Telecommunications power systems

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Delta"s telecom power systems are designed for wireless broadband access, fixed-line applications, Internet backbone and datacenters. Our reliable, energy-efficient telecom power solutions protect against grid power interruptions and fluctuations and help operators reduce OPEX and their carbon footprint. Delta"s rectifiers achieve energy efficiency of up to 98%.

The considerable problems deriving from the growth of energetic consumptions and from the relevant environmental “emergency” due to the emissions of greenhouse gases, push people to find out new solutions and new technologies for the production of primary energy fit for fulfilling the urging and growing energetic demands.

The global climate change, which is due to increased CO2 and other green house gases concentration levels in atmosphere, is considered one of the most important global emergency that requires immediate and effective policies (IPCC, 2007). The CO2 emissions are mostly due to the use of fossil fuels as energy source. Thus in the future the use of fossil fuels has to be decreased. This can be obtained by improving energy efficiency and by using large scale renewable energy sources.

This is also true in the telecommunication applications, which has seen, in the last years, a remarkable increase in the number of installations present on the whole territory - sometimes located in hardly reachable areas – and the relevant growth of energetic consumptions, because of growing interest about new and reliable services in mobility calls with an increase of the BTS operation hours and traffic management, in order to guarantee the quality of the service anywhere and anytime.

Therefore, the reduction of the energetic consumptions of a Telecommunications Power Systems represents one of the critical factors of the telecommunication’s technologies, both to allow a sizeable saving of economic resources to the mobile communications system management and to realize "sustainable" development actions. In other words improving the energy efficiency of telecom networks is not just a necessary contribution towards the fight against global warming, but with the rapidly rising prices of energy, it is becoming also a financial opportunity.

Therefore clear and defined approaches must be taken to optimize actions of energy savings. A telecom network is just like an eco-system: one cannot just apply any energy savings actions without looking at the impacts on the other system components (Roy, 2008). It has been proposed an “Energy Logic Method” which might be applied to both a wireless and a wired line network. This approach is based on a holistic method to energy savings and provides a complete roadmap of recommendations and quantifies their savings, reviewing also the different impacts.

Starting from these considerations the research project “Telecommunication power systems: energy

saving, renewable sources and environmental monitoring” was launched by the Department of Environmental Sciences of the Second University of Naples (DSA-SUN) and the Institute for the Environmental Research (ISPRA), with the participation of the Italian suppliers of mobile telecommunications (H3G, Vodafone, Telecom and Wind) and their technological partners (Ericsson).

to obtain a rationalization of the consumptions of a BTS through the intervention on energy saving;

to produce, in the sites where the BTS are located, energy coming from renewable sources - aiming to reduce the emissions of polluting agents in the atmosphere;

to implement intelligent monitoring systems for the energy consumptions and the relevant impacts on the environment.

It has been evaluated, from a technical and economical point of view, the feasibility of some solutions, including:

Energetic auditing for a radio-telecommunication station in different operational contexts (urban and rural areas, different periods in the year, different working load, etc.);

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