ABSTRAK

Untuk menjaga keandalan pesawat udara sudah menjadi hal yang mutlak bagi setiap operator *(airlines)* untuk melakukan *maintenance* (perawatan) pesawat terbang secara berkala. Salah satu maskapai penerbangan di Indonesia yang mengoperasikan beberapa jenis dan tipe pesawat terbang adalah Garuda Indonesia *Airlines*. Di antara beberapa jenis dan tipe yang ada adalah Boeing 737-800. Penelitian ini bertujuan untuk menganalisis reliability *heat exchanger* pada *AC* pack pesawat Boeing 737-800. Salah satu jenis perawatan pesawat yang dilakukan adalah perawatan berupa inspeksi pada komponen *heat exchanger* yang terletak pada *air conditioning pack* pesawat tipe Boeing 737-800. Untuk meningkatkan keselamatan pesawat maka dilakukan uji *reliability* dengan *preventive maintenance* terhadap komponen pesawat terbang khususnya pada bagian *heat exchanger*. Penelitian ini menemukan jenis kerusakan pada *heat exchanger* yang mempengaruhi sistem pesawat melalui *pressure test* di workshop PT. GMF Aeroasia yaitu *blocking* karena adanya kotoran dan *leakage* karena terjadinya kebocoran pada *heat exchanger*. Penelitian ini juga membandingkan efektivitas dari perpindahan panas *heat exchanger* yang mengalami kegagalan sebesar 38% dan yang bekerja dalam keadaan normal sebesar 43%. Penelitian ini mengarah pada karakteristik kerusakan bagian komponen pesawat menggunakan metode distribusi *Weibull*. Hasil perhitungan secara teoritis mendapatkan nilai MTBF *(Mean Time Between Failure)* komponen *heat exchanger* pada pesawat Boeing 737-800 milik Garuda Indonesia sebesar 2870 *flight hours*, data MTBF ini akan menjadi referensi sebagai pembuatan jadwal *maintenance* terbaru sehingga perawatan *heat exchanger* akan dilakukan setiap A *phase* yang ke 2. Penelitian ini juga menghitung jumlah *spare part* yang harus disiapkan yaitu sebanyak 2 buah *heat exchanger* untuk mencegah pesawat AOG *(aircraft on ground)* yang disebabkan tidak ada persediaan *spare part.*

Kata Kunci: *Heat Exchanger, AC Pack, Reliability, Garuda Indonesia, Distribusi Weibull.*

Reliability Analysis of Heat Exchanger on Boeing 737-800 Air Conditioning Systemwith Weibull Distribution Method

ABSTRACT

In order to maintain the reliability of the aircraft, it is absolutely essential for every operator (airline) to carry out regular aircraft maintenance. One of the airlines in Indonesia that operates several types and types of aircraft is Garuda Indonesia Airlines. Among the several types and types that exist is the Boeing 737-800. This study aims to analyze the reliability of heat exchangers on AC pack Boeing 737-800 aircraft. One type of aircraft maintenance that is carried out is maintenance in the form of inspection of the heat exchanger components located in the air conditioning pack of Boeing 737-800 type aircraft. Component life is defined as the average time between failures of a component. The average between component failures is measured as the average time interval between repairable/rotable components, with the time expressed as flight hours. To improve aircraft safety, a reliability test was carried out with preventive maintenance on aircraft components, especially on the heat exchanger section. This study found the type of damage to the heat exchanger that affects the aircraft system through a pressure test at the workshop of PT. GMF Aeroasia namely blocking due to dirt and leakage due to leaks in the heat exchanger. This study also compares the effectiveness of heat exchanger heat transfer which has failed by 38% and which works under normal condition by 43%.This research leads to the characteristics of damage to aircraft component parts using the Weibull distribution method. The results of theoretical calculations obtain the value of MTBF (Mean Time Between Failure) of the heat exchanger component on Garuda Indonesia's Boeing 737-800 aircraft of 2870 flight hours, this MTBF data will be a reference for making the latest maintenance schedule so that heat exchanger maintenance will be carried out every A phase the 2nd. This study also calculates the number of spare parts that must be prepared, namely as many as 2 heat exchangers to prevent AOG (aircraft on ground) aircraft due to unavailability of spare parts.

Key Word : Air Conditioning System, Heat Exchanger, Weibull Distribution