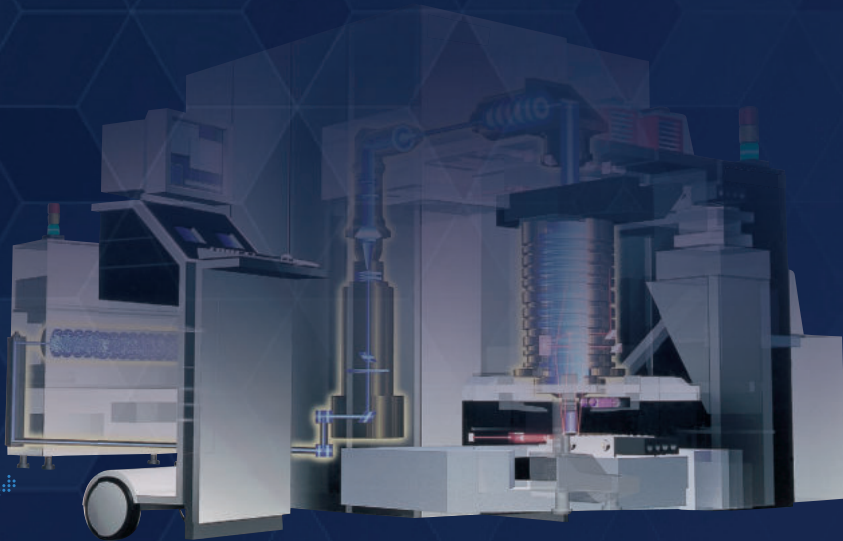


CCE Industry Solution Semiconductor



About CCE

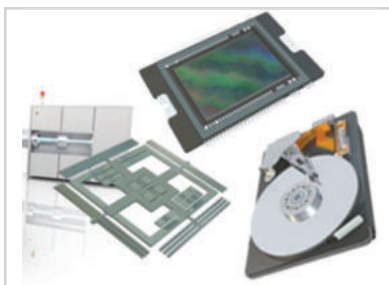
CCE is a Michigan corporation in business since 1989. Our offices are located in Farmington Hills, Michigan and Fort Lee, New Jersey, as well as a state-of-the-art engineering development center in Chennai, India. CCE is an engineering product development company that offers a comprehensive solution to our clients, to reduce time, cost, and risk inherent in product development.



We help companies across a wide variety of industries with their new product development (NPD) and sustaining engineering needs.

About Client

The client is the largest supplier in the world for photolithography equipment for the semiconductor Industry.



Key products include machines that are used for the production of integrated Circuits (ICs), such as CPUs, DRAM memory, flash memory, and more!

Our Goal

Our goal was to work in collaboration with the client's team on multiple product design activities during the development stage

Technical Product Documentation

- ▶ Created 3D models as per supplied non-parametric 3D input
- ▶ Created a detailed drawing for the new model
- ▶ Applied tolerances and dimensions based on design requirements



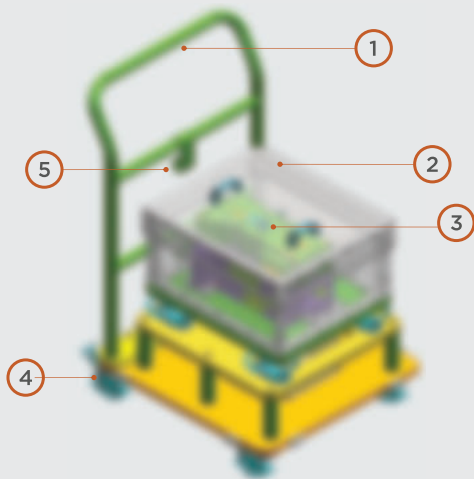
Manage ECO (Engineering Change Order) Process

- ▶ Managed stakeholder sign-off at various stages of the design process. Requirements included understanding of the engineering principles, attending design team meetings, documenting changes, monitor part status and logistics

Mini Storage Cart

We designed a mini storage cart for a fully configured optical module assembly. The storage cart is used to move the optical assembly within the clean room facility and needs to pass through aisles and doors

- ▶ Design included a damper to withstand the vertical shock load
- ▶ A cover was designed to protect the optical module housing from dust particles
- ▶ Four swivel casters were provided for easy access inside the clean room. Two swivel casters had brakes at the other side of the handle
- ▶ Mass & stability checks were performed to ensure the design met safety and ergonomics



- | | |
|------------------------|--------------------------------|
| 1. Cart | 4. Swivel Caster |
| 2. Top Removable Cover | 5. J- Hook (To hold top cover) |
| 3. Optical Module | |

Tool Design for Hydrophobic Coating

A tool was developed for the fast transport of water from the extraction seal. This was done to ensure water doesn't evaporate in the extraction seal thus decreasing the thermal load on the wafer table and thus improving overlay performance



Locating Position



Mounting Position

- ▶ The tool can flip horizontally to load the wafer table on the tooling station
- ▶ Tool has the ability to rotate the wafer table 180 degrees to inject & drain the hydrophobic solution

Electrical Development

We worked on multiple development activities in electrical design of photolithography machines. This included cable set design, cable routing for the sensor assembly, and manufacturing drawings for E-cabinets and its components for a



Cable routing for the sensor assembly



Design concepts of E-cabinet and its components for a test stand

Work Highlights

- ▶ New product development was done in continuous collaboration with the client's team
- ▶ All modules were designed using NX
- ▶ The final design, 3D CAD models and manufacturing drawings were delivered to the customer through our proprietary web-based work order management system PowerLink. PowerLink provided control, visibility, traceability, accountability, and helped improve productivity