

## BLUM SYDNEY - RACK CLAD BUILDING

### Non-Linear Static Analysis

Date: June 2016

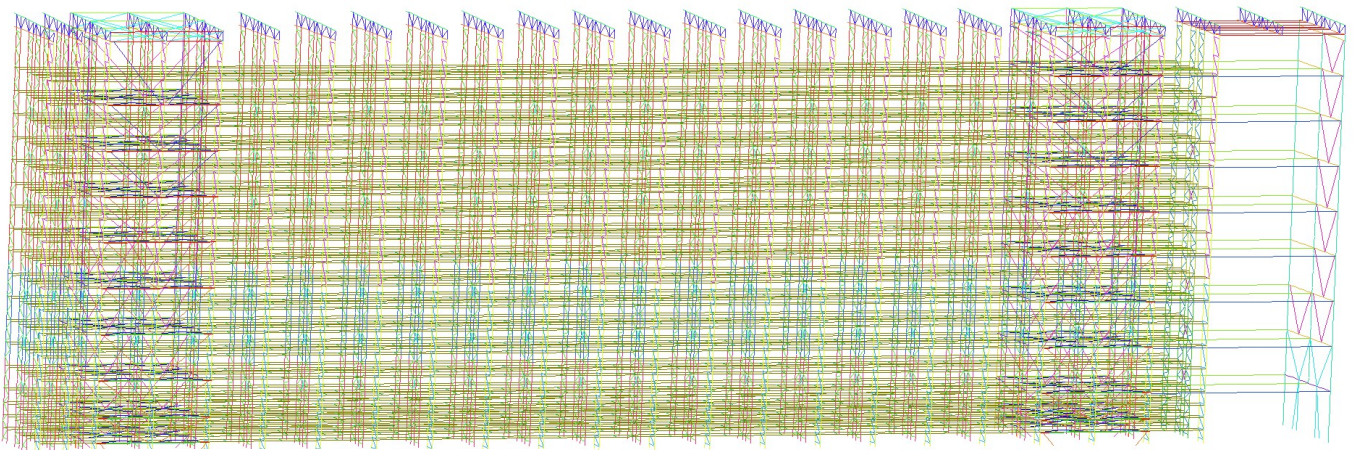
Client: SSI Schaefer Austria

#### Project Description:

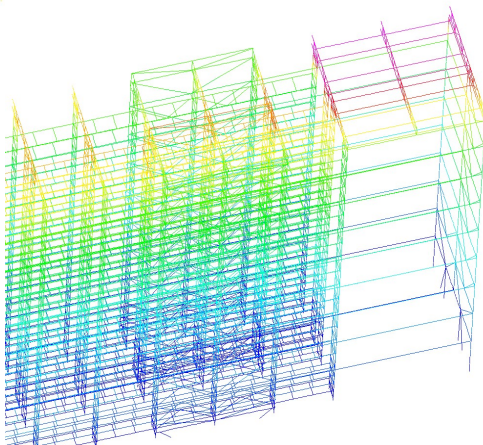
David Beneke Consulting was commissioned by SSI Schaefer Austria to undertake a proof check of a high bay rack clad building for Blum, Sydney. Conventional high bay pallet racking is such that the rack is independent of the building structure that houses it. In this case though, roof and wall cladding is directly applied to the rack. Accordingly no independent building structure is required.

A 3D finite element analysis model of the rack clad building was created from 1D line elements with 2D load patches used to apply the wind pressures. 3 additional wind load cases were added to the static and earthquake load cases typically used.

The analysis and member size checking for this project was significantly more complicated compared to a typical high bay rack. This was not just for the extra wind load cases, it was also for 2 extra cross sections in the down-aisle direction that needed to be examined, the additional roof trusses and the additional down-aisle bracing tower. Deflections in the cross aisle direction were critical under wind load conditions. Reaction forces at the bases of the bracing frames closest to the down-aisle walls were also significantly greater.



*FEA model of the rack clad building*



*Down aisle displacements under combined dead, pallet and placement loads.*

#### Contact:

dbconsulting@live.com.au

davidbenekeconsulting.com

Ph +614 1257 5693

23 Narabang Way, Belrose NSW 2085