



Fab 12, Hsin Chu

Electronics

Client
TSMC

Location
Taiwan, Hsin Chu, Tainan



*Aerial Perspective, Design Concept
Fab 14, Tainan*

Taiwan Semiconductor Manufacturing Cleanroom

Project Highlights

- Corporate Office Buildings
- Fabrication Facilities
- Central Utility Buildings
- Warehouse
- Gown Room
- Laboratory
- Parking Garage
- Dormitory
- Bulk Gas Yard
- Cafeteria
- Auditorium
- Recreational Facility

Project Description

In 1997, Taiwan Semiconductor Manufacturing Corporation (TSMC) opened the doors to its CH2M HILL IDC designed Fab 6, the first foundry built in Taiwan's Tainan Science-Based Industrial Park. At the time, it was the largest semiconductor fab ever built and was the highest-yielding eight-inch pilot line in TSMC's history.

Since then, CH2M HILL IDC has provided unyielding support for TSMC as they continue to grow, furnishing design, construction and engineering services for numerous TSMC facilities.

Project Examples:

Fab 6 (Cleanroom Area: 15,000m²)

TSMC's Fab 6 is a production facility featuring industry-leading technology ranging from 0.25- to 0.10-micron. Initial output was approximately 32,000 eight-inch wafer starts per month, increasing to over 50,000 at peak production. The fab was outfitted with the company's first 300mm pilot line and one of TSMC's four copper production lines. With a cleanroom space of over 17,650 m², Fab 6 contains nearly 1,000 sets of manufacturing tools and employs more than 2,000 people.

Fab 12, Hsin Chu (Cleanroom Area: 12,000m²)

CH2M HILL IDC designed and provided services during construction for this 300mm manufacturing facility in the Hsin Chu Science-Based Industrial Park in Taiwan. The site location was very compact, requiring extensive



Fab 14, Tainan

master-planning in order to design a facility that met the production goals of TSMC.

Fab 12B, Hsin Chu (Cleanroom Area: 11,000m²)

CH2M HILL IDC successfully designed and managed the build of this "at-risk" project, with our cleanrooms group providing turnkey delivery of the cleanroom.

Fab 14, Tainan (Cleanroom Area: 15,000m²)

CH2M HILL IDC designed this 300mm facility for TSMC. The client postponed construction, due to concerns regarding a new type of high-speed train that would be passing by the facility. TSMC needed to know whether this new train might cause more vibration at the site than had initially been expected. CH2M HILL IDC led a comprehensive engineering study of background vibrations that was "the first of its kind in global I/C history." Over a period of six months experts in process, equipment, fab operations, geology, construction and semiconductor manufacturing equipment combined their efforts in an unprecedented scope for vibration work. Shakers were used to simulate vibration effects at various distances from Fab 14. The analyzed data showed that the train's vibration held no significant threat to the fab. The research conducted produced new equipment and facility specifications that will improve TSMC's future fabrication techniques.