

PROJECT

## COSIVU

# Compact, Smart and Reliable Drive Unit for Fully Electric Vehicles

**Funding:** European (7th RTD Framework Programme)

**Duration:** Oct 2012 - Sep 2015

**Status:** Complete

**Total project cost:** €5,186,130

**EU contribution:** €3,350,000



**Call for proposal:** FP7-2012-ICT-GC

[CORDIS RCN : 104150](#)

### Objectives:

The project 'COSIVU' aims at new system architectures for drive-train by developing a smart, compact and durable single-wheel drive unit with integrated electric motor, compact transmission, full SiC power electronics (switches and diodes), a novel control and health monitoring module with wireless communication, and an advanced ultra-compact cooling solution.

The advances over the current state of the art can be summarized as follows:

- 20% higher energy efficiency and thus extended driving range due to dramatic reductions in the vehicle weight (30%) and in the losses in the power module (50%-70%)
- Increased performance, flexibility as well as safety and reliability due to close hardware-in-the-loop control based on integrated sensors, novel analysis algorithms coded into the microcontroller within the smart drive allowing in-situ functional and health monitoring and the bi-directional wireless communication between each drive and a central computer
- Reduced cost-of-ownership for the end-user due to prognostic maintenance advise, factor 2 increase in lifetime and uptime of the smart drive unit, and minimized usage of expensive mechanical parts and cabling.

### Methodology:

Within this project, these ambitious goals will primarily be demonstrated for commercial electric vehicles, which are even more demanding with respect to power performance, durability, and availability than other types of vehicles. In addition, the new architecture will be adapted to other vehicle platform such as vans, pick-up and even passenger cars. Specific and concrete examples will be given. Therefore, the feasibility of the novel drive-train architecture will be shown and demonstrated in a quite general way.

### Parent Programmes:

[FP7-ICT - Information and Communication Technologies](#)

**Institute type:** Public institution

**Institute name:** European Commission

**Funding type:** Public (EU)

### Lead Organisation:

**Rise Ivf Ab**

**Address:**

ARGONGATAN 30  
431 53 MOLNDAL  
Sweden

**Organisation Website:**

<http://www.swereaivf.se>

**EU Contribution:** €500,325

**Partner Organisations:****Volvo Bus Corporation****Address:**

Fästningsvägen 1  
40508 Gothenburg  
Sweden

**Organisation Website:**

[http://www.volvo.com/bus/global/en-gb/home\\_new.htm](http://www.volvo.com/bus/global/en-gb/home_new.htm)

**EU Contribution:** €550,557

**Frauenhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.v.****Address:**

Hansastrasse 27C  
80686 MUNCHEN  
Germany

**Organisation Website:**

<http://www.fhg.de>

**EU Contribution:** €714,679

**Elaphe Pogonske Tehnologije Doo****Address:**

Teslova Ulica 30  
1000 Ljubljana  
Slovenia

**EU Contribution:** €406,824

**Volvo Construction Equipment Ab****Address:**

BRUNNSTA  
631 85 ESKILSTUNA  
Sweden

**EU Contribution:** €31,833

**Transic Ab Tsc****Address:**

Isafjordsgatan 22 32 C 6Th Floor  
16440 Kista  
Sweden

**EU Contribution:** €226,473

**Technische Universitaet Chemnitz****Address:**

STRASSE DER NATIONEN 62  
09111 CHEMNITZ

Germany

**Organisation Website:**

<http://www.tu-chemnitz.de>

**EU Contribution:** €239,188

**Hella Fahrzeugkomponenten Gmbh**

**Address:**

Dortmunderstrasse 5  
28199 Bremen  
Germany

**EU Contribution:** €219,455

**Fairchild Semiconductor Gmbh**

**Address:**

EINSTEINRING 22 28  
85609 ASCHHEIM DORNACH  
Germany

**EU Contribution:** €63,511

**Berliner Nanotest Und Design Gmbh**

**Address:**

Volmerstrasse 7 B  
12489 Berlin  
Germany

**Organisation Website:**

<http://www.nanotest.eu>

**EU Contribution:** €183,300

**Sensitec Gmbh**

**Address:**

Georg-Ohm-Strasse 11  
35633 Lahnau  
Germany

**EU Contribution:** €213,855

**Technologies:**

Electric road vehicles  
Single-wheel drive unit with integrated electric motor

**Development phase:** Research/Invention

**STRIA Roadmaps:** Transport  
electrification

**Transport mode:** Road transport

**Transport sectors:** Passenger transport, Freight transport

**Transport policies:** Digitalisation

**Geo-spatial type:** Other