

# Nanotechnology to optimise batteries charging and discharging time

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A French company from the electric equipment industry which specialises in battery production has developed a nano-based technology that allows charging and discharging carbon batteries in seconds, over one million times, without any performance losses. It is also able to operate in extreme conditions. The technology is offered to all industries using carbon batteries (automotive, aerospace and smart grids) within the framework of either technical or commercial agreement.

On the global energy market, the demand for batteries has constantly increased over the last year. One of the major challenge for this technology is the ability to provide continuous power and, also, the poor autonomy currently offered. The French company aims at providing a solution to battery producers and to industrials offering them a technology which drastically reduces the charging and discharging speed. This technology therefore improves the energy efficiency and the continuity in power of any electrical device. The solution offered by the company is based on a revolutionary electrodes technology compatible with all kinds of chemistries from capacitors, ultracapacitors, batteries end even fuel cells. The electrodes are based on vertically aligned carbon nanotubes which is considered as an environment-friendly material. The company owns a unique nano manufacturing process and pioneers the industry by mixing carbon and graphene and using a singular coating. This electrodes technology is considered as 100 to 1000 times more conductive (electrically and thermally) than existing ultracapacitors and has moreover a 10 times greater ionic conductivity. With this technology, an ultra fast battery could for example charge and discharge in milliseconds to 5 seconds for up to one million cycles. This is mainly due to the system which significantly reduces the size and weight of a device's energy storage system when compared to a conventional battery. The market to adress with this technology is very diverse and concerns either ultracapacitors replacement (with faster charging of electricity) or a combination with existing lithium-ion batteries. In fact, lithium-ion batteries combined with their solutions – which boast greater energy density – or hydrogen fuel cells – are capable of harvesting energy at all – can provide more power and extend a product's lifetime. Created in April 2013, the SME based Southern France, benefits from over 15 years of R&D work on nanomaterials performed in research institutes and laboratories by its founders. Today, the company, strengthened by its 24 employees, has its own pilot production line and creates new interface materials and an innovative generation of ultracapacitors and batteries electrodes. They have started to sell their solution to customers and generate turnover. The SME is therefore looking for partners ready to accelerate their market penetration hence battery producers ready to include their solution or industrials interested in getting directly provided by their solution. In this context, the company is looking either for commercial agreements with technical assistance or for technological agreements.

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