



SMARTeCH'S LEAP INTO INDUSTRY 4.0 WITH SOLIDWORKS

ABOUT COMPANY

Founded in 2008, Smartech International Sdn Bhd specialises in the design, manufacturing, and distribution of innovative HVAC-R (heating, ventilation, air conditioning and refrigeration) systems for various sectors, including oil & gas, marine, and commercial refrigeration.

The name SMARTeCH stands for "Superior Make Air Conditioning and Refrigeration Technology," reflecting the company's commitment to engineering excellence.



CHALLENGES

1. Limited Visualisation with 2D Design

Before adopting SOLIDWORKS, Smartech faced difficulties visualising complex designs as their projects involved intricate systems for HVAC-R. Key components like compressors, condenser coils, and evaporators were difficult to place with precision, which led to guesswork during the assembly phase. The lack of a 3D view made it challenging for production workers to understand complex assemblies and identify individual parts and resulted in misalignment, inefficiencies, and production delays.

2. Time-Consuming Manual Processes

The manual creation of DXF files from 2D drawings was not only time-consuming but also prone to errors. Engineers had to calculate flat patterns manually, increasing the risk of inaccuracies and prolonging the design cycle. As design data was stored locally without a centralised system, data sharing across departments was inefficient and increased risks of data loss.

3. High Scrap Rates

Without an effective data management system in place, it was difficult to track changes, and ensure the right version is being sent to production. Changes in files were not traceable and designs were not able to be restored. Such communication errors could lead to incorrect parts being produced, contributing to a scrap rate of approximately 25% annually.

4. Complex Sheet Metal Fabrication

Sheet metal fabrication presented additional complexities, particularly in transferring detailed design information to production teams. With 2D drawings, critical aspects of sheet metal designs were often unclear, requiring the production team to make assumptions during assembly.

SOLIDWORKS: A GAME-CHANGING SOLUTION

Having implemented several SOLIDWORKS solutions such as SOLIDWORKS CAM, SOLIDWORKS PDM, SOLIDWORKS Electrical Schematic and 3D streamlined the process of CAD to CAM, from engineering to production, and from mechanical to electrical design.

Smartech's cutting-edge vision of becoming a Model -Based Enterprise led them to establish an Industry 4.0 taskforce, focused on the digital transformation of the organisation, aimed to leverage the digital assets of the company to achieve greater heights.

KEY BENEFITS

1. Visualising the complete picture

Smartech's transition to SOLIDWORKS allowed engineers to visualise the entire unit and critical components before production. This comprehensive visualisation enabled them to understand the full assembly from all angles, ensuring that designs were executed with precision. It enabled the team to make better decisions, improved design accuracy, reduced errors, and ensured seamless communication across departments before fabrication.

2. Enhanced Scalability and Efficiency

With SOLIDWORKS, Smartech automated the creation of DXF files, reducing manual work and errors. The introduction of a centralised data management system through SOLIDWORKS PDM enabled teams to access and share design data seamlessly, eliminating the risk of data loss and improving collaboration. This digital transformation enhanced Smartech's scalability, allowing them to handle a higher volume of complex projects with greater speed and accuracy. By leveraging their growing library of digital assets, Smartech could easily repurpose data for future projects, further increasing scalability and operational efficiency.

3. Reduced Scrap Rates and Cost Savings

The implementation of SOLIDWORKS PDM introduced effective version control, ensuring the right design files were used throughout production. This improvement led to a 15% reduction in scrap rates, as fewer errors occurred in manufacturing and spare part orders. Additionally, the ability to quickly revert to previous designs and track changes gave Smartech a competitive edge, enhancing their ability to meet customer needs promptly. The structured data management system, combined with digital asset reuse, led to reduced waste, minimised rework, and faster production, resulting in significant cost savings over time.

4. Streamlined Sheet Metal Fabrication

SOLIDWORKS' automated flat pattern generation simplified and automated the sheet metal fabrication process, eliminating manual calculations and reducing potential errors. Detailed 3D models provided production teams with clear visualisations of complex designs, ensuring accurate execution without assumptions. This led to more efficient fabrication, reducing time spent on assembly and improving overall production speed.



IME has been a crucial partner in our growth, providing constant support and solutions tailored to our needs. Their expertise with SOLIDWORKS has helped us unlock new levels of precision and efficiency, setting the foundation for our global expansion.

Mr. Y. S. Siaw
Executive Director,
Smartech International Sdn Bhd

