



Inotera Memories - Fab 1 Taoyuan, Taiwan

Low-vibration structural & mechanical design

Client

Inotera Memories

Completion

2004

Work Scopes

Structural Vibration Design
Mechanical Vibration Design
Vibration Testing

Special Work Scope

Power Plant Vibration Impact
Rotary UPS Vibration Impact

Architect/Engineer

Fei & Cheng Architects

Contractor

Tokiokiki

Total Building Area

Confidential

Clean Room Area

Confidential

Clean Room Class

Class 1

Inotera Memories was founded in 2003 as a joint venture between German firm Infineon Technologies and Taiwanese firm Nanya Technology Corporation (NTC). Inotera focuses on the production of DRAM products on 300 mm wafers at geometries of 0.11 micron and below. Fab 1 was the first 300mm facility for Nanya prior to the creation of the joint venture with Infineon.

Fab 1 presented unique challenges from an environmental vibration standpoint. The most significant was the vibration impact of the 300MW Hwa Ya cogeneration plant at about 30m from Fab 1. The power plant was under construction at the same time as Fab 1. Large numbers of blowers, pumps, cooling towers, and turbines, at very large capacities were included in the power plant. We performed one-of-a-kind studies to identify the most significant vibration sources and generate predictions for vibration impact at Fab 1 from each source.

Fab 1 was designed as moment frame system with no interior shearwalls. Shearwalls at fab edges were utilized to carry the moment frame distributed loads to the foundation. This is considered a novel design, and the elimination of all interior shearwalls on a tall two-story subfab system is a significant accomplishment. The slightly larger column size of 75x75cm was a small price to pay for the benefit of the open, no-shearwall design. Subfab utilization was greatly enhanced and optimized in the absence of no interior shearwalls.

The fab, support wing, and shell are part of one monolithic structure with no Structural Isolation Breaks, another significant accomplishment for a fab of this size.

