

**ANALISIS PERFORMANCE TURBOSHAFT ENGINE T700-GE-700 PADA
HELICOPTER SIKORSKY UH-60A BLACK HAWK DENGAN VARIASI
KETINGGIAN**

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ABSTRAK

Kemampuan terbang pesawat terbang dapat ditentukan oleh performance dari engine pesawat tersebut dan kondisi terbang pesawat tersebut. Penelitian ini bertujuan untuk mengetahui pengaruh ketinggian terhadap performance engine turboshaft T700-GE-700 yang digunakan pada helicopter sikorsky UH—60A black hawk. Dengan menghitung nilai fuel air ratio, specific thrust, specific fuel consumption, thermal efficiency, propulsive efficiency dan overall efficiency serta juga menghitung nilai induced power pada saat kondisi hover. Penelitian ini dilakukan dengan menggunakan empat ketinggian yaitu 1000 ft, 2000 ft, 3000 ft, 4000 ft 5000 ft., 6000 ft,7000 ft dan 8000 ft.

Sebelum mengetahui nilai-nilai tersebut maka diperlukan beberapa data parameter input. Dan untuk mengetahui nilai fuel air ratio, specific thrust, specific fuel consumption, thermal efficiency, propulsive efficiency dan overall efficiency menggunakan metode parametric cycle analysis dan engine performance analysis sedangkan untuk mengetahui nilai induced power menggunakan persamaan-persamaan yang terdapat pada momentum theory.

Hasil yang didapat dari penelitian ini yaitu ketinggian sangat berpengaruh terhadap performance suatu engine dimana nilai fuel air ratio, specific thrust, thermal efficiency, propulsive efficiency semakin tinggi seiring dengan kenaikan ketinggian terbang. Hal ini dikarenakan adanya pengaruh dari nilai temperature, density udara dan tekanan udara pada setiap ketinggian akan tetapi untuk nilai specific fuel consumption mengalami penurunan dikarenakan besar kecilnya nilai specific fuel consumption ditentukan oleh nilai fuel air ratio dan nilai specific thrust.. untuk nilai induced power, nilai actual induced power lebih besar daripada ideal induced power hal itu dikarenakan adanya pengaruh dari nilai drag.

Kata Kunci : Performance, Induce Power, Helicopter, Turboshaft Engine, Hover

**PERFORMANCE ANALYSIS OF TURBOSHAFT ENGINE T700-GE-700 ON
HELICOPTER SIKORSKY UH-60A BLACK HAWK WITH ALTITUDE
VARIATION**

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ABSTRACT

The ability to flights an aircraft can be determined by the performance of the aircraft engine and the aircraft's flights conditions. This study aims to determine the effect of altitude on the performance of the T700-GE-700 turboshaft engine used in the Sikorsky UH-60A black hawk helicopter. By calculating the value of fuel air ratio, specific thrust, specific fuel consumption, thermal efficiency, propulsive efficiency and overall efficiency as well as calculating the value of induced power during hover conditions. This research was conducted using four flights altitude, is 1000 ft, 2000 ft, 3000 ft, 4000 ft 5000 ft., 6000 ft,7000 ft and 8000 ft.

Before know the values, some input parameter data is needed. And to find out the value of fuel air ratio, specific thrust, specific fuel consumption, thermal efficiency, propulsive efficiency and overall efficiency using parametric cycle analysis and engine performance analysis methods, while to determine the value of induced power uses the equations contained in the momentum theory.

The results obtained from this study are that altitude is very influential on the performance of an engine where the value of fuel air ratio, specific thrust, thermal efficiency, propulsive efficiency increases with the increase in flying altitude. This is due to the influence of the value of temperature, air density and air pressure at each altitude, but the specific fuel consumption value has decreased because the size of the specific fuel consumption value is determined by the value of the fuel air ratio and the value of specific thrust. For the value of induced power, the actual induced power value is greater than the ideal induced power it is due to the influence of the drag value.

Keywords : Performance, Induce Power, Helicopter, Turboshaft Engine, Hover