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Sustainability studies for future linear colliders

Sustainability is an increasingly important topic in the public discourse, and has become a prioritized goal in the design, planning and implementation of future accelerators; approaches to improved sustainability range from overall system design, optimization of subsystems and key components, to operational concepts. A direct quantification of the ecological footprint, be it greenhouse gas emissions during operation or production, or consumption of problematic materials, is currently performed only sporadically, mostly through translation of electricity consumption into equivalent CO2 emissions, with Lifecycle Assessments (LCA) emerging as a more comprehensive approach.

Two large electron-positron linear colliders are currently being studied as potential future Higgs-factories, CLIC at CERN and ILC in Japan. These projects are closely collaborating on methods to reduce the power consumption of accelerator components and systems, and smart integration of future accelerator infrastructure with the surrounding site and society (e.g. Green ILC concept). In a recent, common study an LCA of the construction of tunnels, caverns and shaft of both accelerators was conducted. This contribution will present this and other current results and future activities.

Collaboration / Activity

ILC and CLIC

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