

# SERVICE FACILITIES OF VLSI FABRICATION

Brief explanation of the several service facilities required for the fabrication plant is given below.

- **Emergency gas shutoff systems:** This system is a pressurized loop tied to normally closed valves on hazardous gases entering the fabrication plant. The emergency shutoff stations located at different strategic points around the plant.
- **Toxic gas monitoring system:** This is either a microprocessor or PLC controlled system. The system monitors the hazardous level of different hazardous gases of type-hydride, oxidizer, mineral acid and pyrolyzer at both sides-source and at the point of use. Inputs of the gas monitoring system are located at the point of use and the exhaust duct immediately upstream from where an emission is most likely to occur. When installing such detection systems specific gravity of the gases has to be taken into consideration.
- **Containment pressure monitoring system:** This system mainly checks three important conditions: high pressure, low pressure and zero (atmospheric) pressure. High and low pressure indicates leakage of gases while atmospheric pressure in the gas supply pipe indicates a catastrophic failure of the system.
- **Safety Shower/Eyewash Stations:** The place where hazardous liquids are used there safety showers and eyewash stations are required. Locations must be chosen such that an electrical hazard is not created by the discharge of the safety shower. Any electrical outlets in proximity to the shower must be protected by ground-fault circuit interruption.
- **Fire Suppression Systems and extinguishers:** Those equipments having combustible material and chemical are equipped with fire suppression and extinguishable systems. The extinguishers used should be compatible with the chemicals used in the system.

- **Particle Filters (HEPA and ULPA):** HEPA (High-Efficiency Particulate Air) Filters rated 99.99% are efficient in filtering particles 0.3 microns and larger in diameter. ULPA (Ultra-Low Penetration Air) Filters rated 99.999% can efficiently filter particles of size 0.12 microns in diameter. These filters are available in variety of sizes which are specifically designed and used for clean rooms of class 10 specification. The filtration medium consists of highly efficient micro porous polyurethane mini plates.
- **Air handlers:** Air handlers consisting of ULPA and HEPA filters handle recirculation of air in clean room to maintain positive pressure and to provide cooling to support areas and office.
- **Exhaust system:** Exhaust systems treat hazardous gases prior to being scrubbed by the fluoride exhaust.
- **High Purity Bulk Gases:** Different bulk gases required to the wafer fabrication building. They are: nitrogen, hydrogen and oxygen. Oxygen and nitrogen are required of two different qualities, one is ultra high purity and the other is "house" quality.
- **Chilled water supply system:** Water from this system is used for dehumidification on the outside air units.
- **Vacuum pumps:** These systems provide necessary vacuum for the machines located at clean room and elsewhere.
- **Air compressors:** Air compressors provide 60 deg C dew point air to the Wafer building.

Source : <http://asic-soc.blogspot.in/search/label/VLSI%20fabrication>