

PARTNERS, SPONSORS & MAIN SUPPLIERS

The first sketch of LAMPO² was realized in June 2009. Thanks to the experience with its predecessor LAMPO - which has covered a distance of more than 12,000 km through Europe - we have been able to optimize weight, aerodynamics and the efficiency of individual components in order to obtain a world-class energy consumption of less than 100Wh/km-ton under real conditions.

Strongly convinced that electric drive-trains are mature and perform sufficiently well to be a solution for all types of vehicles, we equipped LAMPO² with an interface for DC fast charging in order to overcome the range anxiety. Up to 100 km of additional range can be charged within just 10 minutes, by an off-board system.

I would like to thank all of our faithful and new partners, sponsors and suppliers for their support and interest in joining such an ambitious project. The collaboration between Protoscar and these companies has surely been enriching for all participants in many ways.

Now that all our enthusiastic work becomes reality, I would like to invite all of you to experience LAMPO² at the Geneva Motor Show (2nd March 2010 on the e'mobile stand Nr.5141) and to test it at the EVER Conference Monaco (25th - 28th March 2010).

Marco Piffaretti

Very special thanks to:

Josef, Fredy, Dr. Philipp, Axel, Alex, Teresa, Pietro, Mino, Raffaele, Erik, Vittorio, Andrea, Dario, Luca, Claudio & son, Arno, Beat, Thomas, Urs, Markus, Luca, Giorgio G., Giorgio S., Franca, Francesco, Samuel, Sebastian, Stefano, Adriano, Carmen, Paula, Giovanni, Miriam, Giacomo, Sandro P., Sandro M., Mauro, Juergen, Karin, Horst, Ulrich, Wilfried, Susanne, Boris, Martin, Peter, Herr Klaus, Florian, Simon, Tania G., Tania B, Nick, Simona, Enzo, Juichi, Roberto, Domenico, Federica, Mara, Sabrina, Giordano, Luciano, Andreas, Christian...

...from Switzerland, Germany, New Zealand, Denmark, Canada, Spain, Italy, France and Japan.

ABB (Asea Brown Boveri Ltd)



ABB (www.abb.com) is a leader in power and automation technologies that enable utility and industry customers to improve performance while lowering environmental impact. The ABB Group of companies operates in around 100 countries and employs about 120,000 people.

ABB has the competence to develop the infrastructure technologies needed to make widespread electric vehicle use a reality. ABB's involvement in the Lampo project focuses on the electrical grid and charging system; in particular ABB provided the concept ultra-fast DC charging station for the Geneva International Motor Show. Able to deliver as much as 100kW charging power to the vehicle, this unit also simultaneously manages the grid voltage and ensures power quality in the grid is not just maintained, but actively improved. The Geneva concept is a taste of things to come in ABB's planned product range of fast and ultra-fast DC charging technologies. ABB is working with Protoscar to demonstrate some of these technologies in the LAMPO², offering 10 minutes refueling for 100km. ABB's venture into electric vehicle infrastructure is built on more than a century of experience in grid infrastructure, and several decades in power electronics. Combined with its smart grid technologies, ABB can develop the infrastructure needed to connect electric vehicles to the grid and helps make sustainable mobility a reality.

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Alpiq. The leading energy company in Switzerland



Alpiq Holding Ltd. is the leading Swiss energy trading company and the largest energy services provider with European orientation. The Group was formed at the beginning of 2009 through the merger of the two energy pioneers Atel Holding Ltd and Energie Ovest Suisse SA (EOS). In 2008, more than 10 000 employees in 26 countries generated a consolidated annual turnover of around 16 billion Swiss francs. Alpiq is active in the fields of electricity generation and electricity transmission, in energy sales and trading, as well as in energy services. The company is responsible for about one third of Switzerland's electricity supplies.

The story of the company lies in the name. Our roots are in Switzerland, where the Alps stand as a symbol for delivering peak performance and solid expertise.

Alpiq has been committed to sustainable mobility in connection with its core business for a number of years. We support programs, events and initiatives that seek to promote the potential of electricity in reducing CO2 emissions from transport. Sponsoring the Lampo project is in line with the Alpiq long term strategy of facilitating the introduction of electric vehicles in Switzerland.

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BASF (coating)



With sales of EUR 7.6 billion (2007), **BASF is the chemical industry's largest supplier in the world** for the automotive industry. The chemical products used to manufacture a compact car such as the Golf cost an average of EUR 800 in total. Whether it's the interior, the transmission, the chassis, safety features, the motor, emission control or electronics, BASF offers materials for nearly every aspect of car manufacturing. Joint development with customers from the automotive industry is becoming increasingly important in order to use new eco-efficient materials, for instance in engine and car body parts. In this way, chemistry is playing an ever more prominent role in the automotive sector, with innovative materials for greater environmental protection (CO₂ reduction, fuel consumption, weight) and comfort.

When it comes to automotive OEM coatings, BASF Coatings is among the top three global suppliers. With cathodic e-coats, primers, basecoats and clearcoats, BASF Coatings offers eco-efficient technologies and all-around competence for every layer of the finish. BASF is a partner for all large carmakers, as a provider of corrosion protection, color competence and scratch-resistant surfaces. BASF Coatings' global designers and one-of-a-kind Color Design Studio in Münster, Germany, make it a leader in design.

In close cooperation with Protoscar and BASF Coatings, BASF designers have created a color selection for the LAMPO² that not only ideally suits the form of the car, but also establishes the color relationship between the electric car and the aspect of nature. The powerful yellow is a real eye catcher and seeks to remind of the two most powerful and electric elements in nature: Lightning (English synonym for Italian "Lampo") and the sun which feeds LAMPO² with electricity through photovoltaic plants. The matt material underlines the trendiness of electrically powered cars. In harmony with the strong yellow standing for nature, the soft matt demonstrates that environment-friendly driving and trendy style are no contradiction but result in an exciting and unforgettable experience.

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BRUSA (motor, controller, battery, battery charger, DC/DC converter)

BRUSA®

BRUSA Elektronik AG is a leading developer and manufacturer of innovative **components for electrically propelled vehicles**. The company was established in 1985 and is located in the eastern part of Switzerland, currently employing some 65 people. BRUSA is owned and managed by its staff and serves only the civil sector (no military / defense applications).

Activities are focused on **electric, hybrid and fuel cell vehicle** drivetrain systems.



With its product range of standard and customized products, BRUSA Elektronik AG is able to support its customers in realizing prototypes or small series vehicles from the concept idea until the final product. By the end of this year, production capacity is increased to several thousand units per year. Advanced components like **motors, controllers and specialized power electronics** are supplied to leading car manufacturers and development companies. The components which are matched to each other, combined with the comprehensive system competence that BRUSA Elektronik AG has acquired over the years, allows for quick and smooth design of optimized systems and is offered as a one-stop solution.

BRUSA Elektronik AG contributes to the Lampo project by supplying its latest drivetrain components for this sporty full size vehicle: The electric motors (2 x HSM1-10.18.13 hybrid-synchronous with transaxle gearbox), the motor controllers (2 x DMC534/150kW), the Li-Ion battery (2 x EVB1 Li battery packs 400V/16kWh based on prismatic Kokam cells), the battery chargers (3 x NLG513/3.3kW) and the DC/DC converter (BSC624-12V/3.5kW).

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Credit Suisse AG



Credit Suisse AG is one of the world's leading financial services providers and is part of the Credit Suisse group of companies (referred to here as 'Credit Suisse'). As an integrated bank, Credit Suisse offers clients its combined expertise in the areas of private banking, investment banking and asset management. Credit Suisse provides advisory services, comprehensive solutions and innovative products to companies, institutional clients and high-net-worth private clients globally, as well as to retail clients in Switzerland. Credit Suisse is headquartered in Zurich and operates in over 50 countries worldwide. The group employs approximately 47,400 people.

The social and economic impacts of global climate change are becoming increasingly evident. It is therefore essential for the international community to take prompt action to prevent the most severe consequences. Credit Suisse can contribute to these efforts by implementing internal measures, by using its expertise to create excellent products and services and by supporting innovative projects such as Protoscar's LAMPO².

Further information about Credit Suisse can be found at www.credit-suisse.com

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The basis for all work accomplished at the Fraunhofer-Institute for Industrial Engineering IAO with its 250 permanent employees is a deep conviction that business success in a globalised arena is contingent on an ability to profitably leverage new high-tech potentials. In order to optimally exploit these opportunities, companies must be capable of developing and implementing technologies faster than their competitors.

Our Focus: Applied Electromobility

A focus of the work at the Fraunhofer IAO is the successful and sustainable application of electromobility. For example we are

- developing business models and mobility concepts like decentralised sharing services
- investigating the success factors and technical features of charging hubs
- inventing technical solutions for combining smartphones with cars and charging hubs to leverage new mobility concepts
- developing innovative concepts for driver assistance and information systems
- developing solutions for the human-car interface, especially for electric cars
- providing usability engineering services based on rapid prototyping and driving simulation
- supporting the automotive industry, especially the suppliers, in managing the change to electromobility within the innovation network »FutureCar« (www.fucar.de)
- supporting cities, energy suppliers and infrastructure companies in building up sustainable competences and businesses based on electromobility within the innovation network ElectromobileCity (www.electromobilecity.com)



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ITP GmbH (seat-and head-rest heating)



ITP GmbH – SOCIETY FOR INTELLIGENT TEXTILE PRODUCTS

ITP GmbH uses their extensive engineering expertise and creativity to develop customized products with the added benefit of intelligence – **smart textiles**.

As an innovative engineering enterprise, we work closely together with the textile industry and a range of other high-tech industries. This networking is the basis for the successful development of new and ever more functional textile materials and products.

Our main area of expertise is warming, cooling, sensory and actuator textile products.

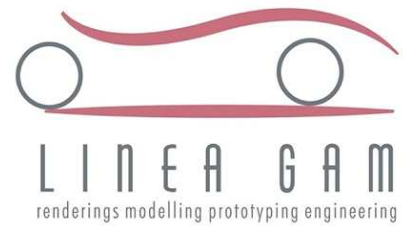
Textiles for warming

We develop and make use of a range of conductive yarns from 2,5 Ω/m to 500 k Ω/m . These are used as the basis for our warming systems. For the LamPO² seat-and head-rest heating we used a woven and knitting heating material with integrated power lead. By the application of special carbonyarn it is possible with a little electric energy to generate a maximum in close infrared rays (NIR). These NIR rays cause direct warming up of the human body. The advantage of this textile heating compared with customary seat heatings is a perceptibly quicker and steady warming.

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Linea GAM (body developing and manufacturing)



Linea Gam Style Inedito Srl is an independent company specialized in the construction of: styling models, running prototypes, show cars, concept cars, customized cars. Linea Gam was founded in 1996, by Mr Vittorio Grasso, today is more than ever a competitive company in its field.

Recently moved to Collegno, it has now incorporated under its management a design dedicated area and an engineering area; it has got 4 main separated workshop: 2 dedicated to modelling and 2 other to prototyping operations, offering a very pleasant and professional working environment.

Linea GAM disposes of 5000 square meters of clean work area, well lit, and fully equipped.

Linea Gam strong point is always the ability of plaster use for its models creation and development, a material that helps the styling research, and the possibility to create real works of art. In general design & engineering, concept and manufacturing of prototypes of automobiles and general motion means with the scope of style research.

The experience and the continuous search for new solutions are the starting point to create any kind of project. Our mission is to preserve the culture of automobiles construction and transmit it to young people, and help them to transform in practice their innovative ideas.

With the same enthusiasm of last year, our teamwork worked on the body development of the Lampo II. Collaborating for the second year together with Protoscar on the same project was helpful especially under the organizational point of view, and together with them we tried to improve the car from the functional and stylistic point of view at best!

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Metaltool (mechanical workshop)



Metaltool is a mechanical workshop – founded in 2001 by Dario Piffaretti – which offers various services and currently employs 11 specialists.

The workshop is characterized by widely using Electric Discharge Machining (EDM). This is a machining process that uses a series of electric discharges (sparks) to erode material from a workpiece. There are two types of EDM: wire-cutting and die-sinking. EDM is a key technology in the manufacture of high-performance molds as well as press tools for the series production of plastic, glass and metal parts and for the direct machining of complex precision components.

Metaltool realizes primarily:

1. Tools for industries

- mechanical matrix for printing and overhauling
- tooling up
- general mechanical pieces
- assembling fitting
- fixing
- grinding
- plate tools
- milling

2. Moulds

- pressure die casting
- shearing machine

The main application fields of Metaltool are:

- medical
- luxury zipper
- mechanical tools
- special and unique car components

Metaltool has contributed to the LAMPO² project by realizing and installing several different mechanical special parts. In particular it has provided:

- structural modification of the chassis in order to adapt it to the electric drivetrain
- realization of new mechanical parts needed for the new layout of the powertrain (e.g. a new front suspension ring in order to locate the front wheels drive axle)

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PTC (design software)



PTC (Nasdaq: PMTC), The Product Development Company®, provides discrete manufacturers with software and services to meet the globalization, time-to-market and operational efficiency objectives of product development. Using the company's CAD, and content and process management solutions, organizations in the Industrial, High-Tech, Aerospace and Defense, Automotive, Consumer and Medical industries are able to support key business objectives and create innovative products that meet both customer needs and comply with industry regulations.

PTC's solutions are specifically designed and tested together to give companies the capabilities necessary to optimize their product development processes.



PTC® Desktop Solutions include integrated CAD/CAM/CAE software, engineering calculations software, as well as document and illustration authoring tools. PTC's principal Desktop Solutions are Pro/ENGINEER®, CoCreate®, Mathcad® and Arbortext®.

PTC® Enterprise Solutions include integrated content and process management solutions as well as enterprise publishing software. PTC's principal Enterprise Solutions are Windchill®, ProductView™, Arbortext and InSight™ Environmental Compliance.

PTC's solutions for automotive are designed to meet the product design and product life cycle management needs to both OEMs and suppliers in the automotive industry. PTC provides enterprise 3D design, product data management and collaboration solutions.

PTC contributes to the Lampo project by supplying Pro/ENGINEER, Pro/ENGINEER Rendering, and Pro/ENGINEER Interactive Surface Design Extension (ISDX). Protoscar used ISDX to develop all of the external surfaces for the Lampo vehicle. The flexibility of ISDX and Pro/ENGINEER filleting capabilities allowed Protoscar to quickly and easily build up the external body panels. These panels were then sent to an external supplier to be manufactured in glass fiber. In addition Protoscar modified the cars suspension (based on an Opel GT) with Pro/ENGINEER.

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Q11 AG (spare parts, online distributor)



Q11 AG is one of the most successful spare parts retailer on the German E-Commerce market. The company was founded in 2000 and distributes spare parts out of the stockhouse in Zurich throughout Germany via parcel service.

According to the specific part identification in Germany, Q11 AG uses an in-house developed software which guarantees the customers a comfortable and correct product choice. High availabilities and a great level of service standards allowed Q11 AG to grow up to one of the most popular providers in the automotive after market.



To fulfill the requirements of its end consumers, Q11 AG is specialized on spare parts for all kind of passenger cars and motorcycles, tyres, cleaning and lubricant products. Q11 AG offers a wide range of brake parts, exhaust systems, filters, shock absorbers, clutches as well as steering and cooling products.

A central topic of Q11 AG`s business implies that each offered item has to come up to the high technological demand of original equipment which is assured by exclusive and certified suppliers.

Q11 AG itself has been a pioneer in German E-Commerce 10 years ago and accomplished proving the potential of online part trading. The company is now proud to be placed one of the most innovative visionary clean cars, which will hopefully affirm the rightness of energy efficiency in automotive business.

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SFOE (project support)



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Bundesamt für Energie BFE
Office fédéral de l'énergie OFEN
Ufficio federale dell'energia UFE
Uffizi federal d'energia UFE

The **Swiss Federal Office of Energy (SFOE)** is the office responsible for all questions relating to energy supply and energy use within the Federal Department of the Environment, Transport, Energy and Communication (DETEC).

The SFOE pursues the following objectives:

- It creates the necessary conditions for ensuring a sufficient, well diversified and secure energy supply that is both economical and ecologically sustainable.
- It imposes high safety standards in the areas of production, transportation and distribution of energy.
- It sets out to promote efficient energy use, increase the proportion of renewable energy in the overall energy mix and reduce the level of CO₂ emissions.
- It promotes and co-ordinates energy research and supports the development of new markets for the sustainable supply and use of energy.

The SFOE is proud to be one of the sponsors of LAMPO²!

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VirVe (EVA vehicle navigation, instrument cluster, vehicle telematics, eco-driving)



VirVe specializes in software designed to address the challenges of present and future transportation systems. Formed in 2007, VirVe is based in Zürich, Switzerland with the mission of improving the efficiency of personal transportation. At the core of VirVe's products are algorithms which translate information about driving routes into energy consumption for electric, hybrid, fuel cell, and conventional vehicles. The Electric Vehicle Application (EVA) found in the LAMPO series vehicles provides drivers with real-time information on how far they can drive based on their current battery charge and future driving conditions, drastically improving the consumer acceptability of battery electric vehicles. The distance to the nearest charging station, as well as extended route planning, among other functionalities are also provided.



VirVe designed and implemented the instrument panel, in addition to integrating its EVA touch screen system for the Lampo projects. VirVe also assisted in telemetric data logging and analysis, and developed eco-driving functionality.

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Vitabella-Palazzetto (remote photovoltaic power plant)



Vitabella-Palazzetto is a farmhouse situated in Tuscany (Italy) where the sun is (nearly) always shining!

This is the reason why it has been decided to develop a remote photovoltaic power plant in that place. This photovoltaic plant has three goals:

1. to produce (more than) enough totally clean energy for driving our electric cars LAMPO and LAMPO²;
2. to become a sample to be copied, particularly as part of the electric-mobility solution;
3. to serve as a didactic tool for the guests of the farmhouse.

The photovoltaic plant is right now in the construction phase with the goal to have it in operation by May 2009, when Lampo really needs its energy for participating in the EVS-Vinking-rally (570 kilometers from Oslo to Stavanger)!

The 260 m² thin film photovoltaic plant (amorphous silicon), which has a peak power of 16kW and a planned production of 16'800 kWh/year, is installed on the roof of an existing facility.

The manufacturer of the photovoltaic laminate, United Solar Ovonic, is the world leader in thin film solar technologies and the manufacture of thin film solar electric laminates. Distributed globally under the UNI-SOLAR® brand, the company's products are ideally suited for cost-effective solar roofing solutions because they are lightweight, durable, flexible, can be integrated directly with building materials, and generate more energy in real-world conditions. The solar plant of Vitabella-Palazzetto is installed by the Grosseto-based company TECNA.

Of course, all the guests of the farmhouse Vitabella-Palazzetto are very welcome to check the production of solar energy themselves, spending some absolutely relaxing holidays in the direct neighbourhood of Siena, Montalcino and the fabulous "terme di Saturnia".

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