, Packaging of high power and control components into modules for up to 300 °C service temperature, Novel cooling solutions
Envisaged products	Compact drive unit (inverter + motor + transmission) for FEV
Profile of partners sought	EU automotive supplier: sensors, cooling, packaging, electronics & technology, electric motor, transmission unit
Interaction with EPoSS WG / ETPs	Automotive

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Technology addressed

- Electronic & mechanical system integration: sensors, control & power electronics, electric motor, optional: transmission unit
→ ultracompact inexpensive & reliable drive unit

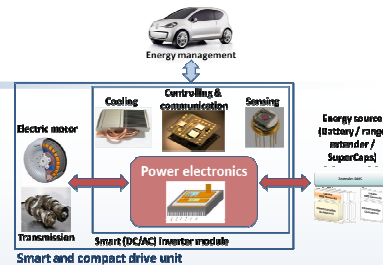
Objectives

- Simultaneous system packaging -> high power electronics with control and sensing electronics (V, I, T), mechanical adaption to electric motor and transmission unit
- Novel heat removal solutions
- Smart control unit (ECU) with communication to central energy management
- Design for manufacturing, for testing, and for reliability by virtual prototyping

Consortium (current state – not finalized yet)

- Leading automotive electronics manufacturer (Germany) – System technology, Application
- Swerea IVF (Sweden) – Cooling system, Material research and technology
- Fraunhofer ENAS (Germany) – Reliability testing, virtual prototyping
- 2 Small / Medium Enterprises (Italy) – Requirements, Validation / Testing

Partners sought (2 ...3 more): EU automotive OEM, automotive suppliers & designers of sensors, power & control electronics, communication, substrates, tools



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Goal of the Project

- Development of leading edge technology for efficient manufacturing of ultra-compact and reliable smart drive unit for FEV
- Technology demonstrator: Smart propulsion unit for FEV
- Target application: Power drive in FEV

Work Packages

- Concept & Requirements - Architecture & System design
- Component and System integration technology (design, test, fabrication)
- Heat removal solutions (applying a novel cooling solution)
- Packaging technology (process development, material & tool optimization)
- Reliability assessment (testing, material characterization, virtual prototyping)

Estimated costs and duration

- Project volume: 5-6 Mio € (funding: 3.0-3.5 Mio €)
- Project period: July 2012 - June 2015 (3 years)

