



SAES, electromobility

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2016

Project:

- Measurement and control of the renewable and alternate energy sources.
- Electromobility, electric cars, components, intelligent control .
- Infrastructure for electromobility and implementation in concept of smart cities – intelligent public accumulation charge/discharge units for transpotration, grid balancing and family homes consumption optimalization.

Activities

- AC drives I.-III. generation
 - Implementation of the commecial drives (BLDC FreeAir, TG Drives, Schwarz)
 - Hybridizations units I.-IV. generation for seriál hybridization.
 - Charging systems, discharging systems, public charging systems (AC, DC, quick charging CHAdeMO)
 - BMSs
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- ✓ Prototype realization and implementations
 - ✓ Tests
 - ✓ Electric cars tests
 - ✓ Charging stations development and tests
 - ✓ Knowledges and experiences implementation

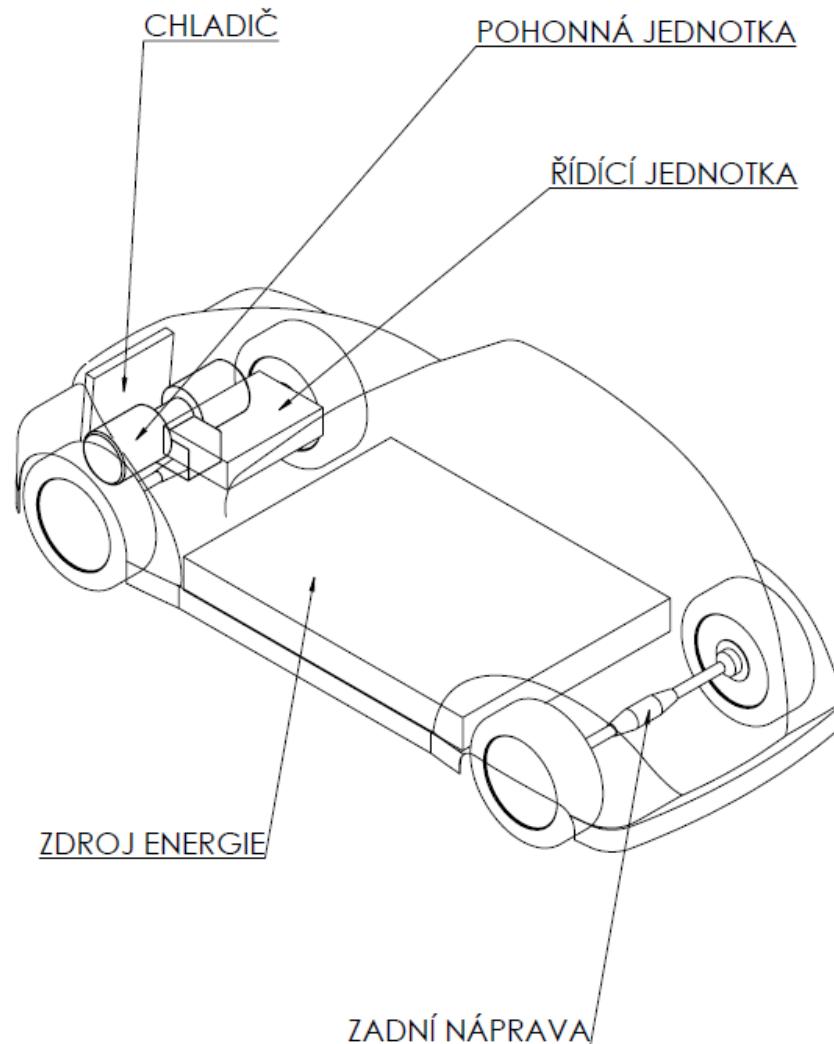


Fig.1. Concept.

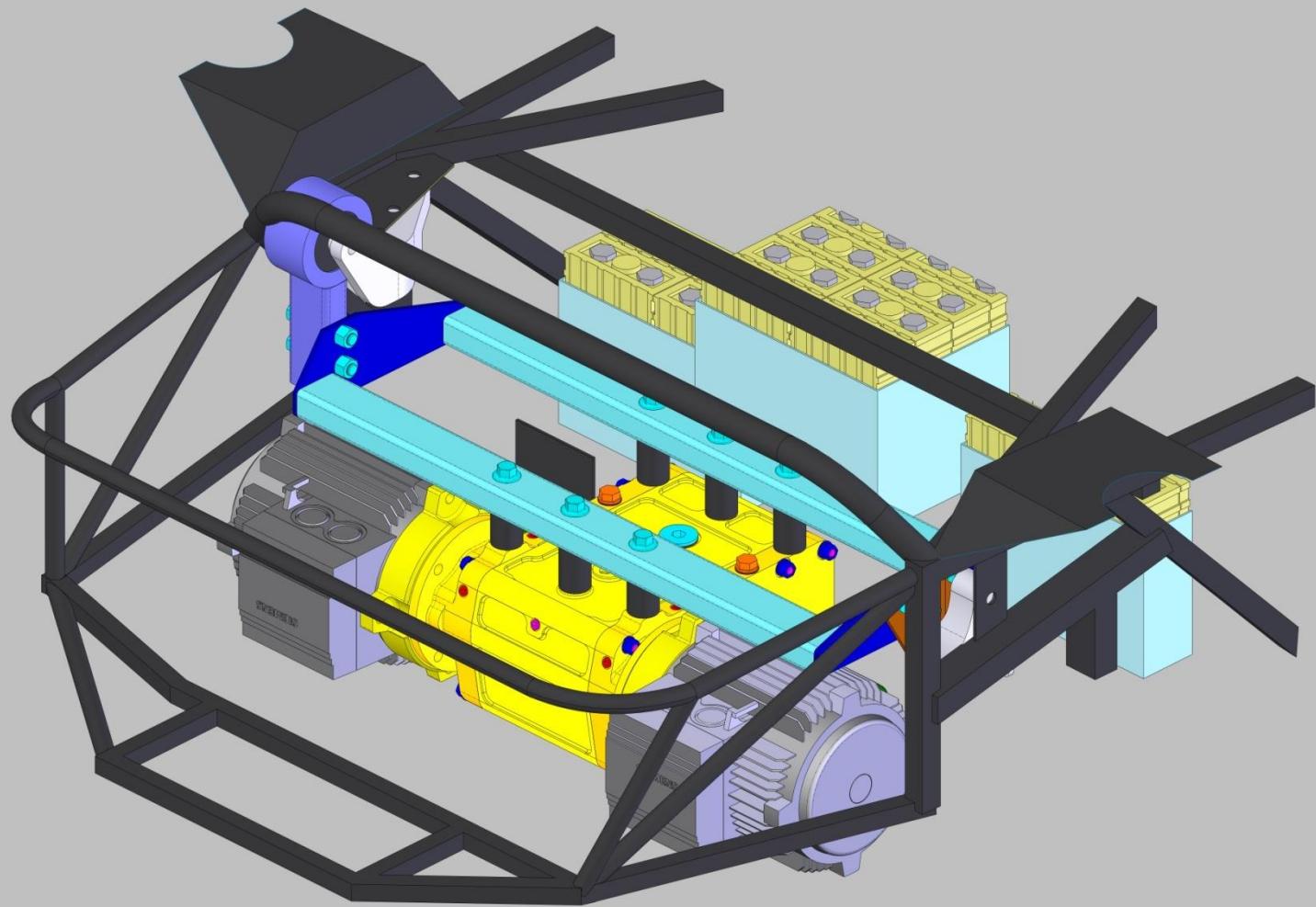


Fig.2. Model of the 1.generation twin drive unit in chassis K0 (2009)

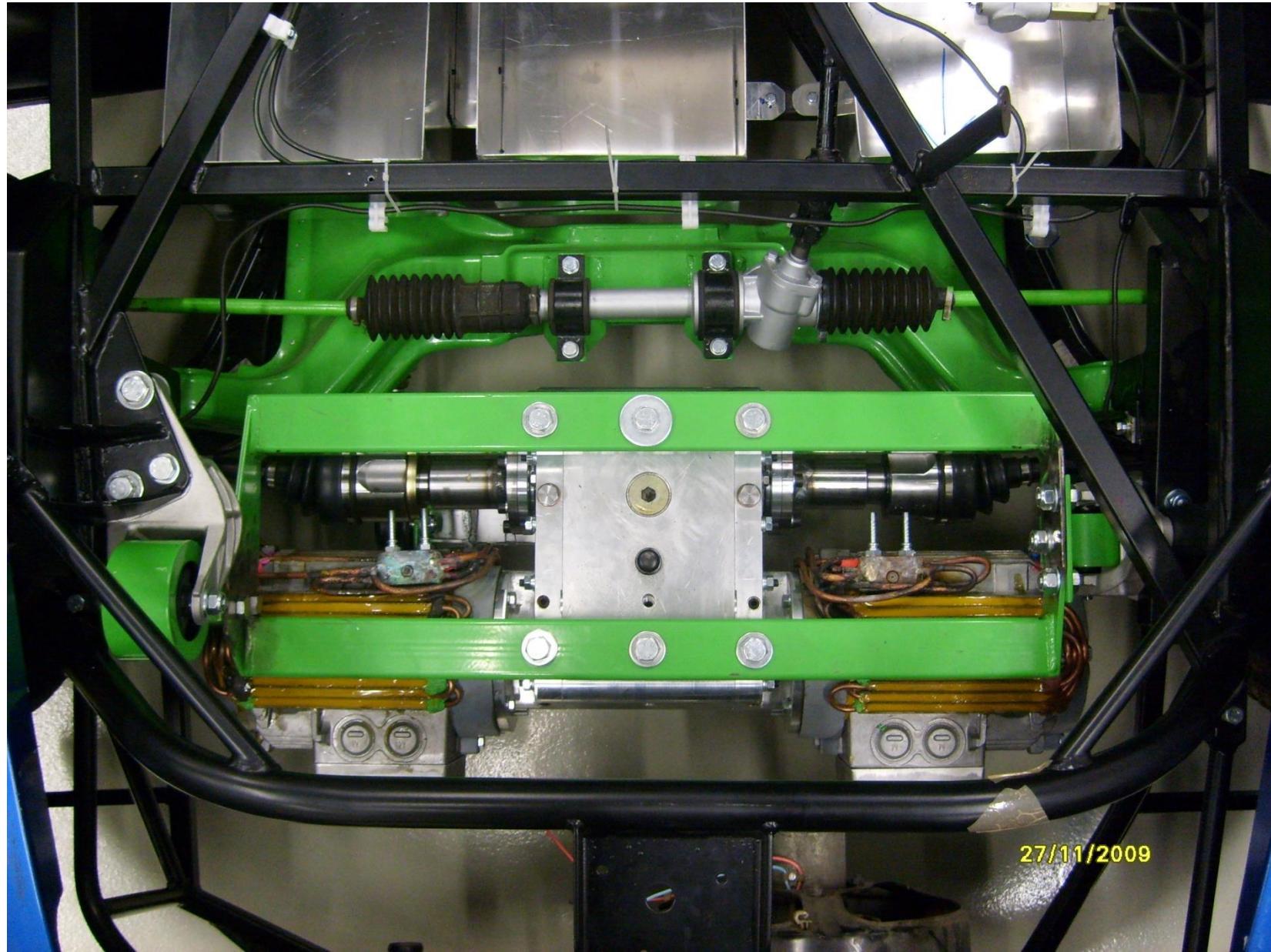


Fig.3. Twin drive unit in chassis (2009)

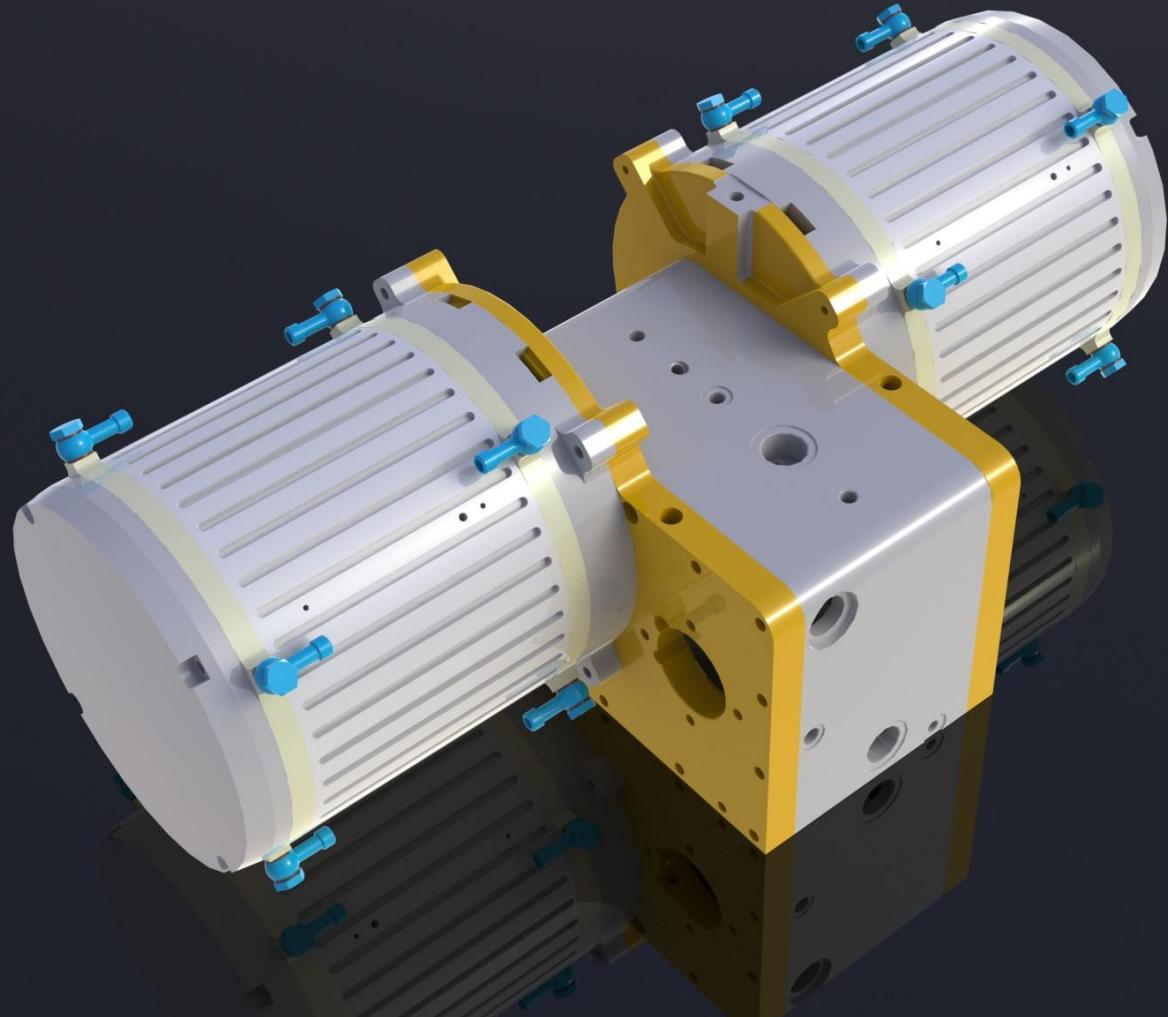


Fig.4. Twin drive concept of II.generation for prototypes K1 and K2 (2010).

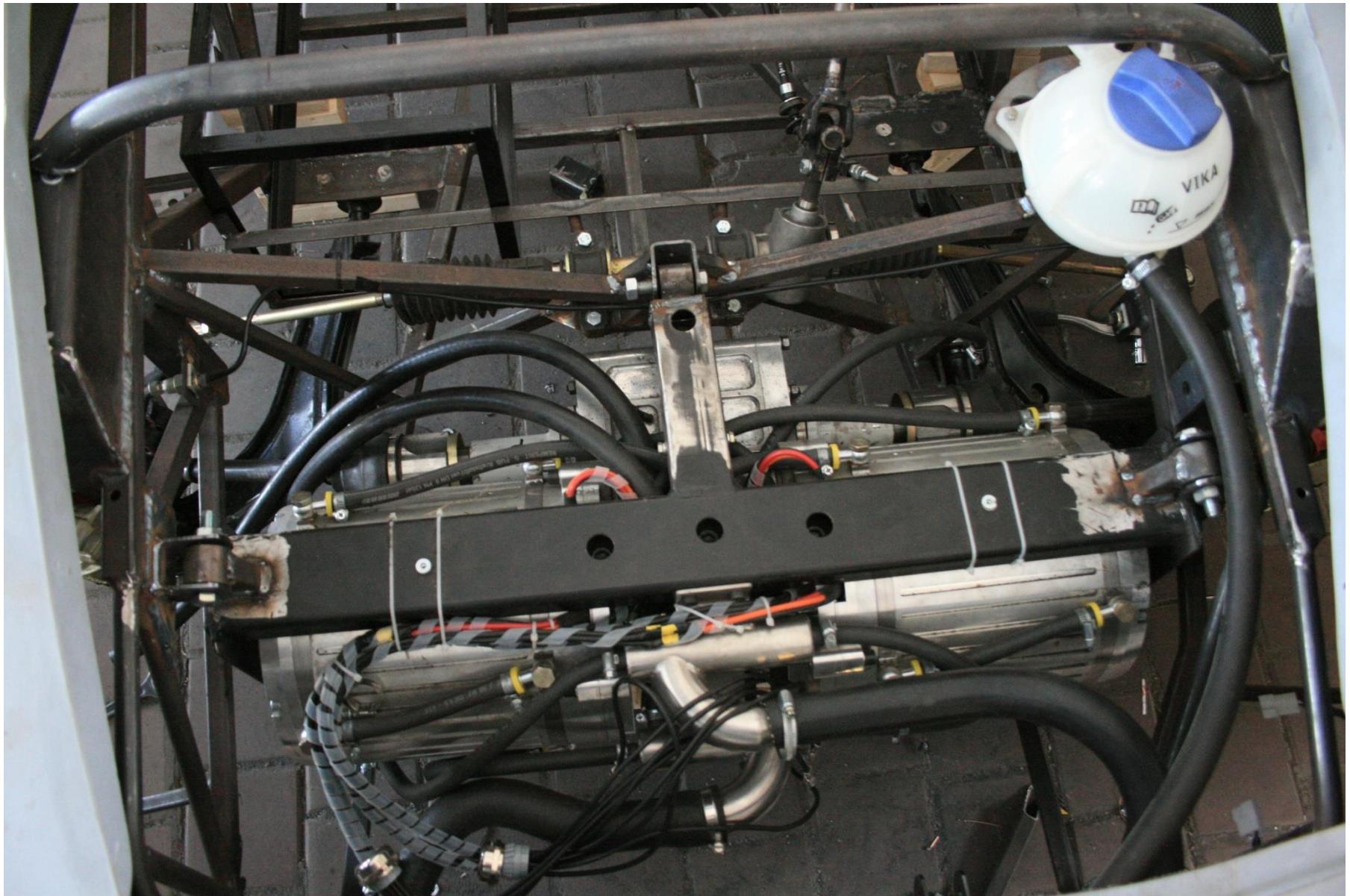


Fig.5. II.generation twin drive in chassis K1 (2010).

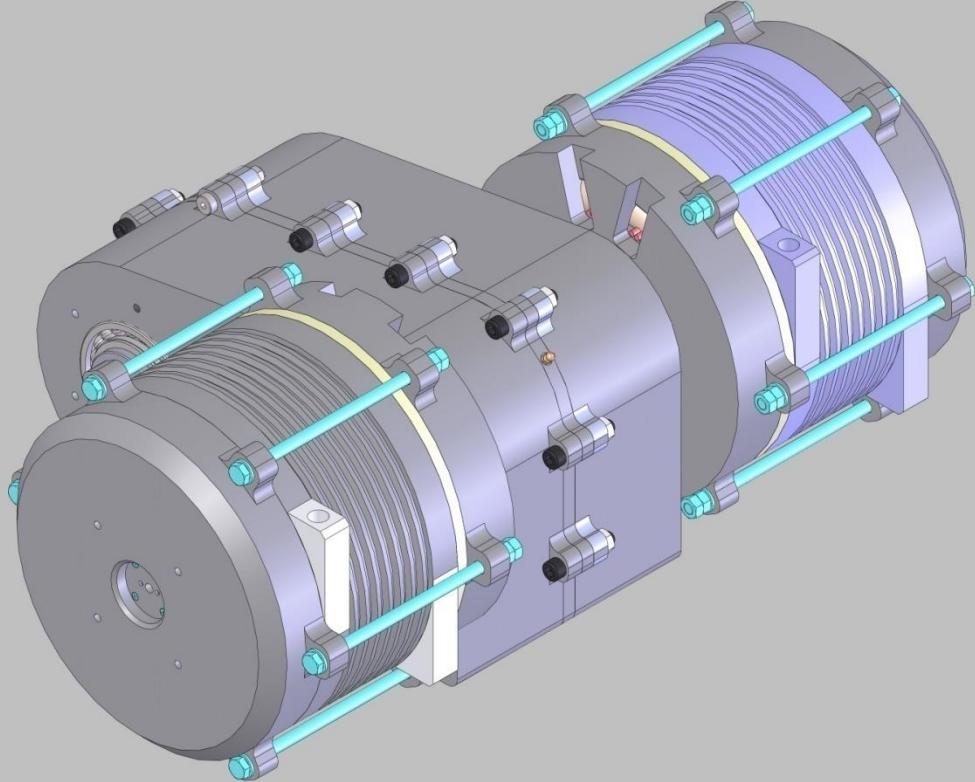


Fig.6. Twin drive III.generation model.

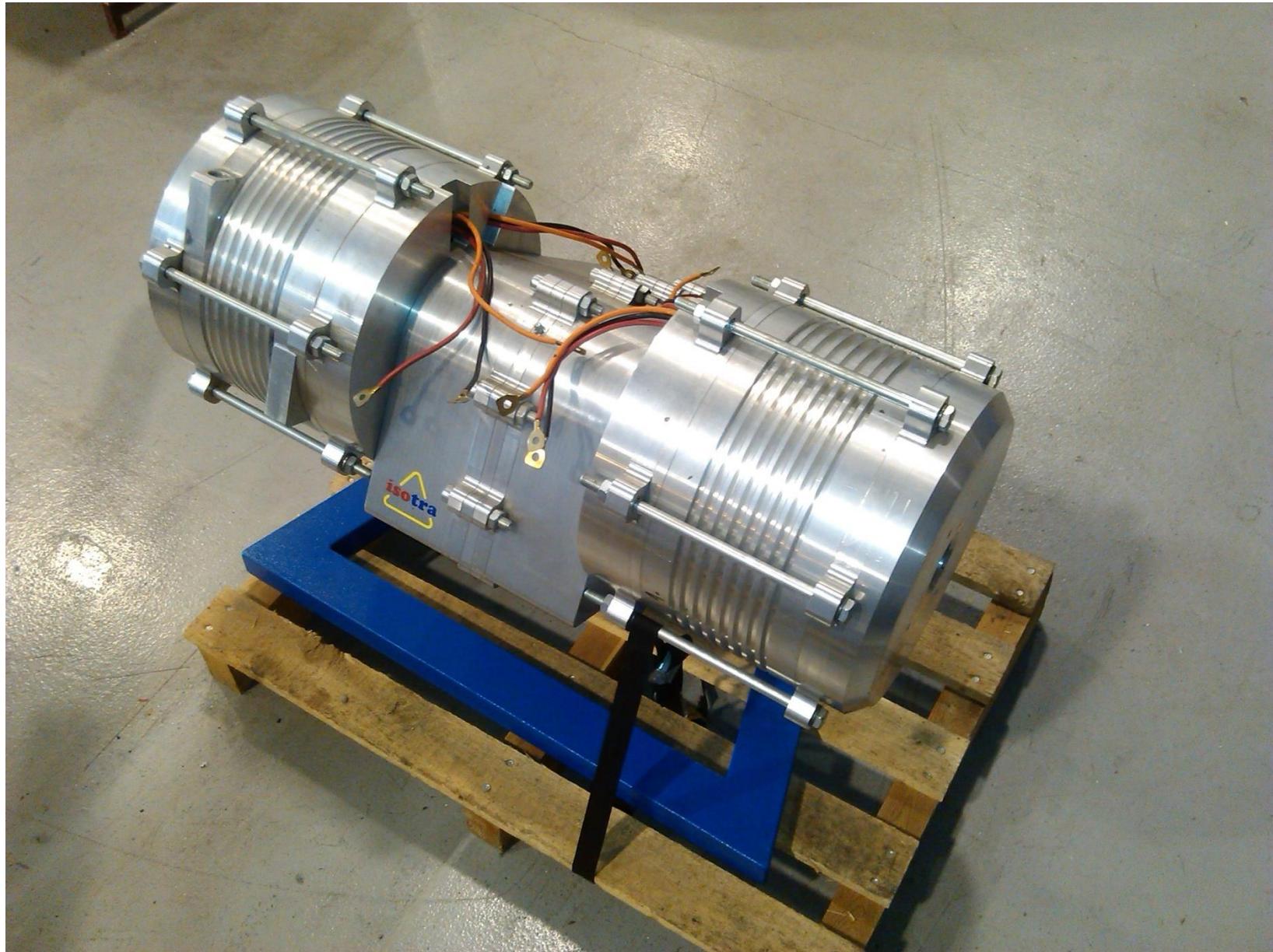


Fig.7. III.generation twin drive prototype (2011).

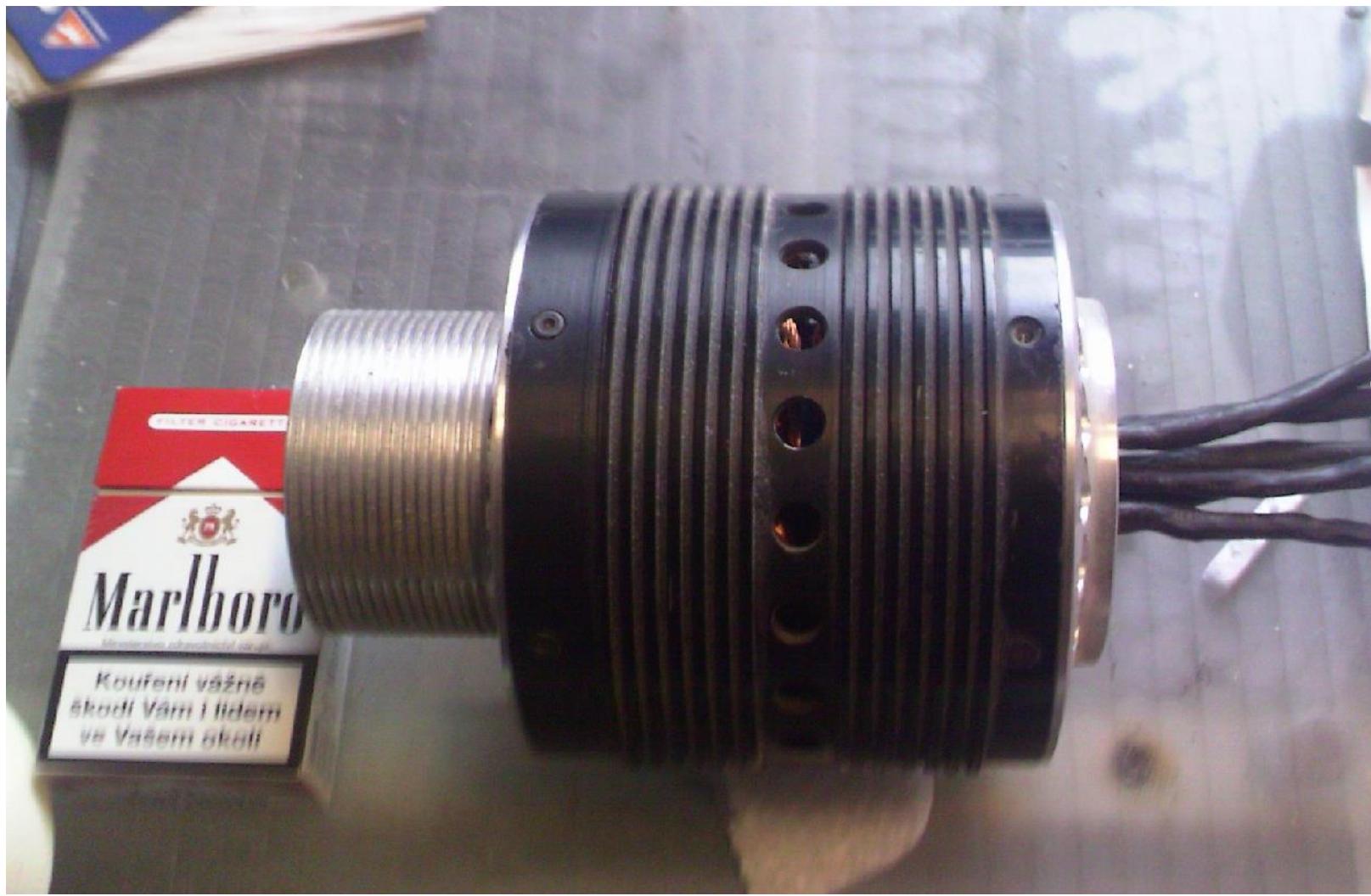


Fig.8. Common development with FreeAir. 10kW BLDC drive unit, implementation in chassis AIXAM and prototype K3 (2011).



Fig.9. BLDC drive unit in chasssi AIXAM (2011).



Fig.10. Twin DC/AC control unit for K0 and K0 test. (2009/2010)



Fig.11. Twin DC/AC control unit VSB-TUO, chassis K1 (2011) and K0 (since 2012).



Fig.12. Implementation DC/AC Lenze control unit for K1 and K2 prototypes (2010/2012).

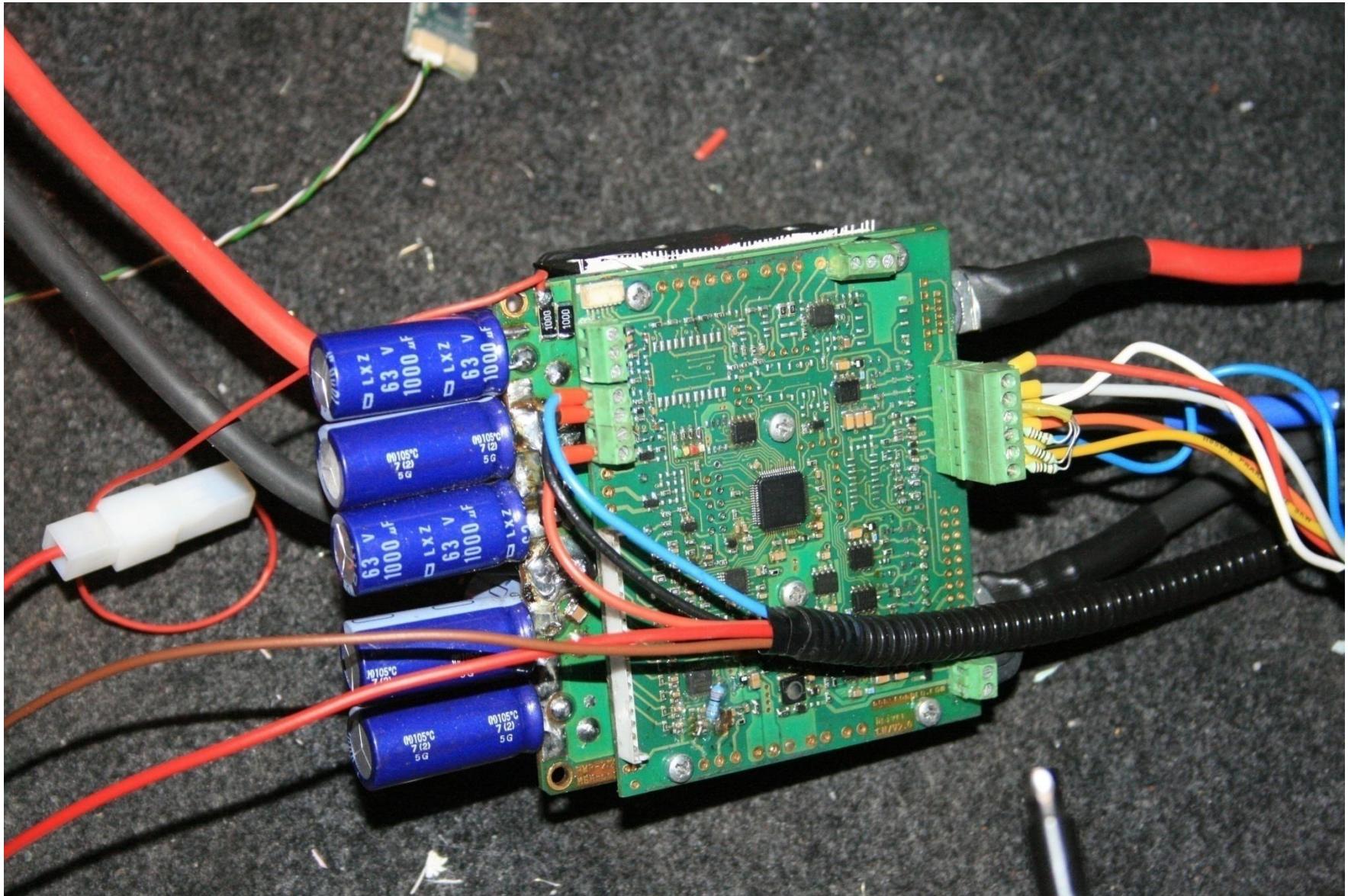


Fig.13. BLDC drive control unit for AIXAM and chassis K3 (2011).



Fig.14. Control unit box, K3 prototype (2012/2013).

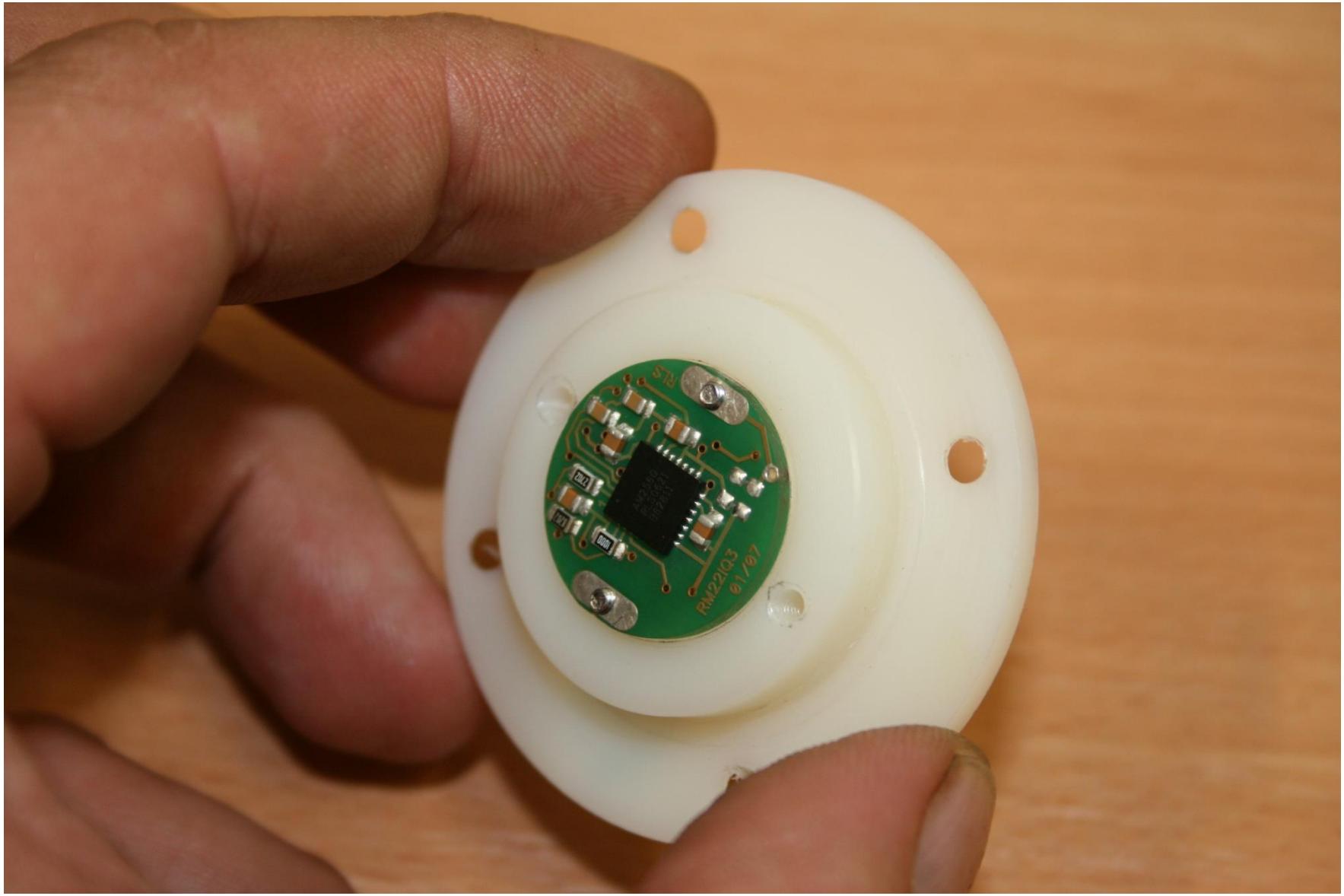


Fig.14. Sensor of rotor position for AC twin drive units I-III.generation (2009-2012)

Charging and BMS systems

- Outdoor public charging stations
- Cable and connectors, car charging socket
- Car implemented charging system
- BMS of traction battery



Fig.15. Wall mounted public charging station (2009).



Fig.17. AC public charging station VSB-TUO (since 2011).



Fig.18. Experimental tractions battery 350V/40Ah (2010-2012).



Fig.19. Experimental charging of the K1 prototype in the Prototype laboratory CPIT C112 (2010-2011).



Fig.20. Charging implementation in the chassis K2 (black box right, 2011).



Fig.21. Charging cable, charging connectors and socket fot K0 prototype (2009-2011).

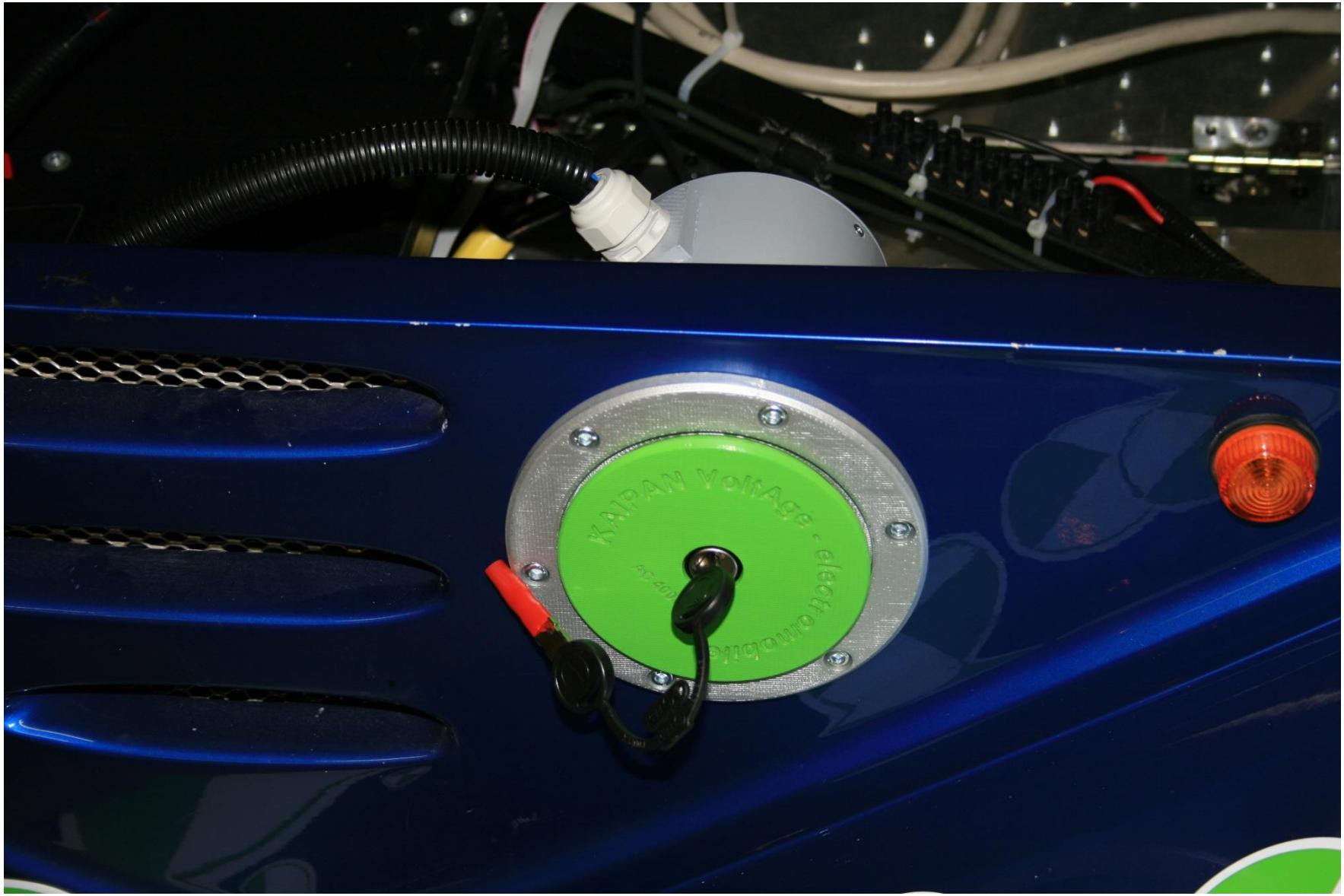


Fig.22. Charging socket implemetation (2009).



Fig.23. Charging socket implementation K3 (2012/2013).

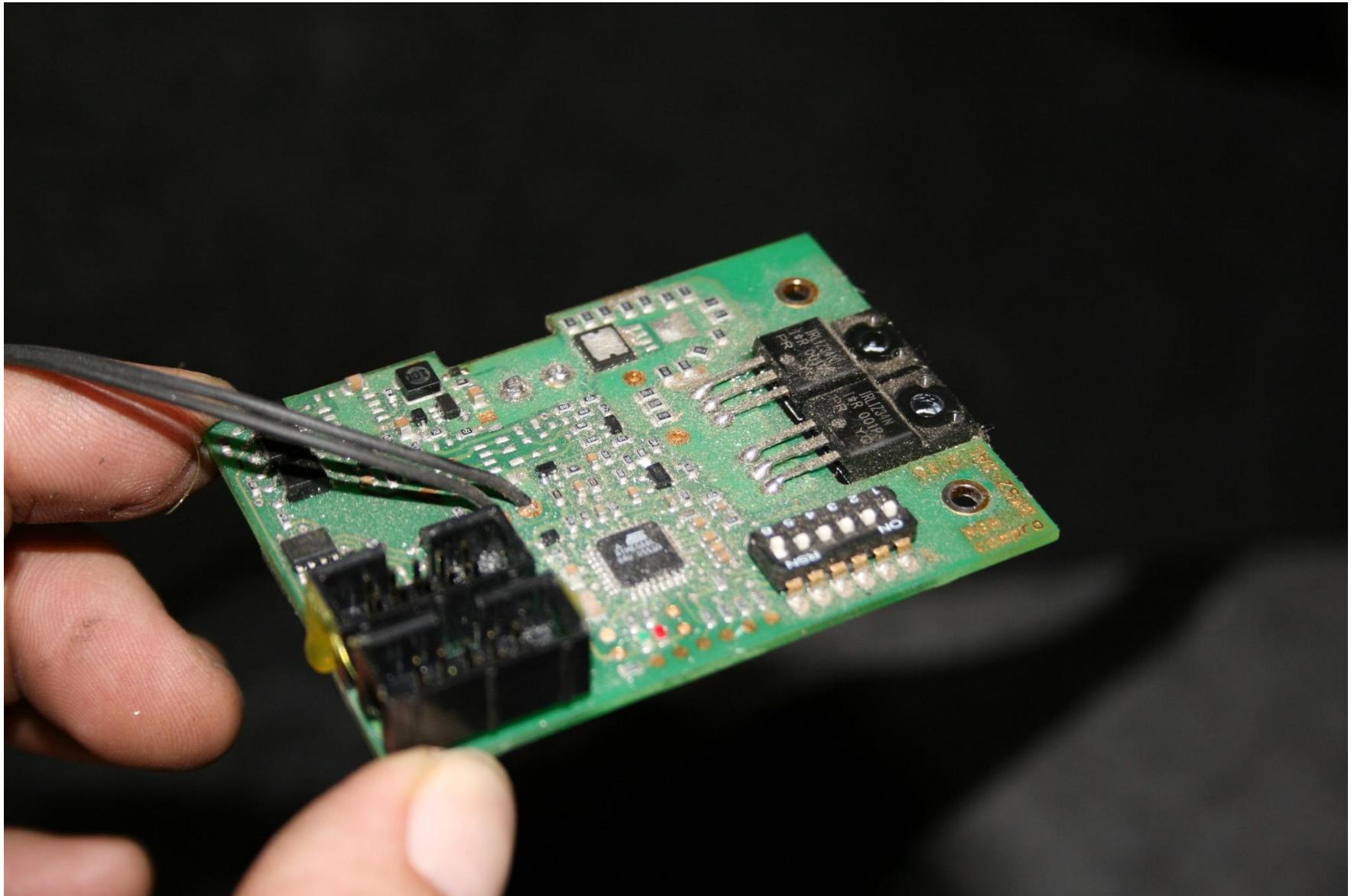


Fig.24. Common development with MGM Compro, BMS module for traction battery (2011).



Fig.25. Prototype K1 before rear traction battery pack assembling (2011).

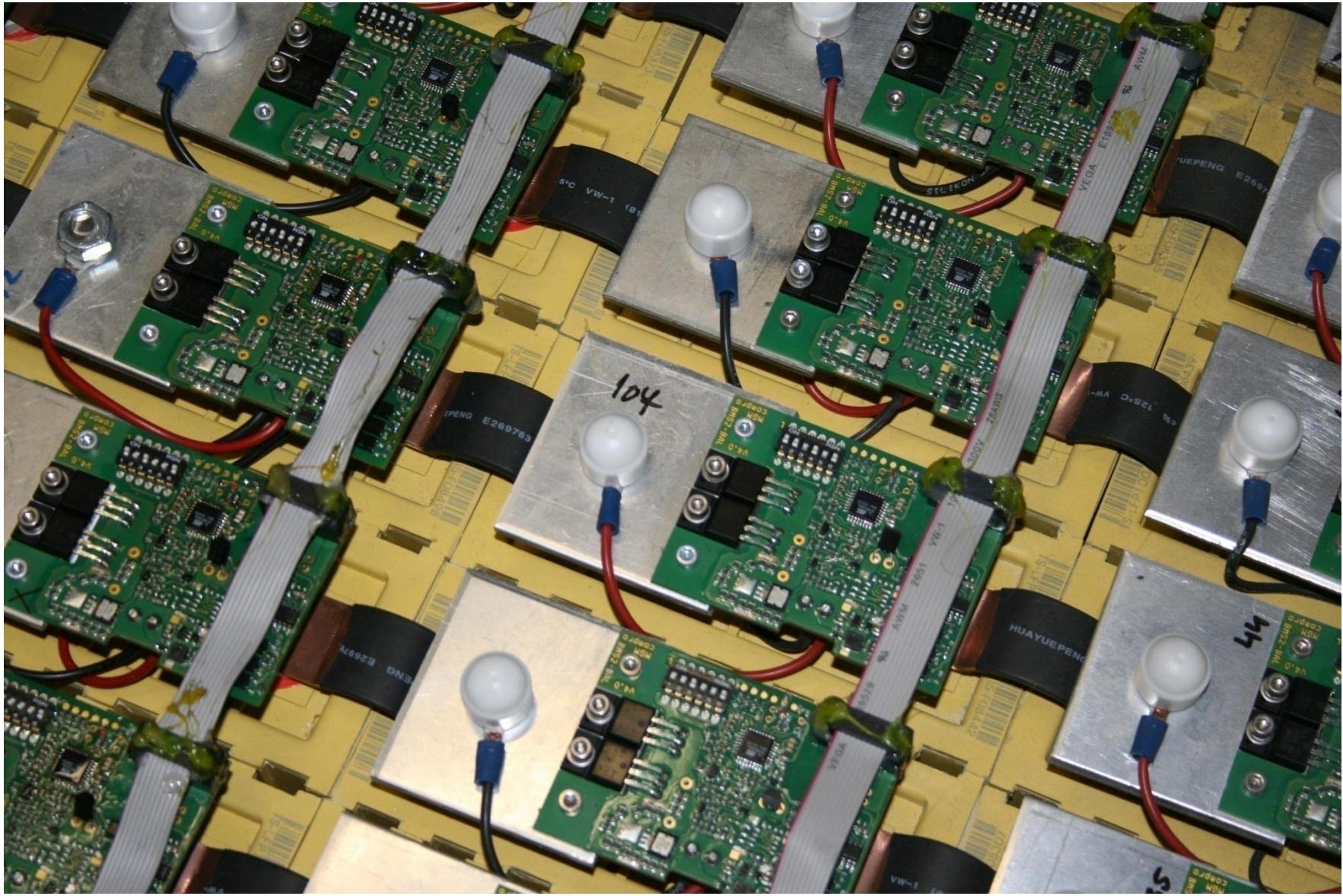


Fig.26. Assembled BMC modules, detail (2010).

Range extenders

- I.generation RE (for KAIPAN VoltAge K2)
- II. generation (light version)
- III.generation RE (whydrogen, CNG)
- IV. generation (PEM fuel cell)

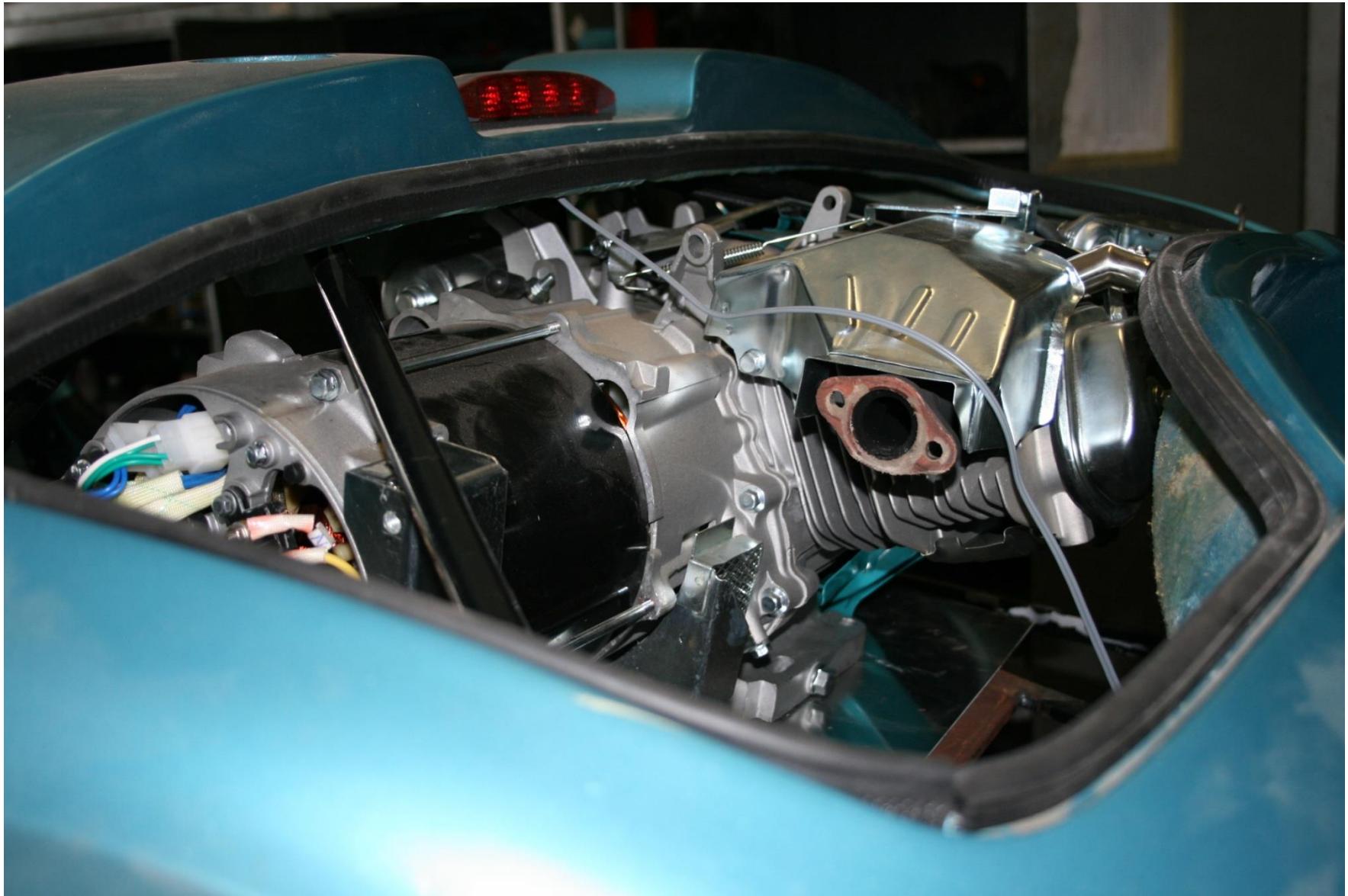


Fig.27. RE I.generation, test assembling in KAIPAN 14 chassis (2011).

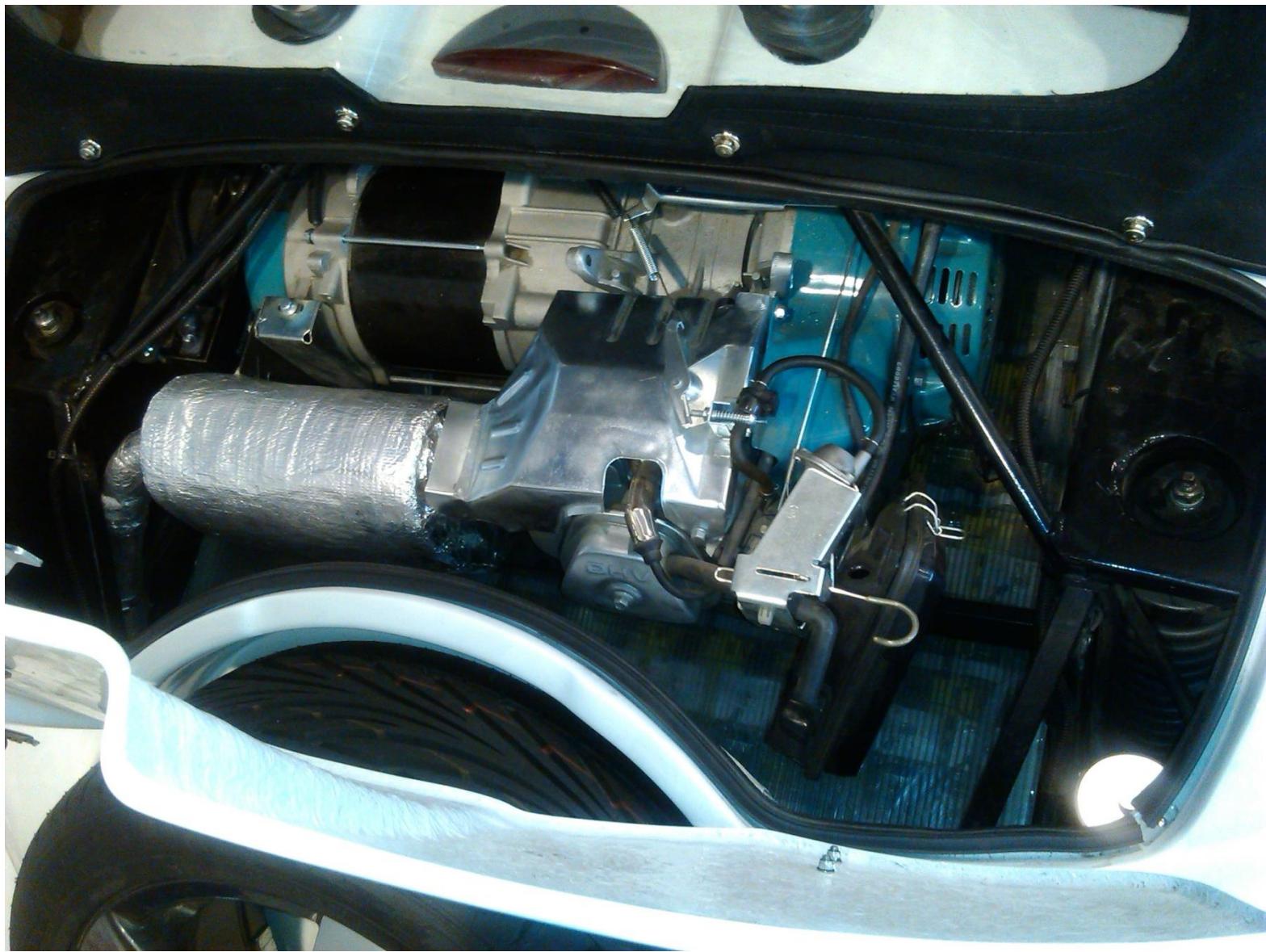


Fig.28. Final implementation RE unit for K2 prototype (2011).



Fig.29. Detail of the RE II.generation unit (2011).

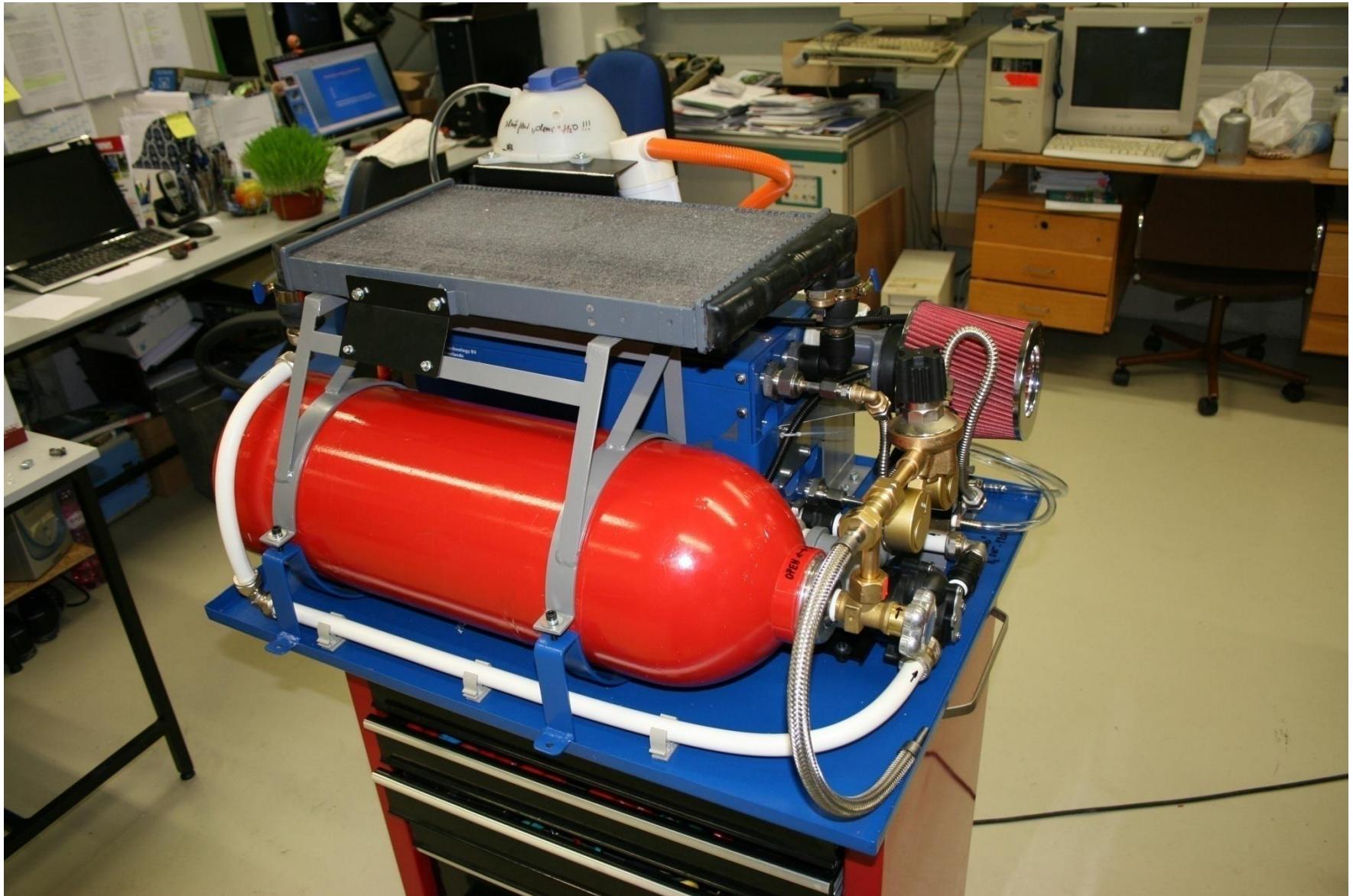


Fig.30. Experimental assembling of the RE IV.generation unit for K3 prototype (2012/2013).

Exhibitions

- Car show Bratislava 2010 a 2011
- Car show Brno 2011
- Car show Leipzig, Germany 2012
- R+T Stuttgart, Germany 2012
- Exhibition Electricmotion Prague 2010
- Contractation Gwang-Ju, Corea 2011
- Contractation Bergamo, Italy 2012
- Exhibition IMF 2013 in Brno



Fig.31. Car show Brno (2011).



Fig.32. Exhibition Electricmotion Prague (2010).



Fig.33. Exhibition for KAIPAN, Mnichovo Hradiště (2011).



Fig.34. Exhibition of team SAZE, Gaudeamus, Brno (2010).



Fig.35. Exhibition for ISOTRA, R+T Stuttgart, Germany (2012).



Fig.36. Car show Leipzig, Germany (2012).

TESTing

- TAZZARI Zero (Tili s.r.o.)
- SMART Electric (EON a.s.)
- PEUGEOT Ion (ČEZ a.s.)
- MIA Electric (SKD a.s.)



Fig.37. Test of the electric car TAZZARI Zero (2011).



Fig.38. Test of the electric car SMART Electric (2011/2012).



Fig.38. Common photography of the K0 and tested electric car Peugeot ION (2012).



Fig.39. Test MIA Electric (2012).

Realised prototypes

- Hydrogenix (2005-2009, 2014)
- K0 – K3
- Jeep Hydrogene
- Vestavba pohonné jednotky K3 do chassis K3-3W
- Vestavba pohonné jednotky do chassis AIXAM



Fig.40. Prototype Hydrogenix (2005).



Fig.41. Prototype Hydrogenix II (2006).



Fig.42. Prototype Hydrogenix III (2009).



Fig.43. Prototype KAIPAN VoltAge K0 (2009/2010).



Fig.44. Electric car KAIPAN VoltAge K1 (2010).



Fig.45. Electric car KAIPAN VoltAge K2 (2011).



Fig.45. Electric (battery, SC, FC) car KAIPAN VoltAge K3 (2011-2012).



Fig.45. Electric (fuel cell) car Jeep Hydrogene (2011-2013).



Fig.46. Prototype K3-3W (2013).



Fig.47. Prototype Hydrogenix IV (in preparation, 2013/2014).

Budoucnost?

Každý musí začít u sebe.

Another informations:

<http://vavemobil.vsb.cz>

<http://hydrogenix.vsb.cz>

<http://saze.vsb.cz>

Thank you for attention

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Hard work in Prototype laboratory (KAIPAN VoltAge K0).