Toppoly Fab 2 (OLED G3.5 Fab)
Chunan, Taiwan

Low-vibration design & FEA modeling

Client
Toppoly Optoelectronics Corp.

Completion
2006

Work Scopes
Vibration Design
Noise Design
Testing Services

Architect/Engineer
Tain Shan - Architectural
LTN - Structural
PECL – M/E/P
M+W Zander - Cleanroom

Total Building Area
Approx. 255,000 sq. ft.

Clean Room Area
Confidential

Established in December 1999, Toppoly Optoelectronics Corp. (now TPO) is the first dedicated TFT LCD volume manufacturer pioneering in LTPS (Low Temperature Poly Silicon) technology in Taiwan.

Fab 2 houses the processes of Color Filter and OLED manufacturing. This stacked fab has two process floors located at level L30 and L50. Certain areas of both floors are sensitive to vibration and are designed to meet the VC-C criteria.

AGVs and other automated materials handling systems are commonly employed in flat panel fabrication facilities. Most manufactures of the AGVs do not have vibration force function data for the designers of fabs. We performed a detailed *in-situ* study of an AGV to extract its operational vibration forcing function. Once the force spectrum was known, a dynamic analysis of the fab structure was performed using finite element modeling. The goal is to mitigate the vibration impact from the AGVs. We were able to optimize the design of floor and structural reinforcements to adequately resist the forces introduced by the AGVs.

Services Provided:

- Site Ambient Vibration Survey
- Structural Vibration Design, Finite Element Analyses
- Mech./Elec./Plumbing equipment Vibration Isolation
- At-rest Structural Vibration Evaluation