

ABSTRAK

Dalam proses operasinya mesin pesawat CFM-56-7B, *ring seal* yang terpasang pada *gearshaft Transfer Gearbox* sering mengalami terkelupas sehingga rusak dan mengakibatkan sering terjadi kebocoran. Pada *transfer gearshaft* terdapat *adhesive bonding* sebagai perekat antara *ring seal* dan *gearshaft* yang berfungsi untuk menahan oli agar tidak bocor. Dengan terjadinya kebocoran oli akan mempengaruhi sistem lubrikasi pada *bearing di transfer gearbox*. Salah satu aspek peningkatan kekuatan *adhesive bonding* tergantung pada dua faktor yaitu kekasaran permukaan dan ketebalan *bondline adhesive*. Tugas Akhir ini menganalisis bagaimana kekasaran permukaan dengan proses *grit blasting* dan ketebalan *bondline* mempengaruhi kinerja *adhesive bonding*. Metode yang digunakan pada penelitian ini yaitu eksperimental yang bertujuan untuk mendapatkan kekuatan *adhesive bonding* yang optimum. Parameter untuk yang dievaluasi dari analisis ini yaitu kekuatan *bonding* dan tegangan maksimum *adhesive* tersebut yang dibuat variasi ukuran *abrasive 20 dan 36* dan tiga ketebalan *bondline* 1 mm, 2 mm, 3 mm. Dari pengujian yang telah dilakukan, didapat hasil bahwa kekuatan *adhesive bonding* meningkat seiring dengan meningkatnya kekasaran permukaan dan berkurangnya ketebalan *adhesive*. Nilai rata-rata optimum uji kekasaran didapat pada ukuran *abrasive 20* sebesar 318,217 μin . Dan nilai optimum nilai tegangan geser didapat pada ketebalan *adhesive bondline* 1 mm sebesar 9,7471 MPa.

Kata Kunci: *Adhesive bonding, gearshaft, ketebalan bondline, ring seal, kebocoran oli*



**EFFECT OF SURFACE ROUGHNESS AND THICKNESS OF BONDLINE
ADHESIVE ON BONDING STRENGTH OF RING SEAL AND STEEL 9315 ON THE
TRANSFER GEARBOX CFM56-7B**

ABSTRACT

In the process of operation of the CFM-56-7B aircraft engine, the ring seal attached to the Gearshaft Transfer Gearbox often peels off so that it is damaged and results in frequent leaks. In transfer gearshaft, there is adhesive bonding as an adhesive between the ring seal and the gearshaft which functions to hold the oil from leaking. The occurrence of oil leakage will affect the lubrication system on the bearings in the transfer gearbox. One aspect of increasing the strength of adhesive bonding depends on two factors, namely surface roughness and bondline adhesive thickness. This Final Project analyzes how surface roughness with grit blasting process and bondline thickness affects adhesive bonding performance. The method used in this study is experimental which aims to obtain optimum adhesive bonding strength. The parameters for those evaluated from this analysis are bonding strength and the maximum shear stress of the adhesive which is made variations in the size of abrasives 20 and 36 and three bondline thicknesses of 1 mm, 2 mm, 3 mm. From the tests that have been carried out, it was found that the strength of adhesive bonding increases along with the increase in surface roughness and decrease in adhesive thickness. The optimum average value of the roughness test was obtained at an abrasives size of 20 of 318,217 μin . And the optimum value of the shear stress value is obtained at the thickness of the adhesive bondline 1 mm of 9.7471 MPa.

Keywords: *Adhesive bonding, gearshaft, thickniss bondline, ring seal, oil leak*

