

# CCE Industry Solution Consumer Appliance



## 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 a leading, multi-national appliance manufacturer, ranked as one of the largest appliance makers in the world.



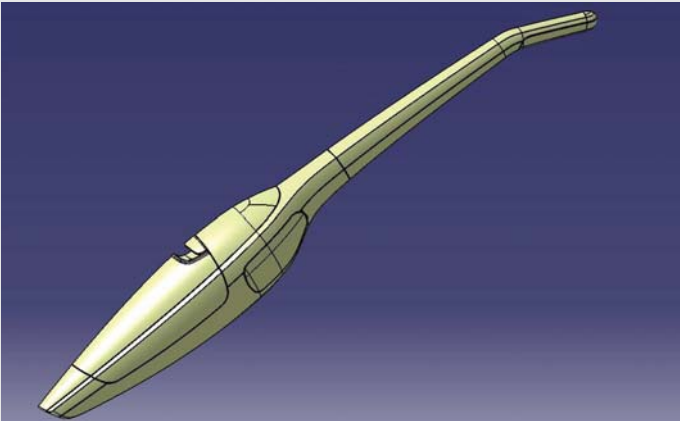
Key products include vacuums, washers, dryers, refrigerators, dishwashers, ranges, water heaters, and more!

## Our Goal

Our goal was to design a new variant of an existing "Handheld" and "Stick" type vacuum cleaner, based on the aesthetic profile provided by the customer's industrial design team. Industrial design surfaces derived from concept sketches were given as input to design the new Stick/Handheld type vacuum cleaner. The stick vacuum cleaner had two versions with/without a dust collection bag. The earlier product version was designed and manufactured 20 years ago.

## Project Kickoff

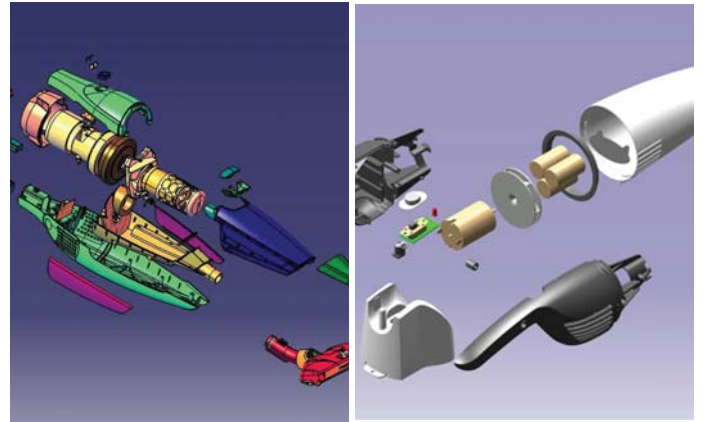
CCE's subject matter expert visited customer location for project kickoff for four weeks. The engineer played a key role in collaborating with the customer to derive all the specifications for the new product. A statement of work and study of older unit allowed for the development of a detailed project plan for the design of the new Handheld/Stick vacuum cleaner.



To derive the new product specifications, he was involved in design planning and review right from the inception stage. Upon his return to offshore the engineer started executing the product design activity with a team of engineers. Project progress and customer communication were handled using our in-house developed online Work Order Management System, PowerLink.

## Design & Delivery

These NPD activities included brainstorming, implement engineering changes, finalize the design, freeze the design after approval and proceed to build a prototype.



CCE's local management support from CCE's MI office, made sure the involvement by client was limited to weekly design reviews and one brief visit to the offshore facility.

## Work Highlights

The major work highlights include

- ▶ Adaptive Design techniques
- ▶ New product design was derived from ID surfaces and functional specifications
- ▶ Different configurations were created for bagged and bag-less versions
- ▶ New product development was done in continuous collaboration with the client's team
- ▶ The final design (3D models and drawings) and prototype were delivered as per customer's expectation
- ▶ The complete project from start to finish took six months with 3 offshore engineers

