



SGS E-MOBILITY

RECHARGING A NEW GENERATION

MATTHIAS POPP
Vice President, SGS Consumer Testing
Services, Automotive

The history of E-Mobility is not new. People have experimented, developed and mass-produced electric vehicles for nearly 120 years. The question is: what innovation is still missing for success? Matthias Popp, Vice President for SGS Consumer Testing Services, Automotive, believes he has the answer – integration.

Electric cars have silently graced the roads of Europe and the USA since the 1890s – only a decade or so after SGS was established in 1878. They proved so popular even Clara Ford, wife of Henry, owned a 1914 Detroit Electric: before her husband changed the automotive landscape forever with his now legendary 'Model T'. Matthias Popp and his team at the SGS E-Mobility Innovation Centre in Munich are hoping to change that landscape once again.

Matthias is combining the knowledge of a number of individual SGS divisions – automotive, chemical, energy, and industrial manufacturing industries – to create a single 'integral safety approach' for E-Mobility. His aim is to bring all of SGS' expertise together in one place and offer a one-stop solution for functional safety, homologation, battery testing, and safety testing of electric vehicle innovations. In 2012, nearly 100 years since the Detroit Electric rolled down the road, Matthias believes the time to go back to an electric future is now.





FOCUS ON THE FUTURE

“We are responsible for creating new test technologies for OEMs, particularly in the field of electro-mobility, or E-Mobility,” is how Matthias explains his team’s role in SGS. “Since 2008, we have seen that due to various factors, such as the financial crisis and an increase in oil prices, the automotive industry has suffered difficulties in selling large volumes of conventional combustion vehicles. With declining profits and increasing green policies from governments globally, the automotive sector has renewed its interest in electric vehicles. A similar thing happened during the 1970s when oil prices threatened productivity and profits. In fact, even now, if you look at Asia, Europe and the USA the push for innovations in electric vehicles and hybrids has mirrored a gradual paradigm shift away from fossil fuels to renewables. Perhaps for SGS in 2012, this is a timely change in perception – the last time sales in electric cars peaked was exactly one hundred years ago, in 1912.”

We ask our customers novel questions. Ones they haven’t thought of yet. That allows us to bring innovation to our customers’ technologies.

JAN HUBER

Manager, Customer Service,
EMC & Safety

CREATING AN ELECTRIC LANDSCAPE

While electric vehicles may not be anything new, for E-Mobility to become a serious global player in the automotive market many areas still need revisiting. If only to make sure that, this time around, E-Mobility is accepted at the consumer level. Matthias and his team provide leading OEMs with dedicated services that generate consumer confidence and trust. “We have specific teams here in Munich that specialise in different areas of E-Mobility. Our homologation group is working with OEMs to speed up the development and type approval process for products. This allows OEMs to get cars to market quicker and more efficiently, helping to keep prices down, which is important for the consumer.” Matthias continues, “We have a team who carry out state-of-the-art battery testing. SGS has invested heavily in this area and the result is a purpose-built €10 million battery test house. This gives us a real edge over our competitors as we can offer OEMs the opportunity to research, develop and test the safety of future innovations in battery technology. Our functional safety group is ensuring computer controlled systems, which are quickly becoming the heart of electric cars, can deliver safety even in the event of software or hardware failure.” This is easier said than done, especially when some electric cars now rely on up to four independent, but interconnected, motors and battery systems for their drive system.

We have a different focus on technology. We challenge conventional thinking, in order to create unique engineering solutions.

KARIM KORTLÄNDER

Manager, Alternative Drive Systems

Matthias and his team also consider how the electric landscape needs to change in order to keep vehicles at full power. “We have a team solely dedicated to innovating testing techniques that safeguard the infrastructure for making electric vehicles viable. For instance, we develop and certify the test charge stations which are now popping up everywhere from people’s homes to fast food drive-ins. Our team helps OEMs meet the safety compliance requirements for these charge stations. Requirements that are continually-evolving in order to cover new challenges against misuse, deterioration due to environmental elements, and acts of vandalism.”

It seems the collective knowledge and experience at the E-Mobility Innovation Centre in Munich really does offer OEMs a one-stop solution for SGS services. Matthias is hoping his integral safety approach can once again make the difference in helping this emerging sector of the automotive industry to recharge interest in innovation.

10

million euros invested by SGS

2000

m² of floor space housing the most up-to-date battery testing equipment

12

test benches for simulation of battery drivecycle and lifecycle scenarios

1000

volt 600 amp traction battery testing capabilities

500

kilos the weight of a single high-performance (up to) 1000 volt battery

300

kilo newton force shaker for vibration and shock testing

50

times gravitational acceleration shock testing

-40

to 160 degrees Celsius climatic chamber 'extreme temperature' test environment

5

special rooms for overload, crush, drop, and penetration safety testing of traction batteries

CO₂

limits are forcing a rethink by OEMs and their R&D departments, prompting hybridisation and electrification of whole fleets of new vehicles

CHARGING WHILE DRIVING

is a radical new way of approaching E-Mobility which is innovating new ways of keeping electric vehicles on the road without the need for stopping to recharge

AUTONOMOUS DRIVING

may become reality, where you no longer 'drive' but instead 'travel in' your vehicle as it takes you safely to your destination

ENERGY STORAGE SYSTEMS

in new batteries to allow people to 'connect to grid' at home and supply electricity stored in their vehicles back to the grid for peak shaving grid demand

RADICAL NEW BATTERIES

produced specifically for decentralised energy storage and based on e-mobility technologies offer more households the chance to live 'off the grid' via solar or wind charging



E-Mobility team in Munich: Jan Huber, Martin Schmidt, Matthias Popp, Jürgen Böck, and Karim Kortländer

DRIVING NEW LEGAL FRAMEWORKS OF THE FUTURE

KARIM KORTLÄNDER

Manager, Alternative Drive Systems

Karim Kortländer is an expert in non-conventional drive technologies for vehicles that run on hybrid, pure electric, hydrogen liquefied gas, and the many other drive technologies hidden away in R&D laboratories around the world. Karim consults on how to bring these new drive innovations to market.

“We are kind of technical lawyers,” he begins, “We help manufacturers understand and navigate the regulatory environment so that they can develop products that get to market faster. We have two roles, advising our customers and sitting on technical working groups for standardisation and regulation.”

The latter role enables Karim and the E-Mobility team to stay ahead of the competition by being involved directly with the process of drafting new regulations. “We aim to develop testable and non-design restrictive frameworks for these new regulations, which we hope will guarantee the safety of passengers and the environment. The goal is to ensure all future drive systems for vehicles maintain, or even improve on, today’s accepted safety levels. However, we also have to ensure that when new technologies are safe, we can prove this, even when faced with the restrictions of out-dated regulations,” explains Karim. “The problem with today’s regulatory framework is that it slows down innovation. We have amazing new technologies but the legal framework to certify them is partially obsolete. It was set up at a time when the kind of technologies we are now innovating were not even considered in people’s wildest dreams. For instance, think of what computing was decades ago and what it is now. Mobile phone technology is another example of massive technological leaps in a short time frame. That leap in technology is just waiting to happen in the automotive world. For instance, imagine a car in the future: you simply get in, say a destination and relax for the rest of the journey. Through the integrated use of

GPS networks, predicted traffic flows, intelligent drive dynamics, and active safety systems – the car makes the journey for you.”

The technologies for making this kind of vehicle already exist. One thing stopping the car of the future being manufactured is the regulatory framework for determining ‘responsibility’ in the event of an accident. “That is our job,” recognises Karim, or as he puts it, “We negotiate the best path for our customers with regards to the current regulations. My skill is in dissecting the content of a particular regulation’s ‘protection mechanism’ and transferring this to future technologies. I guess you could say we align new technologies and future regulations. This benefits our partners in vehicle manufacturing, R&D development, and the many research institutes and universities SGS collaborates with worldwide.”

**SGS IS WORKING
WITH STAKEHOLDERS
TO FORMULATE THE
NEW REGULATORY
FRAMEWORK
FOR ALTERNATIVE
DRIVE TRAINS.**

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WHEN YOU NEED TO BE SURE

