



Platform Screen Doors - Finite Element Analysis

Description

Platform screen doors separate the passenger platform area from moving rail vehicles and are widely used on the underground and light rail vehicle systems. Providing increased safety and a reduction in station air conditioning requirements.

They comprise an aluminium earthed support structure, a longitudinal header carrying the main door actuation mechanisms, large fixed glass panels and translating glass panel doors.

These systems are subject to pressure pulses from approaching rail vehicles, air conditioning pressure loads, impact loads from passengers and in certain parts of the world, seismic loading.

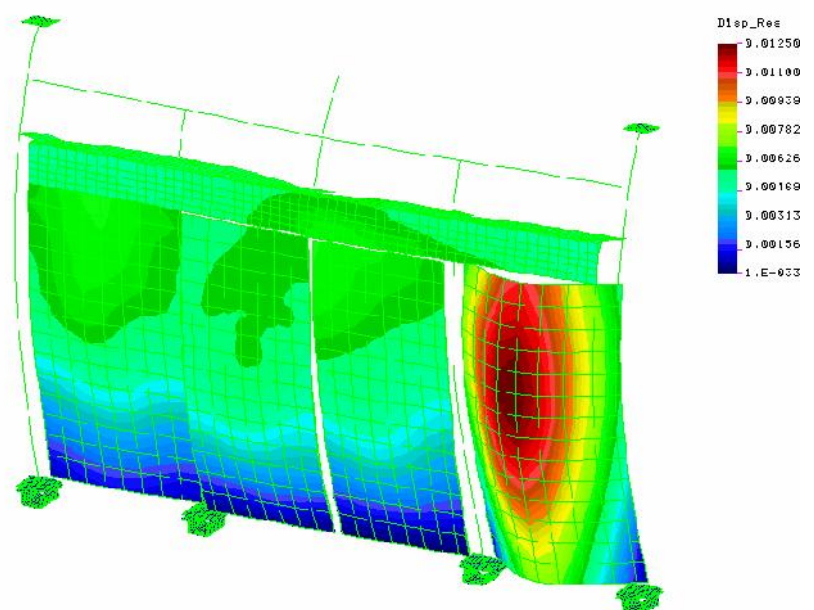
Finite element analysis was used to assess stress levels and deflections for these load cases and design changes advised where appropriate.

Disciplines Used

- Stress, Vibration, Impact and Seismic loading Finite Element Analysis

Specification Summary

- Coupled beam & shell finite element model of one sector of complete screen door system
- Model has fixed panels and sliding doors - aluminium & steel structure, both glazed
- Glazing restraints to model bonded joints
- Fixed and sliding doors, fixed in translation only at upper and lower horizontals
- Primary loading cases: 1000 N/m² pulse pressure loading, 1500 N/m² ventilation loading, 500 N/m crowd loading, Seismic and gravitational loading.
- Analysis for maximum allowable deflection and stress levels in the main structure and glazed panels
- Analysis for fatigue life in main structure



Platform Screen Door Structural Analysis