Smart Systems at ST

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The exponential increase of world energy demand, with a forecasted rise of 45%[1] between 2010 and 2030, makes energy management one of the most urgent topics of the century and a key driver for semiconductors and electronics products evolution. The main solutions for world energy demand and global warming issues have been divided in two main streams: an increasing offer from alternative energy sources and their integration into the new Smart Grid and a reduction of the demand through an increase in the efficiency of systems.

In energy supply and distribution, the Smart Grid is estimated to be able to make a 14% reduction of CO_2[2] emissions reduction in the global energy system by 2020. In addition, it makes it possible to generate high cost savings for industrial and economic systems ($188 Billion per year estimated only for the U.S.[2]) New measures for Energy Efficiency will contribute up to 8 Giga-Tons of CO_2 reduction (54% of total with the application of policy 450[1]) by 2020, mostly thanks to power electronics applications.

Along these two areas of innovation, ST is investing to provide both effective power semiconductor technologies and ICs for new topologies for power conversion. New materials (SiC) for power transistors, innovative solutions for power management and digital control, wired and wireless ICs are some examples that ST offer that apply to energy related applications like PV converters, Smart Metering, Connectivity, Building Automation, Electrical Traction and Motor Control.

Along the energy theme, though at different orders of magnitude, innovation for portable systems is tackled at ST R&D: extremely low consuming CMOS technology for digital ICs, low power RF transceivers, milliWatt capable super thin batteries and 3D integration techniques are the base for miniaturized, long lasting battery based systems, that enable new scenarios especially in portable Healthcare and Wireless Autonomous Sensors Networks.

[1] Source: International Energy Agency
[2] Source: The Climate Group
[3] Source: "Grid 2030" A National Vision for Electricity's Second 100 Years, United States Department of Energy, Office of Electric Transmission and Distribution

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