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Efficiency in Electricity Generation: new Eurelectric report compiles latest knowledge

This report, compiled by the “Upstream” sub-group of Eurelectric’s Working Group on Preservation of Resources, in collaboration with VGB Powertech, gathers state-of-the-art knowledge on energy efficiency in electricity generation based on various different processes - thermal processes, renewable energy sources and distributed generation technologies. The efficiencies presented in this report are related to the most recent power generation technologies currently on the market or expected to be available in the near future.

The report is divided into two distinct parts: one on energy efficiency values in electricity generation, which is the core of the report, and the other part on related issues such as impacts on the environment, power plant scales and generation costs, indicators and benefits of improving energy efficiency.

Electric power plant efficiency is defined as the ratio between useful electricity output from the generating unit and the energy value of the energy source supplied to the unit, within the same timeframe.

With the above definition of efficiency, which do not account for “fuel” availability, from all existing technologies the report, which can be downloaded on Eurelectric web site, shows that the most efficient electricity generation technology is large and small hydropower plants, which demonstrate efficiencies of over 90%, while the least efficient is current solar power generation technologies, with typical efficiencies between 14% and 23%.

Examples in the report underline that increasing power generation efficiency, even on a very small scale such as 0.1%, will have a remarkable impact on fuel consumption and reductions in gaseous emissions.

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