

## **ABSTRACT**

*The generator carriage is one of the carriages containing the generator set. The function of the generator train carriage is not only to help power when the train is going on but also to help installations on the train, including lights, television and air conditioning. The generator carriage that was installed using the old design overheated, this resulted in the burning of the generator set in the generator carriage.*

*Burning of the generator set in the generator train carriage can be caused by damage to the components of the generator because the temperature in the generator carriage room is very high, for this reason the room needs to be replaced with a new carriage room design. The generator carriage is carried out in two designs, namely remote mounting radiator and direct mounting radiator. The replacement of the remote mounting radiator generator carriage room design with the direct mounting radiator requires heat research on both methods. The data needed in designing field observations, literature studies, and interviews. The analysis process uses Autodesk Inventor Professional 2019 software and Ansys Workbench 17.0 software.*

*The results of the design analysis for generator carriages using remote mounting radiator and direct mounting radiator methods were carried out to see that the ambient temperature in the generator carriage could affect the performance of the generator set. The results of the temperature analysis on the generator carriage show that the remote mounting radiator has a lower ambient temperature than the direct mounting radiator.*

*Keywords: Fluid Flow, Engine, Power Train, Fluent*

## INTISARI

Gerbong kereta pembangkit adalah salah satu gerbong kereta yang memuat generator set. Fungsi gerbong kereta pembangkit selain untuk membantu tenaga saat kereta api akan melaju juga untuk membantu instalasi pada kereta api diantaranya lampu, televisi dan AC. Gerbong kereta pembangkit dipasang menggunakan desain yang lama mengalami *overheat*, hal ini mengakibatkan dapat terbakarnya generator set yang ada di dalam gerbong kereta pembangkit.

Terbakarnya generator set pada gerbong kereta pembangkit dapat disebabkan karena kerusakan komponen pada generator set karena temperatur di ruangan gerbong kereta pembangkit sangat tinggi, untuk itu pada ruangan tersebut perlu diganti dengan desain ruangan gerbong yang baru. Penggantian pada gerbong kereta pembangkit dilakukan pada dua desain yaitu *remote mounting radiator* dan *direct mounting radiator*. Penggantian desain ruangan gerbong kereta pembangkit metode *remote mounting radiator* dan *direct mounting radiator* perlu dilakukan penelitian panas pada kedua metode. Data yang dibutuhkan dalam perancangan diperoleh melalui observasi lapangan, studi literatur, dan *interview*. Proses analisa menggunakan *software Autodesk Inventor Profesional 2019* dan *software Ansys Workbench 17.0*.

Hasil analisa desain untuk gerbong kereta pembangkit dengan metode *remote mounting radiator* dan *direct mounting radiator* dilakukan untuk mengetahui temperatur *ambient* pada gerbong kereta pembangkit dapat berpengaruh pada kinerja generator set. Hasil analisa temperatur pada gerbong kereta pembangkit menunjukkan bahwa *remote mounting radiator* memiliki temperatur *ambient* lebih rendah daripada *direct mounting radiator*.

Kata Kunci: *Fluid Flow, Engine, Power Train, Fluent*