

FOUP Maintenance: Increase Longevity, Maximize Yield

A semiconductor manufacturer may have a fleet of 5,000 to 10,000 FOUPs that handle wafers hundreds of times throughout the manufacturing process. These microenvironments are trusted to be free of contaminants, but like any other mechanical object they have parts that wear over time.

By following industry-leading guidance from Entegris for proper inspection and maintenance, a fab can increase FOUP life and improve device yield by preventing contamination from worn components. Here's how:

ROUTINE INSPECTIONS



Cleaning and Drying

Clean FOUPS regularly – at least at the beginning of every lot, and after any other maintenance. Ensure that the FOUP is completely free of moisture *before using*.



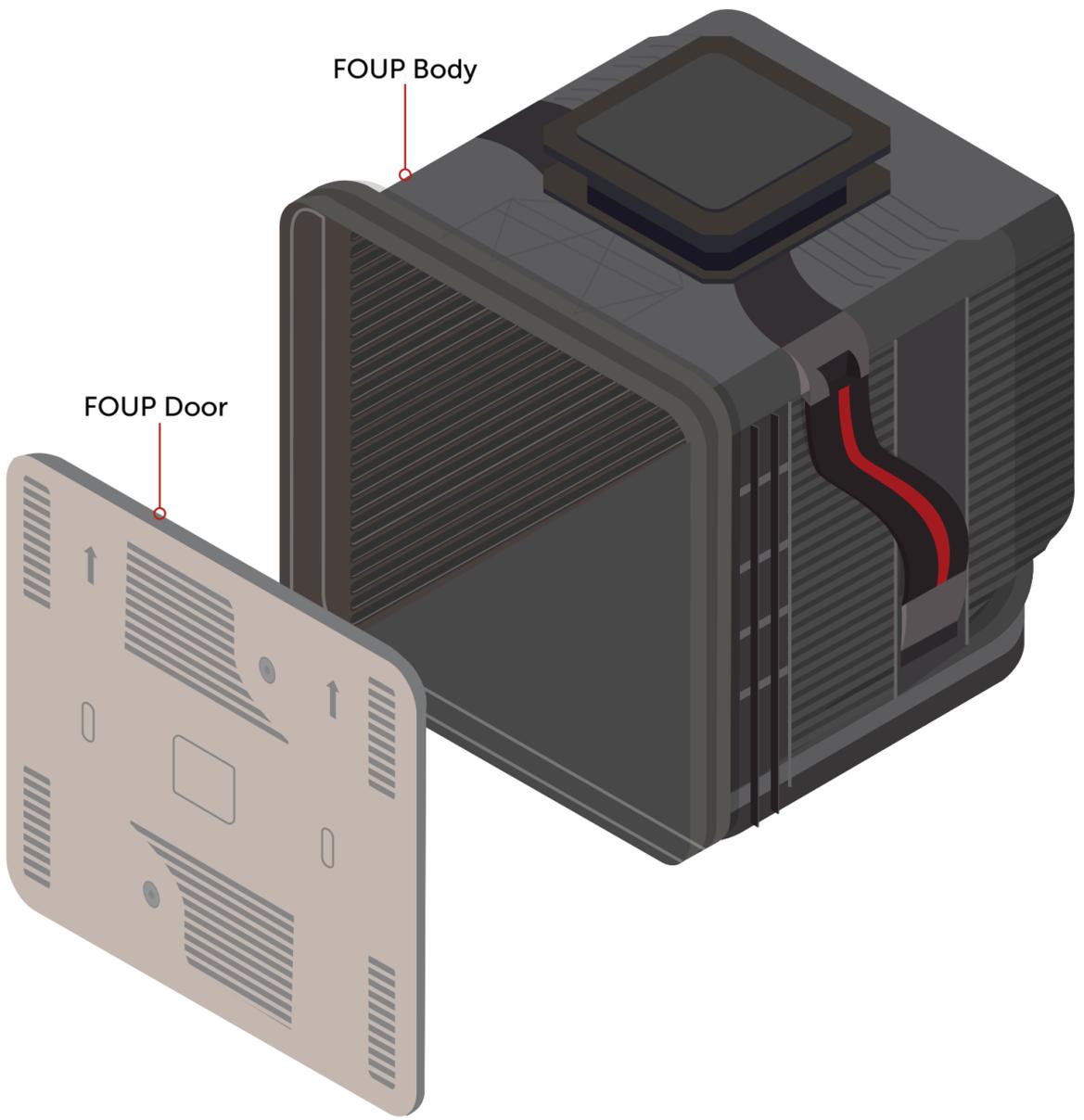
Functional inspection

Check the door latch to make sure it is functioning to manufacturer specifications *before every cleaning*.



Visual inspection

Visually inspect the FOUP for damage and excessive wear *before every cleaning*.



Dimensional inspection

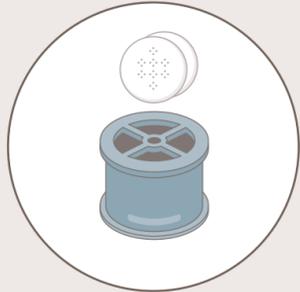
Measure the FOUP door dimensions and shell front flange position if issues are found in other inspections, or *every three months*.



Conductance Testing

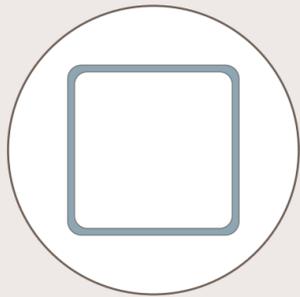
Perform a conductance test to ensure the gasket, O-ring, door, and shell are free of damage if issues are found in other inspections, or *every six months*.

COMPONENT REPLACEMENTS



BREATHER FILTER/PURGE MODULE ASSEMBLIES

Remove and replace the entire assembly, which should include all filters, O-rings, grommets, cartridges, and check valves every year, or after any failed conductance test.



DOOR GASKET REPLACEMENT

Remove and replace the door gasket every year, or after any failed conductance test.



DOOR REPLACEMENT

Replace the door only if it is damaged, or if the door gasket replacement does not correct functional, dimensional, or conductance issues.

ENABLING YIELD ADVANTAGES

While FOUPs will degrade over time, full replacement of a FOUP fleet is costly. It is important, therefore, for every semiconductor manufacturer to properly maintain their fleets. Even small yield improvements can equate to hundreds of millions of dollars of profit annually.

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