Wind loads on an outdoor switchboard at Port of Gladstone

Dara Switchboards

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Introduction

According to bureau of Meteorology of Australia (Figure 1), the maximum wind gust speed recorded since 1968 in Gladstone was 156 km/h (43.3 m/s). Furthermore, Gladstone is located in region C according to the AS/NZS 1170.2:2011 and maximum wind gust speed can reach up to 237.6 km/h (66 m/s). Therefore, maximum wind gust speed of 237.6 km/h (66 m/s) was selected as the design wind speed for this study.

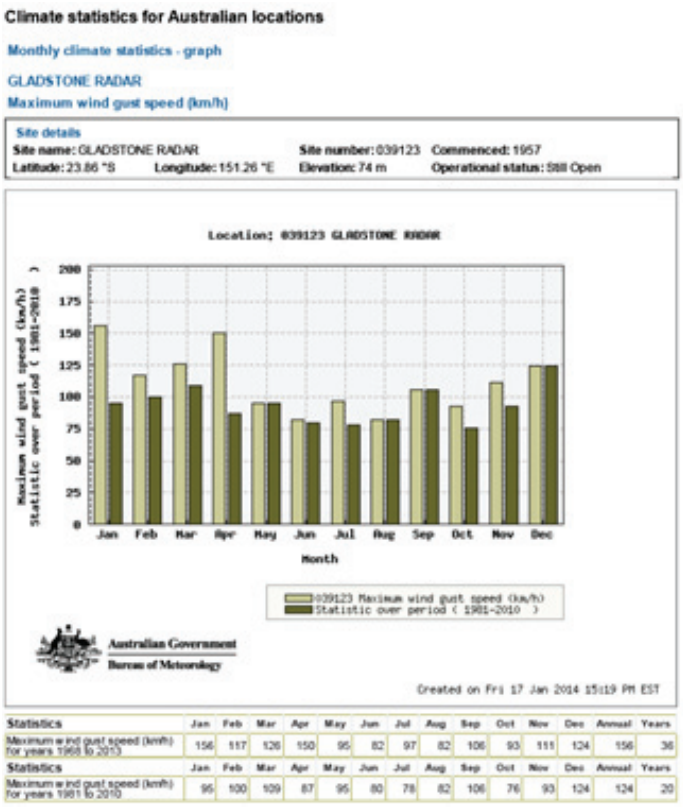

Figure 1: Climate statistics in Gladstone

Finite element analysis

Computational fluid dynamics (CFD) analysis was carried out to find the maximum wind pressure applied on the switchboard in case of a maximum wind gust speed.

Results from the CFD analysis showed that the wind pressure on the switchboard can reach up to 4000 Pa (Figure 2) in an event of 237.6 km/h (66 m/s) maximum wind gust speed

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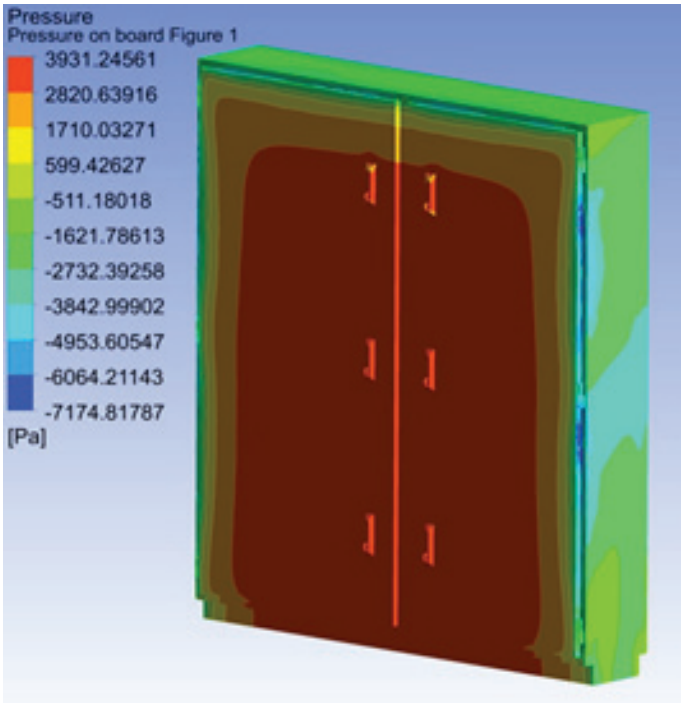

Figure 2: Acting wind pressure on the switchboard

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