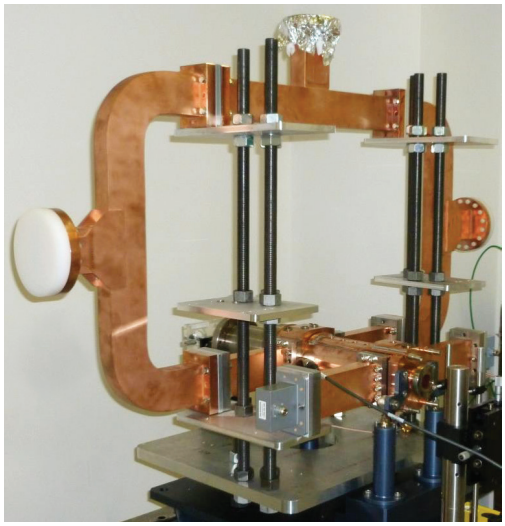
Hybrid TW/SW Photoinjector



Energy	> 30 MeV
Bunch change	Up to 1 nC
Normalized emittance	< 2 μm
π-mode frequency	2.856 or 2.998 GHz
RF repetition rate	Up to 120 Hz
Quality factor, gun	13,000
Shunt impendance	60 MΩ/m
Peak surface field, gun	100 MV/m
Peak cathode field	60 MV/m
20 MeV Input power	25 MW

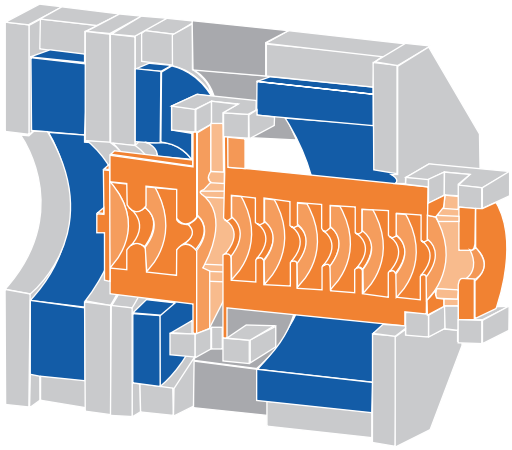
AVAILABLE FEATURES

- Removable cathodes
- Matched solenoid
- Dual-feed option
- Other accelerating section lengths
- X-band versions

The Hybrid Photoinjector is a unique combination of a photocathode gun and linac into a single structure. Unlike other multi-cell photoinjectors, the Hybrid Photoinjector uses a standing wave gun and traveling wave accelerating section fed by a common RF input. The compact package, simplified RF system, and improved longitudinal bunch properties make the hybrid photoinjector an attractive option.

The RadiaBeam Hybrid Photoinjector combines a 1.55 cell SW photocathode section and an axially-coupled, multi-cell traveling wave accelerating section into a single brazed structure. The TW linac is matched to the beam's zero-crossing and acts as a velocity buncher; with no drift space between the gun and acceleration, there is no bunch lengthening.

Transverse emittance is maintained with a symmetric dual-feed coupler, Z-coupling cells, and racetrack irises.



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