

## Analisa performa pengurangan daya dorong pada mesin pesawat kelas long-range wide-body ketika fase lepas landas = Performance analysis of reduced thrust of a long-range wide body aircrafts engine during takeoff phase

Radifan Faiz Irsyadi, author

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### Abstrak

Dewasa ini, pengurangan daya dorong (*thrust*) atau *derate* praktiknya telah digunakan secara umum sebagai prosedur standar dari lepas landas (*takeoff*). Berhubung daya digunakan secara maksimal ketika fase lepas landas, praktik ini memiliki banyak keuntungan dalam pengoperasian pesawat terbang. Tidak hanya tindakan ini mampu mengurangi konsumsi bahan bakar ketika fase lepas landas, tetapi juga mengurangi keausan mesin yang disebabkan tegangan dan suhu tinggi.

*Exhaust Gas Temperature (EGT)* adalah salah satu parameter penting yang digunakan untuk memonitori kerusakan mesin. Terdapat hubungan pasti antara pengurangan daya dorong dan EGT dimana nilai diantara keduanya saling berlawanan. Tetapi, perhitungan harus dilakukan terlebih dahulu oleh kru penerbang berapa persen *derate* yang layak digunakan sebelum lepas landas. Tujuan penulisan karya ilmiah ini adalah untuk menemukan efektivitas *derate* untuk menurunkan EGT dengan maksud meningkatkan performa, memperpanjang umur mesin dan mengurangi biaya operasi oleh operator.

Reduced thrust or *derate* has been practiced commonly nowadays as a standard procedure of takeoff. Since power is being used at maximum during the takeoff phase, the practice has many benefits for the operation of aircraft. Not only it reduced fuel consumption during the takeoff phase, but also reduced the engines wear and tear that caused by stress and very high temperature. *Exhaust Gas Temperature (EGT)* is one of the most important parameters that is used to monitor engine deterioration. There is a definite correlation between reducing takeoff thrust and EGT reduction, where both values are contradicting one another. However, there must be some calculation by the flight crew on how much percentage of *derate* is eligible prior to takeoff. The goal of this paper is to find the effectiveness of *derate* to reduce EGT in order to improve performance, prolong engine life and reduce operating costs of the operators.