Energy efficiency of particle accelerators – A networking effort within the EuCARD$^2$ program

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**Abstract**

EuCARD2 is an Integrating Activity Project for coordinated Research and Development on Particle Accelerators, co-funded by the European Commission under the FP7 Capacities Programme. Within the network EnEfficient we address topics around energy efficiency of research accelerators. The ambitious scientific research goals of modern accelerator facilities lead to high requirements in beam power and beam quality for those research accelerators. In conjunction with the users’ needs the power consumption and environmental impact of the research facilities becomes a major factor in the perception of both funding agencies and the general public. In this network we combine and focus the R&D done individually at different research centers into a series of workshops. We cover the topics “Energy recovery from cooling circuits”, “Higher electronic efficiency RF power generation”, “Short term energy storage systems”, “Virtual power plants” and “Beam transfer channels with low power consumption”. Our network activities are naturally open to external participants. With this work we will introduce our energy efficiency topics to interested participants and contributors from the whole community.

![Figure 2: Distribution of power loads in a 15 minute average caused by GSI campus and accelerator facility. Note the difference in load from 5000 h to 6500 h due to different operation times of the accelerator (taken from [5]).](image)