

To whom it may concern,

I am writing to apply for a job as a Mechanical/Design engineer at your company. I have a passion for designing and developing engineering parts and am eager to apply my skills at your company.

I am currently working at Dyson as a Design Engineer under the Floorcare department which is responsible for designing vacuum cleaners. I had the opportunity to work in 3 next generation vacuum cleaner projects where I collaborated with cross functional teams, including engineering, finance, procurement, manufacturing, suppliers and electronics, to ensure the design meets the requirements.

In each project, the vacuum cleaner is divided into different subassemblies. My team was in charge of the Main Body subassembly. In the first project, I used NX Siemens to update the CAD model design of 3 plastic parts and generated CAD drawings. I also managed the bill of materials (BOM) for the sub-assembly and released it for production process. I created the assembly drawing using NX Siemens which explains the precise sequence for assembling the components for that sub-assembly at production line. Plus, I designed and assembled jigs that was used for static load tests for certain parts to ensure they can withstand the specified force requirement as part of the validation process. I also designed and released a drawing for a jig that will be used to assemble a part in the assembly line. In addition, I conducted investigative tests to prove the functionality of the electro-static discharge (ESD) scheme of our vacuum cleaner to prevent static discharge to the user. Once the design achieved certain maturity, I dealt with tool makers to ensure the parts can be tooled using injection moulding process. Once, the pre-production started, the plastic parts were examined to ensure they meet the requirements set and I completed the Dyson Part Approval Process which allows our contract manufacturers to proceed with mass-production (SOP).

In my second project, I was the assembly owner of the Bin & Filter Assembly where I designed 6 plastic parts, 1 seal and 2 common parts. I came up with multiple design ideas and used a concept selection matrix to identify the best design for the overall assembly and individual parts that can fulfil the requirements such as functionality, weight, tooling, user interaction, robustness and cost. I used NX Siemens to generate the CAD model. I created quick mock-up parts to prove the functionality of my design ideas using acrylic and EPDM foam, and also ordered SLS/SLA prototypes using 3D printing capability at Dyson. I used those prototypes to analyse the user interaction, ease of assembly and also used them to create a fully working machine with other subassemblies. Based on my analysis on those prototypes, further improvements were made to the design in terms of sealing and structural rigidity.

In present, I am currently involved in my third vacuum cleaner project where I am the assembly owner of the UI Assembly. I am responsible for the design of 5 plastic parts, 1 seal and 3 common parts. The UI assy also includes a System Controller PCBA and as a design engineer I came up with the design outline for the PCBA that enables it to be fitted into the UI assy and the keep out area for that PCBA which ensures there is enough clearance between the PCBA and neighbouring parts. I am working closely with the Electronics and PCB team to ensure the proper development of the PCBA. I went through the same process of coming up with multiple design ideas for the assy, choosing the optimal design for the parts, and creating mock-ups and prototypes to validate my design ideas.

In each project, I conducted tolerance stack analysis to ensure the parts can align and fit properly with neighbouring parts as per the design intent. I also conducted leak tests for my parts and assemblies to ensure it meets the product and air watt requirement and updated the design based on the results to improve the sealing performance. Material selection was also conducted across the projects to ensure proper material that is weight & cost efficient while being structurally sound, was used for the parts.

I will utilize my knowledge in product design & development, and problem solving skills to improve the products offered by this company. Thank you and I'm looking forward to hearing back from you.

Sincerely,  
Vellan Nadarajan