

WEEKLY REPORT 2: 7/29/2024 – 8/4/2024

What I've done for the week:

After presenting the final manufacturing report to Swapnil, I took the opportunity to align with him over engineering drawing best practices. We discussed the critical aspects of precision and clarity in technical drawings, ensuring that every detail would be easily interpretable by the production team. During this meeting, I shared my initial draft of the drawing with Swapnil to gather his feedback. His insights were invaluable, highlighting areas for improvement in terms of both technical accuracy and adherence to industry standards. I then began refining the drawing, integrating Swapnil's suggestions, and subsequently shared the revised version with him for further insights. This iterative process helped in improving my skills in producing high-quality engineering drawings that meet professional standards.

Another crucial aspect I started working on was Geometric Dimensioning and Tolerancing (GD&T). I developed a basic understanding of how to define tolerances and incorporate them into engineering drawings, ensuring that each part would fit together perfectly during assembly. This involved studying various symbols and their meanings, as well as understanding how to apply them to different features of the parts. Additionally, I started analyzing the tolerance stack-up calculations provided by my mentor, which allowed me to comprehend how individual tolerances accumulate to affect the overall assembly.

Thirdly, I started studying the heat and surface treatment processes for the parts. This step is critical to ensure the durability and performance of the components under various operating conditions.

Challenges & Lessons learned:

1. I learnt the importance of clarity and precision in engineering drawings. Iterative feedback from experienced professionals is crucial to producing high-quality drawings.
2. Developing a comprehensive understanding of GD&T principles has been difficult due to the complexity of their correct application.

What will I be doing the next week:

1. Fully define heat & surface treatment processes for each individual component in the stirling engine. I will be researching different heat processes to understand their effects on material properties like hardness and tensile strength. Also, will begin exploring various surface treatment techniques, including coating, plating, and polishing, to enhance the parts' resistance to wear and corrosion. By integrating these processes into the manufacturing plan, I aim to improve the overall quality and longevity of the final product.
2. Finish tolerance stackup analysis for individual components ensuring that the final product would function as intended without any issues arising from improper fits or misalignments.