

# Simulation of Noise Generated from Jet Fan

## Project Representative

Shigeyuki Tomimatsu

DMW Corporation

## Authors

Shigeyuki Tomimatsu<sup>\*1</sup>, Yoshinobu Yamade<sup>\*2</sup>, Yuichi Hirokawa<sup>\*3</sup>, Noriaki Nishikawa<sup>\*3</sup>

\* 1 DMW Corporation

\* 2 Mizuho Information & Research Institute Inc.

\* 3 Japan Agency for Marine-Earth Science and Technology

## Abstract

The demand of a high-efficiency and low-noise jet fan, which is used for ventilation of a tunnel of a carriage way, is getting higher and higher every year. Thus, in order to deal with this demand, it is essential that product development is continuously conducted.

In the case of conventional development by experiments, it is down to a limited number of experiments because noise is generated. On the other hand, in the case of a simulation, noise issues are minimized as much as possible because the number of experiments is decreased. Moreover, the number of prototypes should be decreased by decrease in the frequency of experiments. As a result, development cost should be reduced. Also, in the case of the conventional simulation using RANS (Reynolds Averaged Navier-Stokes Simulation), it is almost impossible to consider noise issues. However, in the case of the simulation using LES (Large Eddy Simulation), it is possible to consider noise issues. The purpose of this project is to establish the environment and the method to promote product development using the large-scale simulation.

**Keywords:** Large-scale simulation, Jet fan, Noise, LES