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Instituut vir Termodinamika en Meganika – Institute for Thermodynamics and Mechanics

Orgafle Cabinet Compression

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Introduction

A compression test was done to determine the total load carrying capacity of the Orgafile cabinet. The test was done in the Structures Laboratory of the Department of Mechanical Engineering of the University of Stellenbosch. The test was done to determine the ultimate failure load of a cabinet filled with documents.

Test Set-up

The test was done in a 1400 kN Static test frame. The load was measured using four 10kN HBM S9 load cells. The four load cells were fixed to a load plate and the data sampled simultaneously. Data acquisition and signal conditioning was done with a HBM Spider8-30 and sampled with a lap top computer running Catman 3.0 software.



Figure 1: Test Frame

Because of the difficulty in simulating proper boundary conditions on a single side panel it was decided to test the complete cabinet.



Figure 2: Orgafire Cabinet fitted in the test frame

Results and Analysis

The load from the four load cells were summed to give the total load. As can be seen from Figure 3: Load versus time, the ultimate compressive load of the cabinet is 24.74 kN.

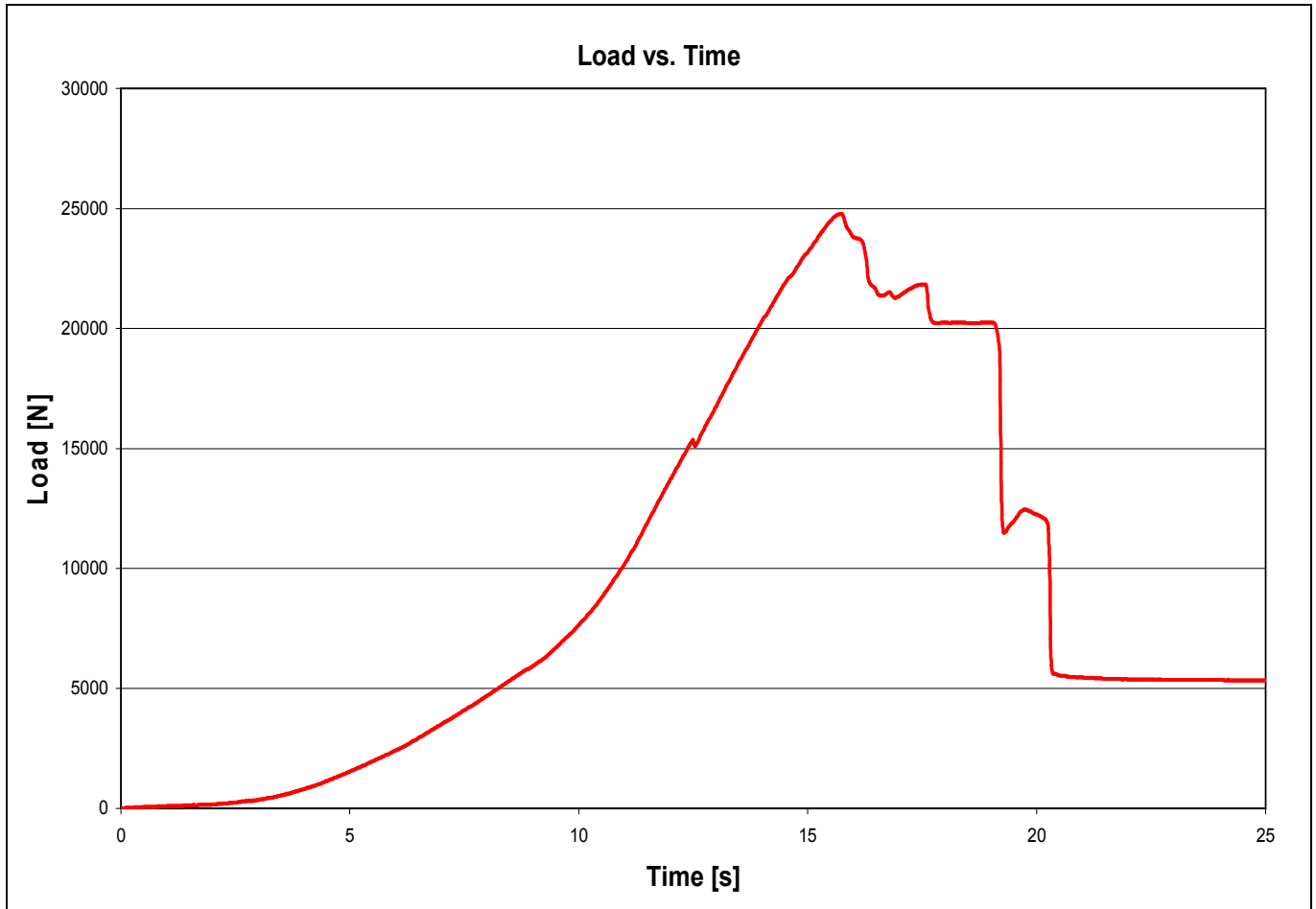


Figure 3: Load versus time.

Failure of the cabinet, resulted form local compressive fracture of the side wall at the slide mounting position. After force removal the cabinet remained intact. This is a desirous safety feature in furniture



Figure 4: Failure of the side panel.

Conclusion

A OrgaFile cabinet was tested to destruction to determine the ultimate compressive load. The cabinet failed at 24.74 kN and remained intact after failure.