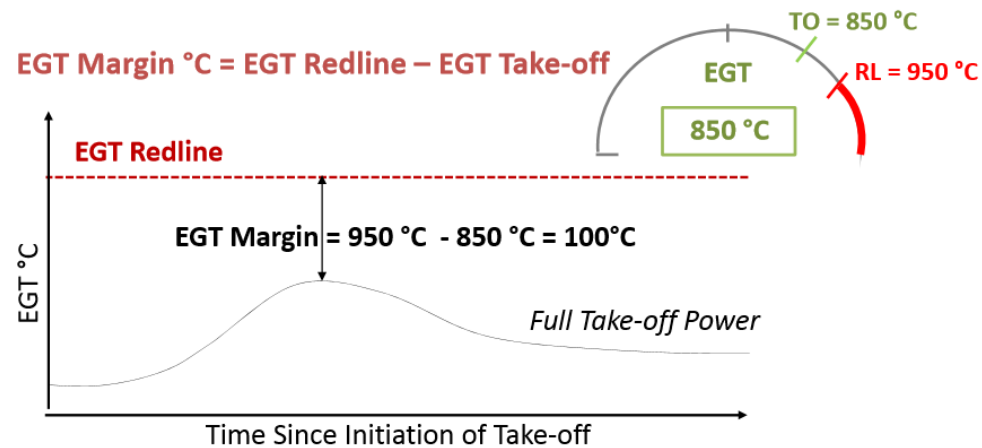


EGT Margin

- EGT is a measure of the temperature of the gas as it leaves the turbine unit.
- Engines are certified with temperature limits enforced via a limit on maximum take-off EGT, referred to as the **redline EGT**.

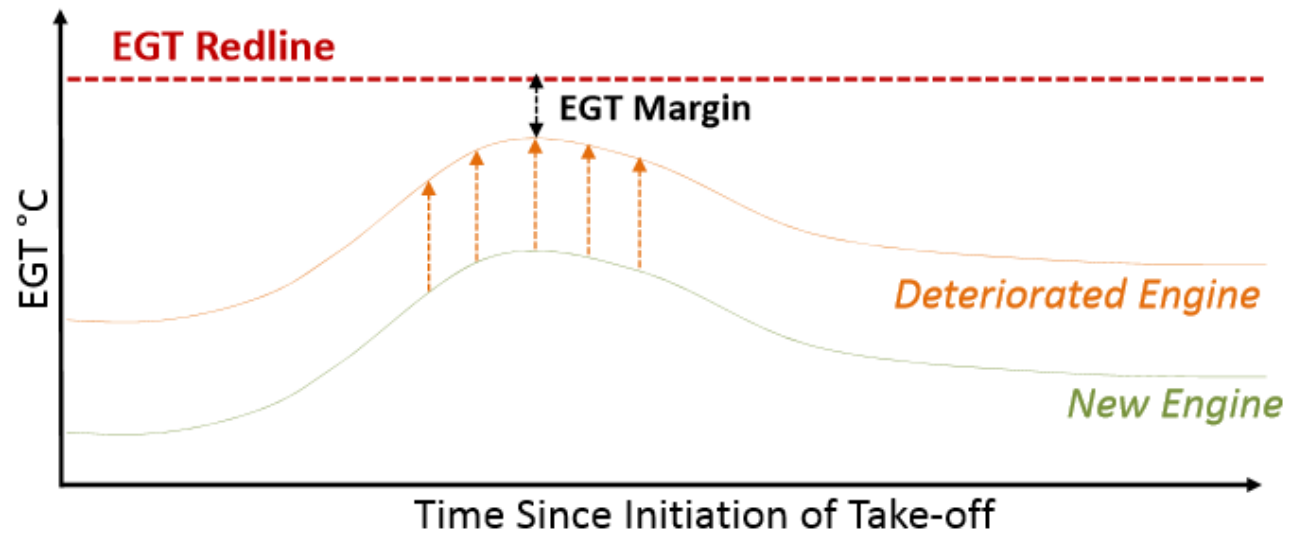


- EGT Margin (EGTM)** is the difference between the **peak EGT** incurred during take-off and the certified redline EGT. It is used to evaluate and track engine **time on-wing & health**.



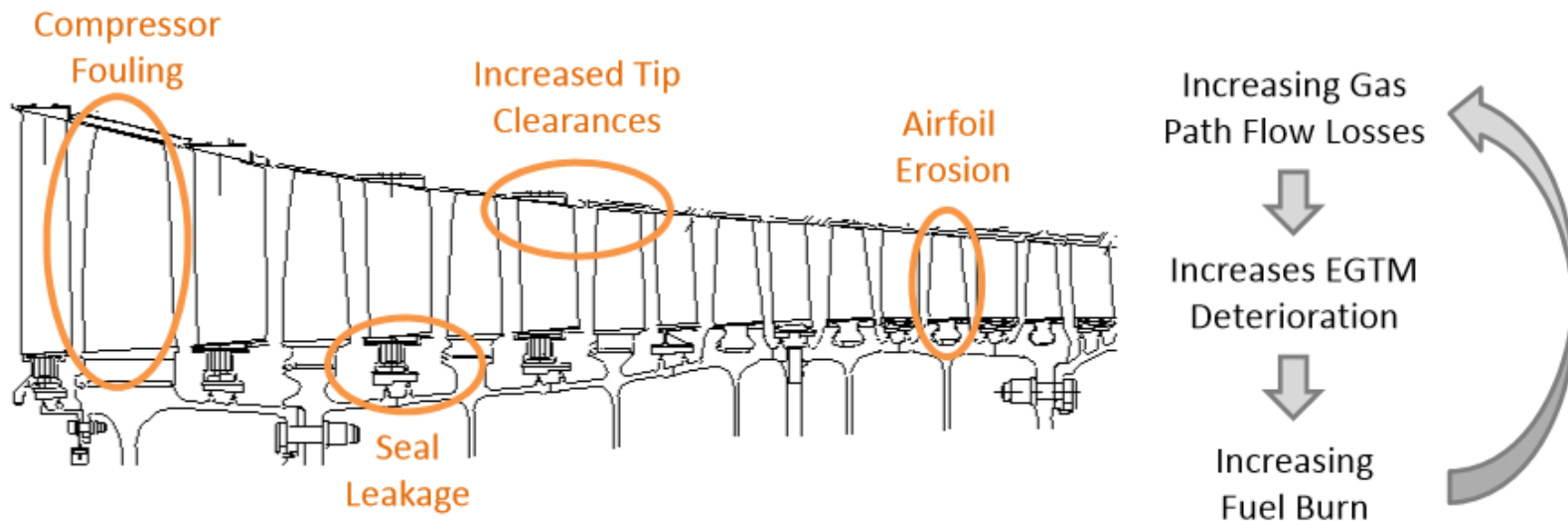
- d. **EGT margins (EGTM)** are at their highest levels when the engines are new or just following refurbishment.
- e. As the engine deteriorates, the EGT margin will rise until it reaches Redline EGT, or the absolute temperature limit which cannot be exceeded without damaging the engine

EGT Margin Deterioration



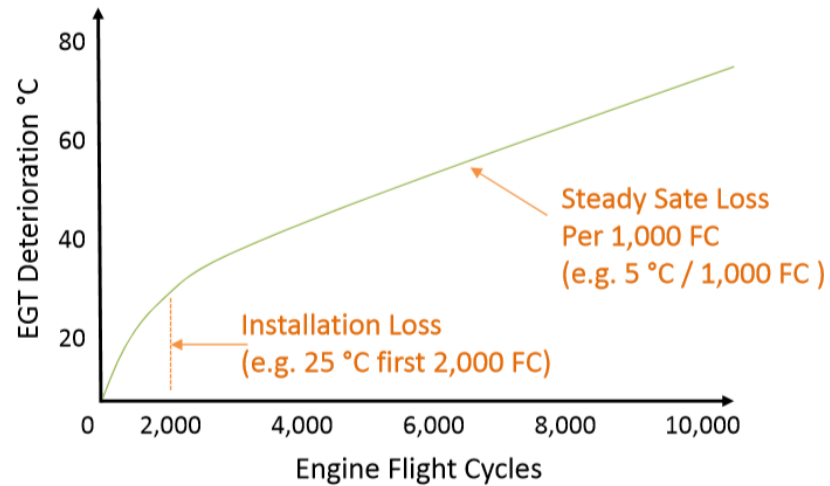
- f. EGT Margin Deterioration largely results from hardware distress (e.g. gradual increase in clearance between turbine blade tips & surrounding static seals or shrouds, and combustor distress).

EGT Margin Deterioration Cycle



g. Rates of EGTM deterioration are highest during initial operation & subsequently stabilize to reach a steady state level.

Relationship Between EGTM Deterioration & Engine FC



h. Rate of EGTM deterioration is influenced by:

- Engine thrust rating increases
- Engine derate decreases
- Average flight leg decreases
- Operating environment becomes more severe

i. EGT Margin Recovery Through Water Washing – All engines become contaminated during the course of normal operations. Over time, this contamination leads to performance deterioration which can be restored by regular engine wash.

- j. Engine washing is an on-wing, ground-based, process that pumps water and cleansing additives into the engine's intake while the engine is operating. The process fully penetrates the compressor and turbine to clean the airfoil surfaces.
- k. Engine wash provides increased EGT margin - thus longer on-wing life- and compressor efficiency resulting in reduced fuel burn. Keeping the gas path clean can reduce fuel burn by as much 1.2% and increase engine EGT margin by as much as 15 deg. C.

