SIEMENS

Marine

Boyang Hardware

A leading Korean marine equipment manufacturer significantly increases sales and market share

Product

Solid Edge

Business challenges

Product quality issues caused by inaccurate data management

Miscommunication between designers and producers

Time-consuming production process hinders time-to-market

Keys to success

Minimize migration issues in transition from 2D to 3D data

Reduce product defects by creating error-free design solution

Customize 3D design stabilization to minimize complexity

Results

Creation of an error-free design environment

Reduction of manufacturing errors to 10 percent range

20 percent faster product development process

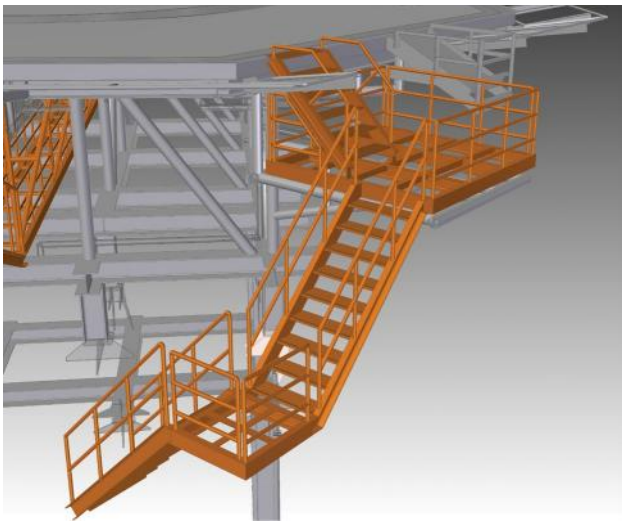
Increased orders and enhanced competitiveness

Boyang Hardware employs Solid Edge, a hybrid 2D/3D design technology from Siemens PLM Software, to dramatically improve productivity and throughput

Increased customer demand creates need for a better design/development process

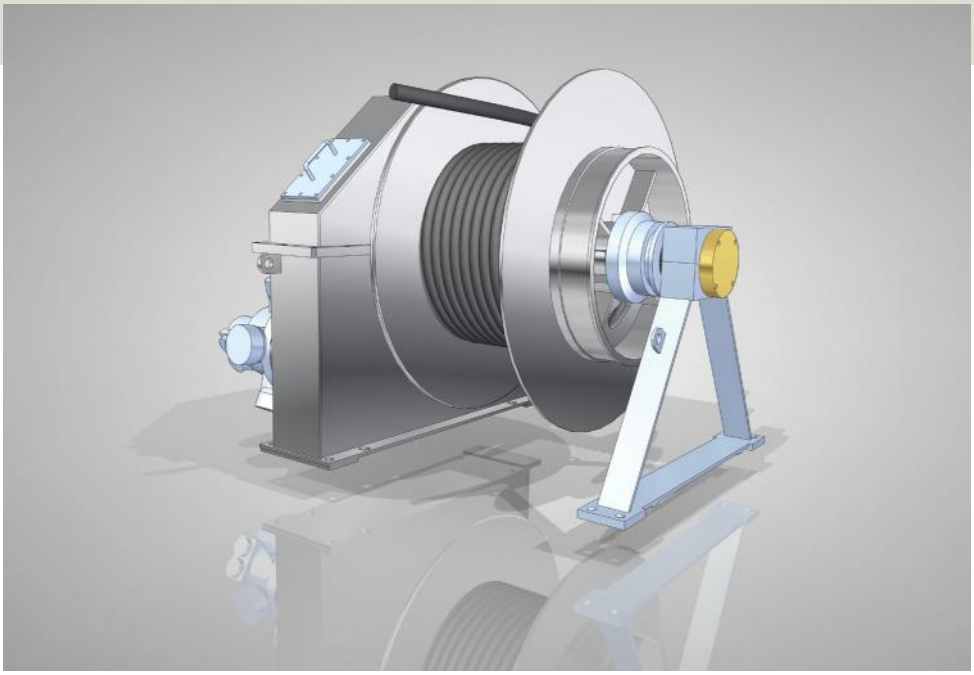
For 30 years, Boyang Hardware (Boyang) has produced industry-leading products, such as ship cabin equipment and other steel and aluminum products for major shipbuilders and shipyards throughout Asia. Boyang has invested in technology development and innovation and has increased its competency by earning ISO 9002 Standard Quality certification, Hyundai Mipo Dockyard HGMS certification and WPS Shipping certifications.

As Boyang attempted to expand its business from the core shipbuilding business to the marine plant field, the company faced internal challenges due to increasing demand for its products. The organization also faced quality issues as it ramped up production. There were too many errors and inaccuracies in product design that led to an increase in scrap. Reviewing and editing 2D drawings was time-consuming. In addition, the inherent difficulty in interpreting 2D drawings by designers and manufacturers led to even more physical losses.



The company tried to solve these issues by hosting stringent internal reviews and lengthy meetings revolving around 2D design data. However, the legacy system's product data management capabilities were inadequate, so the company started investigating new solutions for both designing and manufacturing.

Boyang needed a solution in which design errors could be easily spotted and corrected, as well as one with that enabled quick problem-solving. Eventually, the company reached a consensus to replace its 2D design approach with a hybrid 2D/3D approach, concluding that the older 2D system was the main reason for most of the design errors. An important point in selecting a new system was its ability to



minimize any losses during the migration of its enormous amount of 2D data to the 3D environment.

Use of 2D/3D hybrid system helps deliver a clear competitive edge

Boyang engineers believed that Siemens PLM Software's Solid Edge® software with synchronous technology would provide a good solution. They felt that the Solid Edge hybrid 2D/3D approach to design would reduce errors and enable workers to quickly adjust to the new working environment, while enjoying continuous support from experts in 3D computer-aided design (CAD)/computer-aided engineering (CAE). In addition, the company decided that it could gain a competitive advantage over other shipbuilding suppliers by adopting Solid Edge.

"We were initially hesitant to switch to a 3D CAD/CAE environment from our previous 2D environment, because most of our competitors were not using 3D," says Young-Chul Kim, section manager at Boyang. "However, through Siemens PLM Software's continuous support in the work process, we were able to shift to the new environment successfully. This has laid a solid foundation for us to become more competitive in the market and witness remarkable growth."

The use of Solid Edge supported a successful and seamless data migration from Boyang's legacy 2D design data to its new 3D environment. The software's built-in CAE simulation capabilities enabled rapid and thorough analysis of each work element, allowing designers to reduce part

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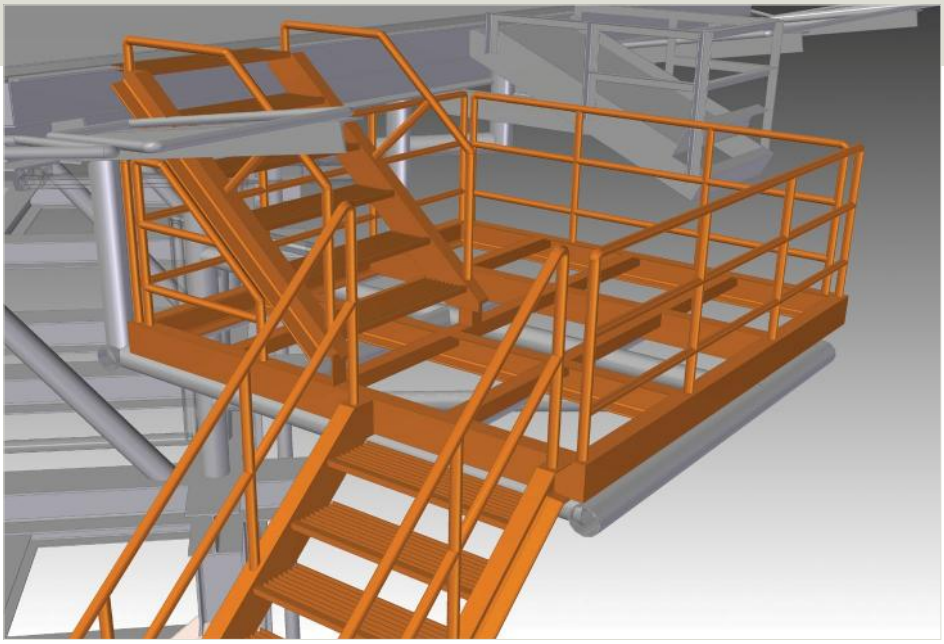

Solutions/Services

Solid Edge
www.siemens.com/solidedge

Customer's primary business

Boyang Hardware is one of the largest outfitting and marine hardware manufacturers in Korea.

Customer location

Kyungnam
Korea

Partner

Dawoo Technologies Co., Ltd.

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Section Manager
Boyang Hardware

count by combining complex parts for better performance. Although the new modeling system meant a new way of approaching design, the approach proved to be valuable, enabling significantly faster and more accurate results.

Using Solid Edge, Boyang can now effectively share approved design data with everyone involved in design and manufacturing, which has led to faster decision-making and increased productivity. In addition, use of Solid Edge has enabled the designers to design more intuitively and efficiently, including the re-use of previous designs, which has reduced overall working time.

Design error rate reduced to almost zero

Boyang has shown remarkable financial growth and operational advancement since its deployment of Solid Edge. The company has realized a significant improvement in product development, with its design error rate slashed from 15 percent to almost zero. Boyang also has resolved the issue of too often having to correct product flaws, because its manufacturing associates now clearly understand product assembly relationships via 3D animation.

With Solid Edge, Boyang has gained a substantial advantage over competitors not yet actively implementing 3D CAD. As a result, the company has greatly increased sales and notably improved market share.

In addition, the use of Solid Edge has enabled improved workflow. Engineers quickly adjusted to the new product development environment, which greatly facilitated communication internally and externally. This ultimately helped to improve productivity by 20 percent.

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