

Experimental Study on Aerodynamic Noise of Radiator Cooling Fan with Different Diameter in Hemi-Anechoic Chamber

Authors : Malinda Sabrina, F. Andree Yohanes, Khoerul Anwar

Abstract : There are many sources that cause noise in a car, one of them is noise from radiator cooling fan. This part is used to control engine temperature by ensuring adequate airflow through radiator. Radiator cooling fan noise is a very important matter especially for vehicle manufacturers. This can affect brand image of the car and their customer satisfaction. Therefore, some experiments to measure noise level of the fan are required. Sound pressure level measurements for two axial fans with different diameter have been investigated in a hemi-anechoic chamber based on standard JIS-B8346, focusing on aerodynamic noise. Both fans have the same profile and shape with diameter respectively 43 cm and 49 cm. The measurement was performed in hemi-anechoic chamber in order to obtain a background noise at measuring point as low as possible. Noise characterizations of these radiator cooling fans were measured in five different rotating speed and the results were compared. The measurement result shows that the sound pressure level increases with increasing rotational speed of the fan. In comparison with a smaller diameter, it is shown that fan with larger diameter produces higher noise level at the same rotational speed.

Keywords : aerodynamics noise, hemi-anechoic chamber, radiator cooling fan, sound pressure level

Conference Title : ICWTNNS 2017 : International Conference on Wind Turbine Noise and Natural Sounds

Conference Location : Stockholm, Sweden

Conference Dates : July 13-14, 2017