

## INTISARI

Pesawat penumpang merupakan alat transportasi massal yang memiliki banyak keunggulan bila dibandingkan dengan jenis transportasi lain. Waktu perjalanan yang singkat untuk menempuh jarak yang jauh menjadi keunggulan utama dari transportasi ini. Untuk menunjang keamanan serta kenyamanan penumpang, diperlukan perancangan kabin yang baik. Pada pesawat Airbus A320, terdapat baris kursi yang terletak di samping *emergency exit*. Baris kursi tersebut menghalangi penumpang saat terjadinya evakuasi *emergency landing*. Perancangan kursi penumpang yang dapat melipat menjadi topik penelitian.

Penelitian ini bertujuan untuk mendapatkan rancangan kursi penumpang Pesawat Airbus A320 yang dapat melipat untuk memberi ruang evakuasi dengan menggunakan *software Computer Aided Design (CAD)*. Rancangan akan dianalisis strukturnya berdasarkan *standard* pembebanan *European Aviation Legislation (CS – 25.561 Amandemen 22)* dengan menggunakan *software Finite Element Analysis (FEA)*. Analisis struktur ini akan memperoleh nilai tegangan *von mises*, deformasi dan *safety factor*.

Hasil penelitian ini memperoleh rancangan kursi penumpang yang dapat memberi ruang tambahan sebesar 27,8 cm. Bagian rangka kaki, rangka duduk, dan *armrest* melipat untuk memberi ruang tambahan saat terjadinya proses evakuasi. Setelah melakukan proses simulasi, rancangan memiliki *safety factor* diatas 1,33. Sehingga rancangan dapat dikatakan layak untuk menuju tahap manufaktur.

**Kata kunci** : pesawat penumpang, Airbus, kursi penumpang, *finite element*, perancangan, analisis.

## ABSTRACT

Commercial airplane is one kind of mass transportation that have many advantages compared to others. With airplane, people can have a shorter travel time in a long distance travel. To support the safety and comfort factors of passengers, a good cabin design is needed. On Airbus A320, there is a row of seats located next to the emergency exit. Those row of seats block the passengers during the emergency landing evacuation. One of the solutions for this problem is by installing some special seats that can be folded, so the passenger will have a wider space in evacuation process. The design of passenger seats that can be folded is the topic of this research.

This study aims to find the design of Airbus A320 passenger seat that can be folded to provide a wider evacuation space using Computer Aided Design (CAD) software. The structure will be analyzed according to European Aviation Legislation (CS – 25.561 Amandement 22) standard using Finite Element Analysis (FEA) software. Analysis of this structure will obtain a value of von mises stress, deformation, and safety factor.

The results of this study obtain a passenger seat's design that provide 27,8 cm additional space . Specifically, there are three components that can be adjusted in this special seats, those are armrest, base frame, and buttom frame. The result of simulation process stated that this design has a safety factor above 1,33 on each section. So, the design is feasible to go to the manufacturing stage.

**Keywords** : commercial airplane, Airbus, passenger seat, finite element, design, analysis.