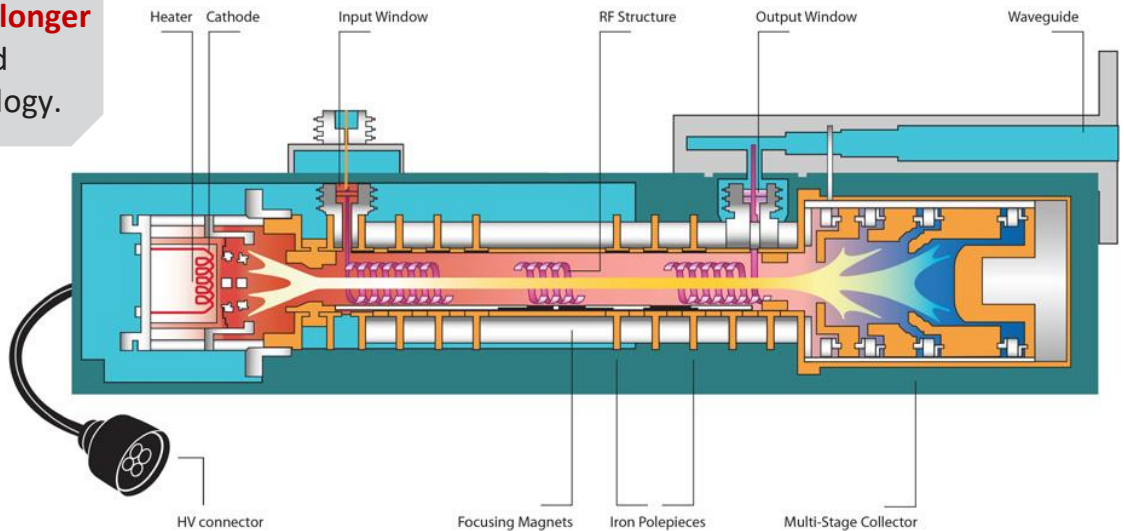


## Dynamic *LIFEEXTENDER* Technology

Experience up to 50% longer TWT life with patented *LIFEEXTENDER* technology.

*LIFEEXTENDER* is a new, patented technology introduced to the electron device market for improving travelling wave tube (TWT) or Klystron life. The dynamic *LIFEEXTENDER* is the only method where the life is extended by preserving the cathode's active coating.



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An electron device reaches end of life when its cathode barium reserve is exhausted. The rate of barium evaporation is determined by the cathode temperature, which is in turn determined by the cathode heater voltage setting. With *LIFEEXTENDER*, the cathode heater voltage is adjusted over time to minimize the rate of barium depletion, thereby maximizing the life of cathode, resulting in 30% to 50% (!!!) extended lifetime.

A conventional method utilizing adjustment of the anode voltage only improves the operational life of the amplifier for a limited period. In this case, the cathode heater voltage is fixed at the time of manufacture and does not change over time. Thus, while the anode voltage is ramped up to compensate for the loss of gain and beam current in the TWT or Klystron that naturally occurs over time, nothing is done to reduce the rate of barium depletion. Furthermore, the static setting of the heater voltage results in an inefficient use of barium reserves early in the life.

Dynamically adjusting the heater voltage over time will lengthen the cathode life. Anode voltage adjustment on its own only extends the operational life of the TWT for a limited time without extending the ultimate life of the cathode. With *LIFEEXTENDER*, the lifetime is actually extended by saving barium during the initial operational period so it can be used later to extend the cathode life.

