



Progressus - Highly efficient and trustworthy components and systems for the next generation energy supply

Progressus supports the European climate targets for 2030 by proposing a next generation smart grid, demonstrated by the application example “smart charging infrastructure” that integrates seamlessly into the already existing concepts of smart-grid architectures keeping additional investments minimal. The expected high-power requirements for ultra fast charging stations lead to special challenges for designing and establishing an intelligent charge-infrastructure. As emission free traffic concepts are a nascent economic topic also the efficient use of charging infrastructure is still in its infancy. Thus, novel sensor types, hardware security modules, inexpensive high bandwidth technologies and block-chain technology as part of an independent, extendable charging energy-management and customer platform are researched for a charging-station energy-microgrid. Research of new efficient high-power voltage converters, which support bidirectional power flow and provide a new type of highly economical charging stations with connected storage and metering platform to locally monitor the grid state complements the activities. The stations are intended to exploit the grid infrastructure via broadband power-line as communication medium, removing the need for costly civil engineering activities and supplying information to the energy management solutions for utilization optimization. Smart-Contracts via block-chain offer a distributed framework for the proposed energy management and services platform. Furthermore hardware security hardens the concept against direct physical attacks such as infiltration of the network by gaining access to the encryption key material even when a charging station is compromised. Progressus solutions are estimated to enable a carbon dioxide saving of 800.000 tons per year for only Germany, will secure the competitiveness of European industry and research by extending the system know how and will thus safeguard employment and production in Europe.

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