

# RF-based energy savings at the FLASH and European XFEL linacs

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Several measures were developed and deployed at the pulsed linacs FLASH and European XFEL operated at DESY in order to reduce the energy consumption of the RF systems. A staged implementation of several techniques allowed energy savings up to 25% for both facilities, at the cost of reducing the RF overhead and increasing the complexity of the low-level radio frequency (LLRF) system. However, through tool development and automation, the energy saving linac configuration could be implemented without compromising the RF stability, maximum beam energy, accelerator availability and with minimal impact on the setup time.

## Footnotes

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