

Grenoble Iserre Report

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Claude Ricaud,
Senior Vice President, Power
Innovation at Schneider Electric

Electric vehicles: Schneider Electric on the right track

A global specialist in energy management, Schneider Electric is determined to play a leading role in developing electric vehicles. It has focussed the full force of its expertise on finding powerful, safe and easy-to-use solutions for charging vehicles. According to Claude Ricaud, Senior Vice President, Power Innovation, Grenoble-Iserre has a key part to play in developing this technology, particularly with regard to R&D.

How do things stand for industrial production of electrical vehicles in France and in particular in Grenoble-Iserre?

Three categories of player have a stake in developing this technology: car manufacturers, electricity utilities and the electrical engineering industry. France enjoys a leadership position in each of these fields, thanks to PSA and Renault-Nissan in manufacturing, EDF for power, and Schneider Electric, Alstom and Legrand in electrical engineering. These front-line players are surrounded by a host of suppliers, partners and research laboratories. So we have all the necessary ingredients for France to become a driving force in developing electric vehicles (EV).

The top firms in each of these fields are stepping up their R&D capacity in Grenoble-Iserre, working on batteries and infrastructure, as well as studying patterns of consumption. Why have they chosen this area? Quite simply because there is a powerful environment with several competitiveness clusters (Tenerrdis, Minalogic), research institutes (Minatec, Ines), industrial firms and start-ups. The local authorities have also provided a lot of support for EV technology. The fact that Grenoble has been chosen as one of the pilot-towns for the government's electrical vehicle development plan is further proof of this trend.

How is Schneider Electric involved in developing this technology?

Electric vehicles will require a huge amount of infrastructure for charging and energy

management. To obtain vehicles with zero carbon-dioxide emissions they have to be charged with emissions-free electricity. The whole operation would be pointless if we had to turn on fossil-fuel power stations to charge the batteries for the rush hour. So proper energy management is essential to achieve the goal of an entirely carbon-free car. Schneider Electric fully intends to position itself as a "first entrant" for the production of charging infrastructures and the development of service offerings. We have already pioneered solutions and technology and we shall continue to contribute to building up the industrial process.

What are the challenges regarding standardization of the electricity supply?

The question of standardization is absolutely crucial. Schneider Electric has set up the EV Plug Alliance (1) in partnership with Legrand and Scame, an Italian firm, to promote standardized, interoperable and safe solutions for the power plugs to be used on EVs. Standardization means deployment all over Europe, at least. But we need to use this work to project a whole range of values: safety first, which is a pre-requisite which is absolutely not negotiable; then simplicity of use, energy efficiency and, of course, cost.

(1) The EV Plug alliance was set up in March 2010 by Schneider Electric, Legrand and Scame. In May they were joined by Gewiss, Marechal Electric, Radiall, Vimar, Weidmüller France and Yazaki Europe.

Bestofmedia: new R&D centre in Grenoble

Bestofmedia, the world's third largest online publisher specializing in high-tech content, has just opened a research and development centre in Grenoble, assisted by AEPI. Over the next three years it will be investing €m to optimize the firm's technical expertise and streamline the organization of content on its three main sites: Tom's Hardware (high-tech), Tom's Guide (consumer electronics) and Tom's Games (video games). With about 38 million readers – including 5.2 million in France – Bestofmedia is currently represented in 200 countries. Focussing increasingly on North America the firm hopes, thanks to research carried out in Grenoble, to move up from fifth position among US media sites and join the top three.

Ethera: pollutant trapping sensors

Certified by Lyonbiopole and supported by France's Single Interministerial Fund (FUI), the Covadis project led by Ethera, a small Grenoble firm, in partnership with bioMerieux, Pleiades Technologies, CEA Leti and the Francis Perrin laboratory, has led to the development of single colorimetric sensors based on an original technology using nanoporous materials. Acting in much the same way as a sponge, the sensors can trap pollutants thanks to their specific molecules. They can be used for tests in two fields of importance to human health, monitoring air quality inside buildings and detecting diseases by analysis of patients' breath. Ethera was launched last March and is based at Minatec, exploiting technology protected by five patents. A small fabrication unit is scheduled to come online in Grenoble in 2012 or 2013.

Aztec-Cat: snow-groomers at Le Versoud

Aztec is the first French firm to manufacture groomers for ski slopes – a market previously occupied by Prinoth-Leitner of Austria and Kassbohrer of Germany. Aztec has established itself in Le Versoud, just up the valley from Grenoble, to start production, having signed an industrial and logistics partnership agreement with Caterpillar Logistics. The new groomers are powered by Caterpillar engines and offer longer service life than their competitors, lightweight technology which does not disturb snow pack, lower fuel consumption and immediate service for total availability during the winter season. Aztec's partnership with Caterpillar Logistics will enable it to concentrate on its core trade, while drawing on the logistics know-how of a service company with 105 outlets in 25 countries. Caterpillar will also be giving Aztec the full benefit of its experience of industrial processes.

GEM boosts new enterprise

One-third of all Grenoble School of Management (GEM) graduates have gone on to start a business and make it a lasting success. Helped on their way by specific courses in entrepreneurship (including a specialist Master's certified under the HEC Entrepreneurs scheme since 1993), the launch of the school's own incubator and a "talent bureau" which assists project leaders, this score is substantially higher than the results obtained by other major business schools in France where on average only 5% of graduates start their own business.

In 2009 this enterprising spirit led to the start of 82 companies, of which 35% are located abroad, 39% are elsewhere in France and 26% are in Rhone-Alpes itself. Half of these firms are working in technology management and innovation, GEM's prime speciality. Recent success stories include Beezik.com, the first website to offer free, but legal

downloading of musical content funded by video advertising, FreshPlanet.com, the latest invention, in New York, of a serial entrepreneur who has launched four companies since graduating in 1995, but also Eveon, a small Grenoble-based biotechnology firm specializing in medical injection systems. It has just raised €4m in capital.



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Tenerdis and NREL to collaborate



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Attending the MOU signing were: Véronique Péguignat, International Manager, AEPI; Hervé Fradet, Director, AEPI; David E. Rodgers, Director, Strategic Energy Analysis, DOE/EERE; Ron Benioff, International Programs Manager, NREL; Daniel Harris, Minister Counselor for Commercial Affairs for the U.S. Embassy; Jean-Pierre Chardon, President, Tenerdis; Claude Graff, Past President, Tenerdis; Jean-Daniel Tordjman, Ambassador

France's competitiveness cluster for new energy technologies, Tenerdis, and the National Renewable Energy Laboratory (NREL) in the United States have just signed an agreement on solar energy – photovoltaics and concentrated solar power (CSP) – and smart grids.

Valid for two years and (of course) renewable, the agreement concerns the development of actions and exchanges of good practice on subjects of common interest, with scope for extending it to other fields in the medium term. It reflects the determination of Tenerdis to network with top international laboratories such as the NREL, a key global player in renewable energy research.

The agreement is the result of a partnership initiated two years ago between AEPI and Colorado Rhone-Alpes (Cora), its Denver-based partner. The State of Colorado and Grenoble-Isere have a similar ecosystem and comparable methods, based in particular on synergy between industry, research and university. The aim for AEPI is to promote the area and its assets, and to identify potential sources of collaboration in various technological fields. Cora, which is an offshoot of the French-American Chamber of Commerce in Colorado set up in 2008, facilitates collaboration between economic players (business and research) in the two regions, particularly with regard to new energy technologies.

Grenoble-Isere climbs aboard the electric vehicle

Large-scale deployment of electric vehicles (EV) looks increasingly imminent and France is busily preparing to play a leading role in this market. The whole value-added chain is represented in Grenoble-Isere, from basic research to technology platforms for developing prototypes. But there are still many challenges ahead, particularly for battery storage of electrical power.

With massive investment by car manufacturers in recent years, great leaps forward in battery storage capacity, and increasing support for the development of alternative forms of transport technology among the general public and in government, the mass production of EVs seems just around the corner. To quote Claude Ricaud, Senior Vice President, Power Innovation at Schneider Electric, "We are convinced the market is taking off and now is the right time".

R&D: a complete value-added chain in Grenoble

Grenoble-Isere has the good fortune to have a complete *filière*, or value-added chain, reaching from basic and applied research to large industrial firms and inventive start-ups, through technology platforms for developing prototypes: "The area has substantial assets and, what's more, it is capitalizing on them," says Ricaud. The latest important step forward is the launch of the Steeve⁽¹⁾ platform, the only one of its kind in Europe, which brings together various players from research and industry (CEA, CNRS, EDF, Ineris). It sets out to provide industry with a full range of R&D resources for basic research, battery prototyping, assessing safety performance, and certification.

Steeve's two 400-square-metre test laboratories will enable next-generation batteries to be manufactured in small volumes. With capacity close to 1,000 kWh a month, it should ultimately be able to produce sufficient batteries to equip 50 EVs a month. Several industrialists – Renault, Michelin, Siemens and Alstom – have already expressed an interest in the facility. Steeve will also draw on the resources available at Prollion, an offshoot of CEA-Liten, to validate lithium-ion battery technologies and facilitate their transfer to industry.

Grenoble-Isere is also working on the other end of the process, as Recupyl perfects methods for recycling tomorrow's batteries. The firm has

developed and patented a process that recovers virtually all the metals contained in lithium batteries.

The two big challenges: storage and distribution

It is generally held that electricity cannot be stored. The challenge now is to overturn that assumption. For EVs to develop on a large scale they need to store a sufficient amount of energy in their battery to travel a useful distance. A vehicle with an internal combustion engine is fitted with a 40-litre petrol tank, whereas at present an EV with a lithium-ion battery only carries the equivalent of 8 to 10 litres, enough to travel just 150 kilometres. The current aim is to double that distance.

The second big hurdle is the charging infrastructure. If drivers are to switch to EVs they will need access to dependable, standardized sockets wherever they go to top up their batteries. "The aim is to have clean energy from well to wheel," says Ricaud, "which means charging vehicles with carbon-free electricity, which in turn requires a [power] grid that is suited to efficient, safe, dependable energy management." To achieve this it will be necessary to deploy a charging infrastructure in public spaces, companies and private homes. Universal plugs will also be required, which can be adapted whatever the charge and its location (home, workplace, car park, etc.). This will represent a massive change, in particular with regard to the latest developments in vehicle-to-grid (V2Grid) technology. The basic idea is that the batteries of parked EVs offer considerable storage capacity and thus a means of optimizing electricity supply and demand by way of a smart grid. In other words energy can be shared, and for this purpose the convergence between applications in housing and transport is immediately apparent.

But whatever their performance tomorrow's vehicles must not cost more than their conventional counterparts. "To meet

market demands, tomorrow's electrical vehicles will need to be accessible to the vast majority of consumers," says Ricaud. So will we soon be seeing EVs all over the place and within the reach of all budgets? Probably not as the transition will certainly be gradual. Drivers will have to change the way they use their car too. In the meantime France aims to have 500,000 all-electric or hybrid vehicles on the road by 2015. And 2m by 2020.

(1) Electrochemical Energy Storage for Electric Vehicles



Lithium battery – instrumentation from an electric vehicle to measure energy performance

Grenoble pioneers the development of public charging points

The French government has just launched a plan for the development of electric and hybrid vehicles. Grenoble is one of 12 pilot sites selected to deploy a network of public charging points.

> The State has undertaken to buy 50,000 EVs to guarantee manufacturers sufficient demand to justify ramping up to industrial output.

> The selected localities are committed to deploy public charging points for electric and hybrid vehicles starting in 2010.

> The car manufacturers Renault and PSA have undertaken to market 60,000 EVs in France for 2011-12, targeting in particular large cities.

Festival season opens!



What with the Cabaret Frappe, the Rencontres Brel and Vienne Jazz Festival this summer will be particularly musical in Grenoble-Isere!

The best known event, Vienne Jazz Festival, is celebrating its 30th anniversary this year. For three decades it has brought the world's top jazz, blues and gospel musicians to play at its now mythical venue, aided and abetted by the finest exponents of Brazilian, Cuban and African music. Vienne has become one of the

world's essential events, packing almost 7,000 people into a Roman theatre dating from the first century AD, night after night for two weeks. This year will be devoting special attention to jazz singers, notably Norah Jones, Dee Dee Bridgewater, Diana Krall and Liz Mc Comb, but also on a lighter note such as Joe Cocker, Elvis Costello, Paolo Conte and Bobby McFerrin.

However it would be a pity to overlook Vienne's little brothers and sisters, certainly less well known but every bit as enjoyable. Every year the Cabaret Frappe staged by Grenoble City Council features young artists from near and far in a magical open-air



Vienne Jazz festival

setting in the old town. In all there will be nine days of concerts, three venues and more than 50 performers at this remarkable gathering!

At an altitude of about 900 metres in the midst of the verdant Chartreuse massif, the Rencontres Brel should not be missed, with five evenings of eclectic music. The environment is also on the agenda with an over-riding concern for sustainable development, reflected in a drive to separate waste, with returnable glasses and dishes, car-sharing, eco-toilets, green electricity, sales of local produce and a scheme to compensate for carbon-dioxide emissions. The Rencontres Brel is very determined to become a benchmark for future ecofestivals!

Wherever you may be staying, high or low, whatever your age, whether you swing to jazz or rock, reggae or world music, or indeed French singers in the Brel tradition, you will find plenty to tickle your fancy in Grenoble-Isere this year. So, bring on the music, maestro!



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AEPi is the Grenoble-Isere Economic Development Agency. It provides companies with all the information and assistance they require to set up business in Grenoble-Isere: economic data, offers of building land, offices and industrial premises, meetings with local decision-makers, help with overall project management, notably funding, available grants, etc. Come and contact us.

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