

Engineering Drawings for Radar Enclosure

Scope: Transforming 3D Models into 2D Drawings.

Application: ADAS - Automotive 4D Imaging Radar

ADAS, or Advanced Driver Assistance Systems, is a collection of technologies aimed at boosting vehicle safety and refining the driving experience. A notable component within ADAS is the Automotive 4D Imaging Radar. This radar system employs four dimensions (3D space plus time) to furnish a thorough and real-time perception of the vehicle's surroundings. Its pivotal role includes facilitating features like adaptive cruise control, collision avoidance, and autonomous driving, providing accurate insights into the vehicle's environment.

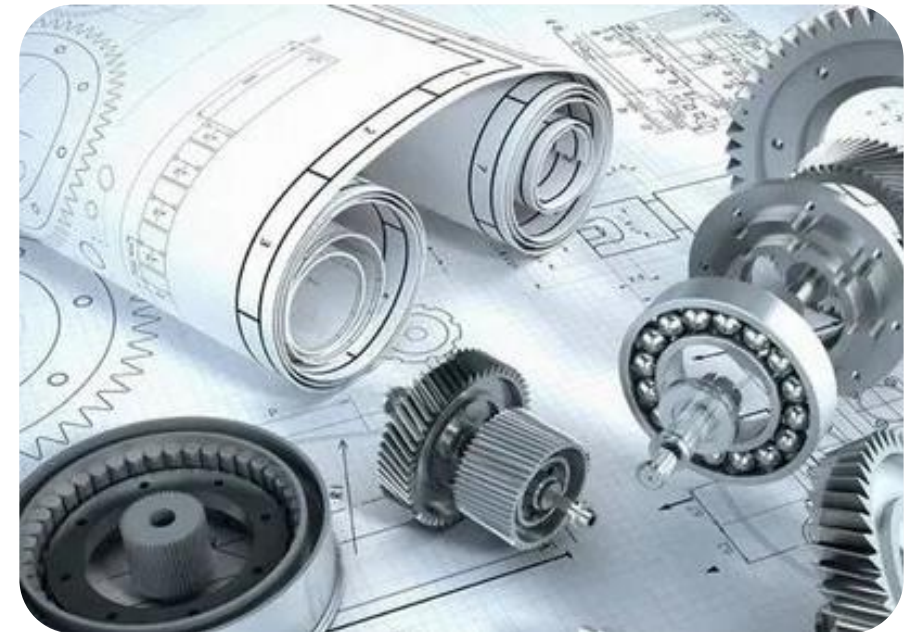


Engineering Drawings - Challenges

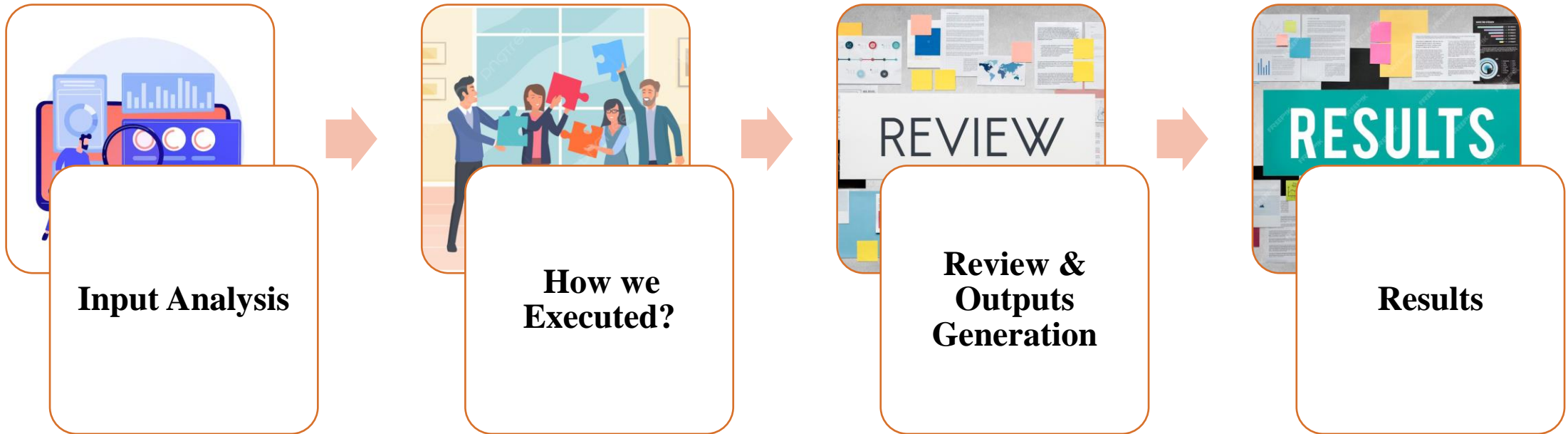
The client has entrusted us with the task of translating their Radar PCB Enclosure (3D CAD model) into precise 2D engineering drawings for manufacturing.

Challenges:

- **Software Compatibility:** Navigating different CAD versions for collaboration.
- **Precision and Accuracy:** Ensuring precise 2D representation of 3D models.
- **Regulatory Compliance:** Adhering to industry standards and regulations.
- **Time Constraints:** Producing precise drawings within a limited time frame.
- **Complex Geometries:** Clearly and concisely dimensioning intricate assemblies.



Engineering Drawings – SoW



Every stages of work have multiple brainstorming and review with the client



Input analysis

Inputs

The client provided the 3D models for both the individual enclosure parts and the assembly.



- A1 - Enclosure Assembly file
- P1 - Top Casing
- P2 - Bottom Casing
- P3 - Switch
- P4 - Switch Holder
- P5 - Light Pipe

Requirements

The client is seeking the drawing files and outputs in the specified formats as per their requirements.

For the **Part 3D Model**,

- ✓ Part file - sldprt.
- ✓ STEP file – STEP AP214 format.
- ✓ Drawing in DXF format.
- ✓ Drawing in PDF format.
- ✓ Drawing File – slddrw format.
- ✓ PNG file of 3D model.

For the **Assembly 3D Model**,

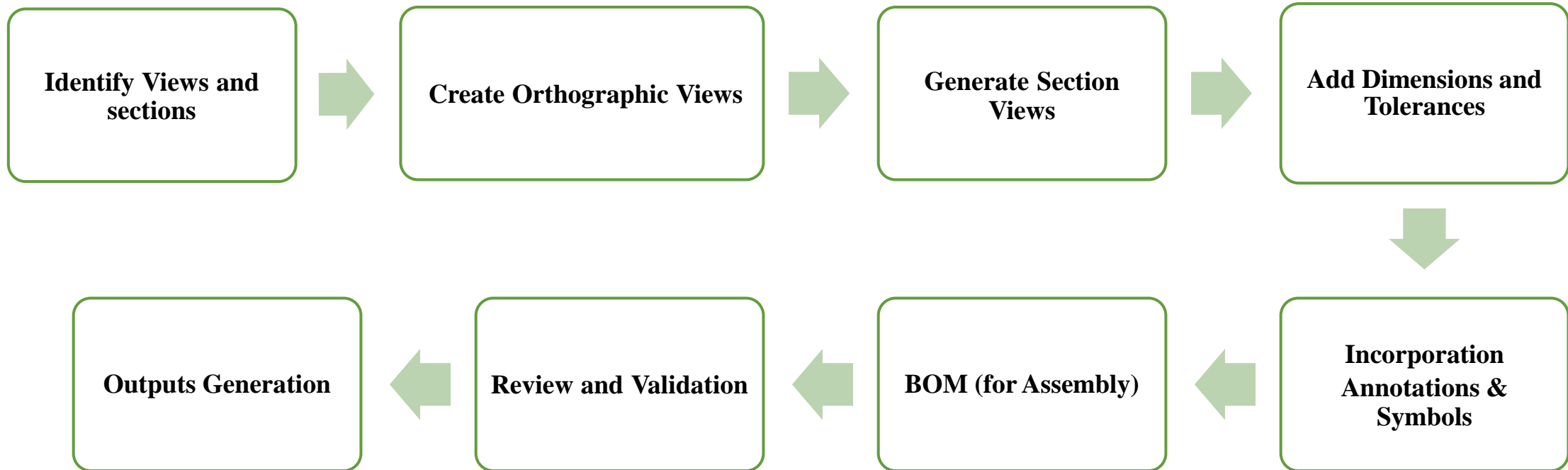
- ✓ Assembly file – sldasm file.
- ✓ BOM file – in excel 97-2003 format.
- ✓ Drawing in DXF format.
- ✓ Drawing in PDF format.
- ✓ Drawing File – slddrw format.
- ✓ PNG file of 3D model.



How we Executed? (Contd.)

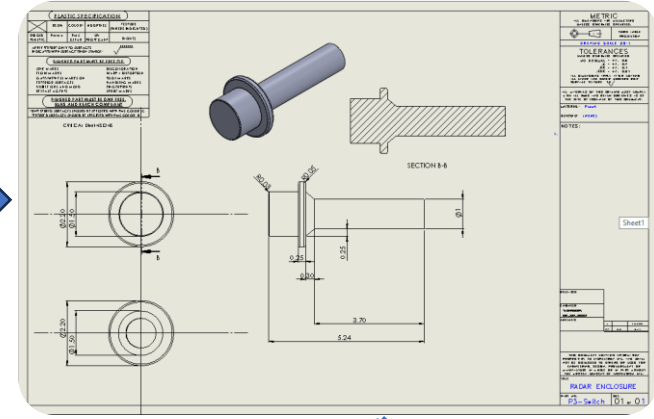
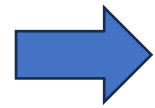
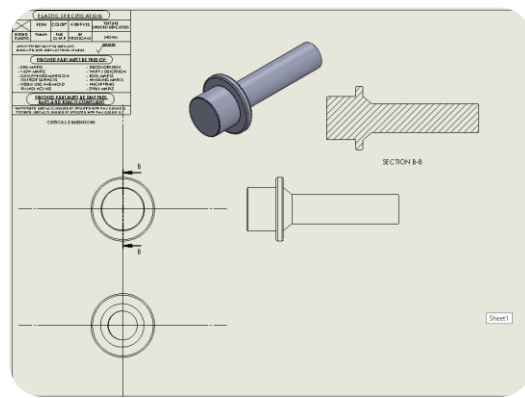
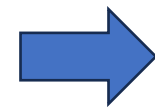
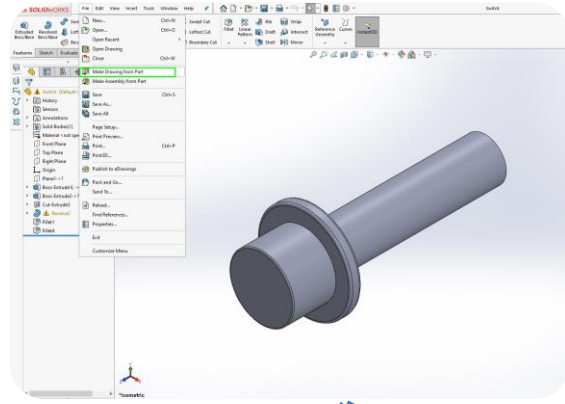
The 3D CAD models were thoroughly reviewed to comprehend the geometry, features, and any other specific details that needs to be captured in the 2D drawings.

Work Outline



How we Executed? (Contd.)

For the Parts 3D Model



Generation of Orthographic and Section Views

Add Dimensions and Tolerances, Revision, annotations

Step file

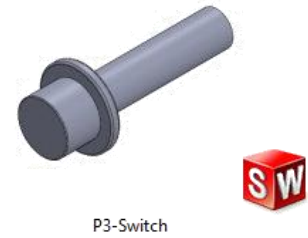
Part file

PNG file

DWG file - slddrw format

DWG file - PDF format

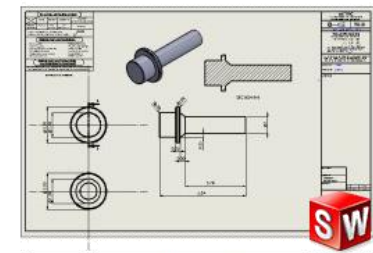
DWG file - DXF format



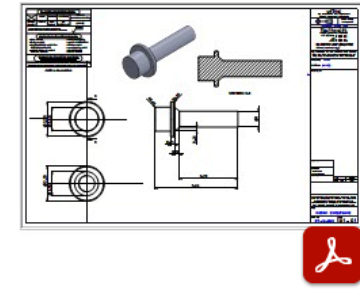
P3-Switch



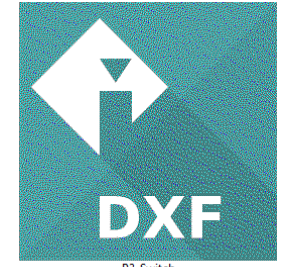
P3-Switch



P3-Switch



P3-Switch

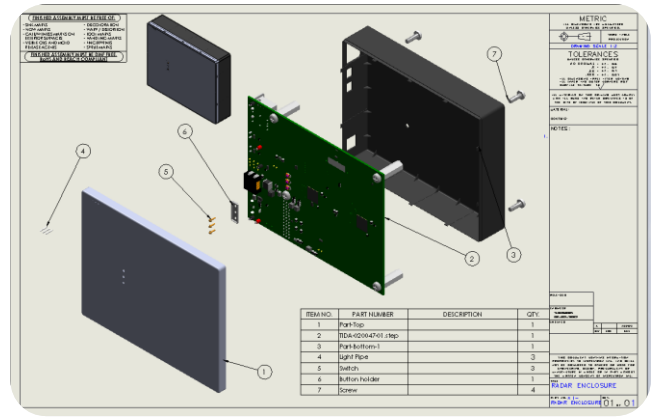
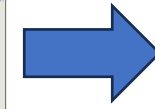
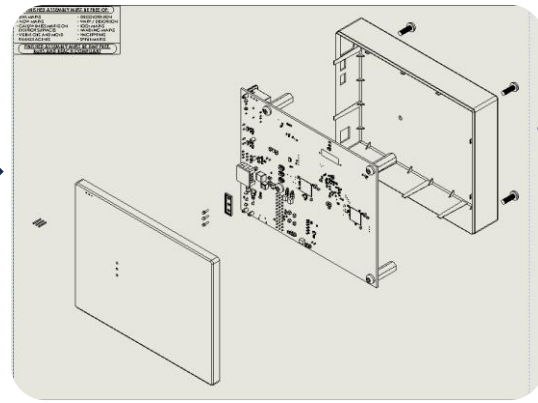
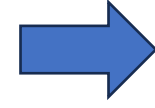
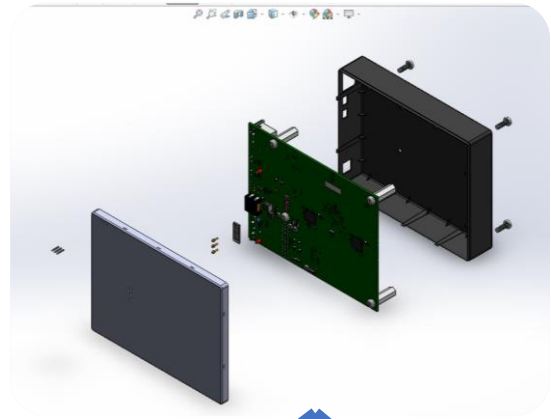


P3-Switch



How we Executed?

For the Assembly 3D Model



Generation of Exploded View

Add Revision, annotations, Balloon notes and BOM

PNG file

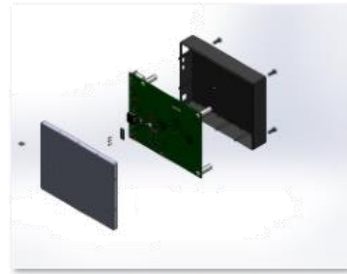
Assembly file

DWG file – PDF format

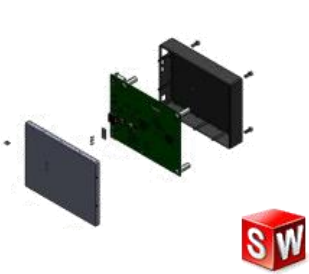
DWG file – slddrw format

DWG file – DXF format

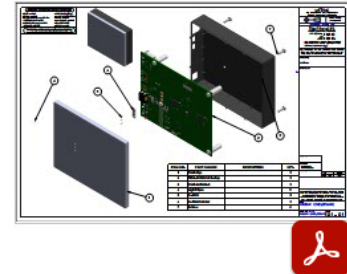
BOM



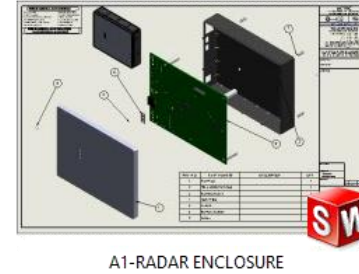
A1-RADAR ENCLOSURE



A1-RADAR ENCLOSURE



A1-RADAR ENCLOSURE



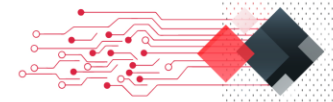
A1-RADAR ENCLOSURE



A1-RADAR ENCLOSURE



RADAR Enclosure- BOM



Review and Validation

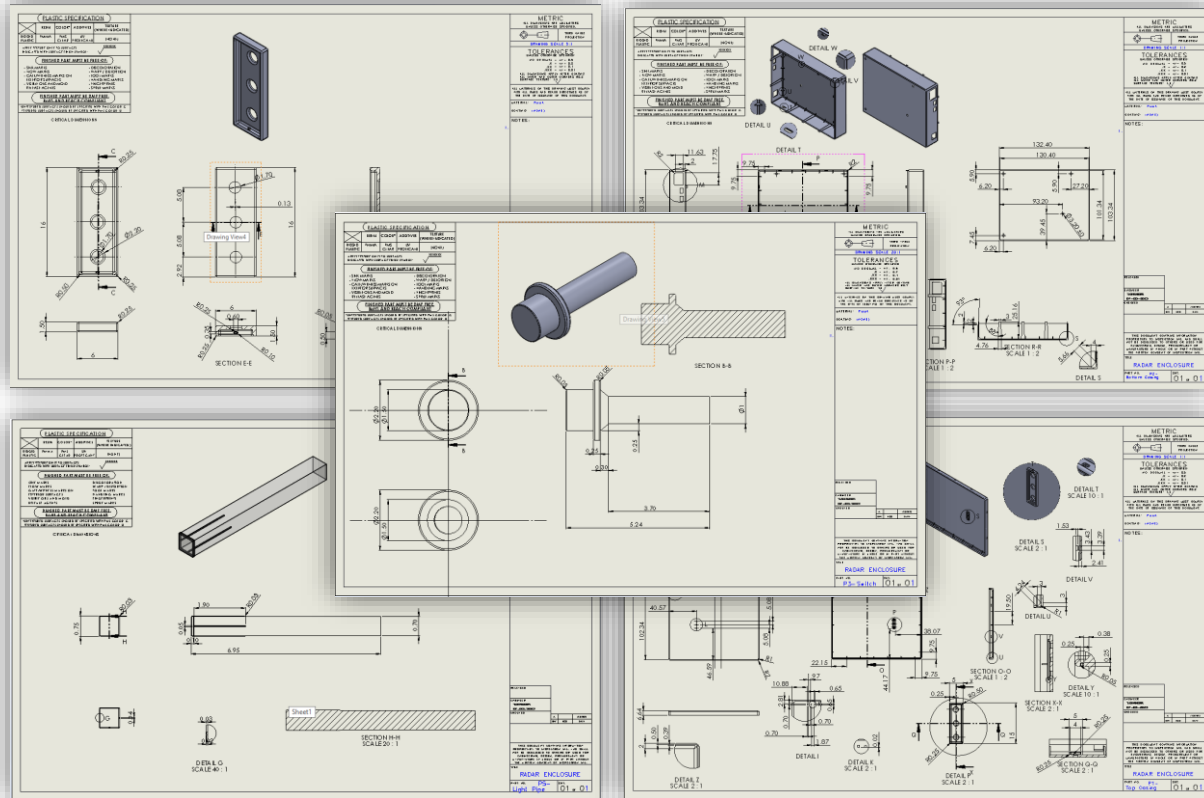
During the review stages, the following points are thoroughly examined, and their accuracy and compliance are verified:

- Dimensional Accuracy
 - Ensure that the sufficient dimensions for manufacturing
 - Critical dimension mentioning
 - Duplicate dimension removing
- Clarity of Views
- Annotation and Labeling
- Tolerances and Fits
- Bill of Materials (BOM) Accuracy
- Consistency Across Drawings
- Client Specifications
- Quality of Graphics

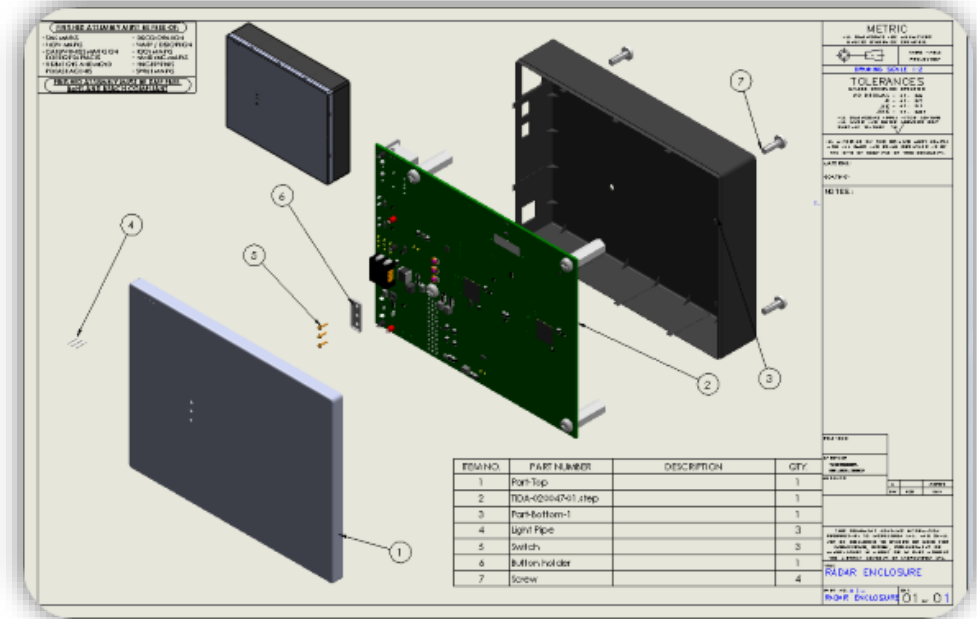
All the files were meticulously reviewed, and the outputs were generated in their respective required formats.



Drawings - Parts



Drawing - Assembly



A Heartfelt Customer's Voice

"The exceptional performance of this team has brought us immense satisfaction. Despite encountering challenges, they adeptly delivered 2D drawings for both individual parts and assemblies of our 3D enclosure through MCAD Engineering Services. Surpassing our expectations in quality, they accomplished this feat within an impressively short timeframe, marking a crucial milestone for the project. This team is the preferred choice for achieving an optimal balance of time, cost, and quality."



Conclusion

- We successfully addressed numerous challenges by engaging in brainstorming sessions and utilizing our expertise in MCAD Engineering Services.
- Achieving the expected outcome within a tight schedule marked a notable milestone in our journey, highlighting our team's commitment and capability to meet deadlines.
- Our commitment is focused to delivering top-tier MCAD services as Transforming 3D Vision into 2D Precision, showcasing our unparalleled skills and reliability in achieving outstanding results.
- We ensured the drawing files were delivered meticulously, meeting their expectations and adhering to their specific requirements. Our focus was precisely aligning with their specifications throughout the process.

