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Overview on high power/high efficiency RF sources development at Thales Electron Devices

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Thales ED has an experience of more than fifty years in high power RF tubes design and manufacturing, from klystrons and grid tubes amplifiers to gyrotrons oscillators.

This talk presents recent high power / high efficiency solutions (experimental results and designs) which are suited for the next generation of particles accelerators. Namely, one of the future large scale linacs main challenges is to reduce the large electrical power consumption (in the TWh per year order of magnitude). To make these facilities more environmental friendly and power efficient, research and development is encouraged at Thales ED to increase RF sources electrical to RF power conversion. One ultimate goal for the vacuum tubes would be for instance to deliver the required high peak power with a targeted 70% efficiency.

The presentation will introduce different tubes solutions comparing parameters such as performance, maturity and lifetime, as well as possible innovations for each technology (klystrons, tetrodes and IOTs), in order to give an overview of Thales ED capability to deliver efficient RF solutions for long pulse and CW applications for the next decade.

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