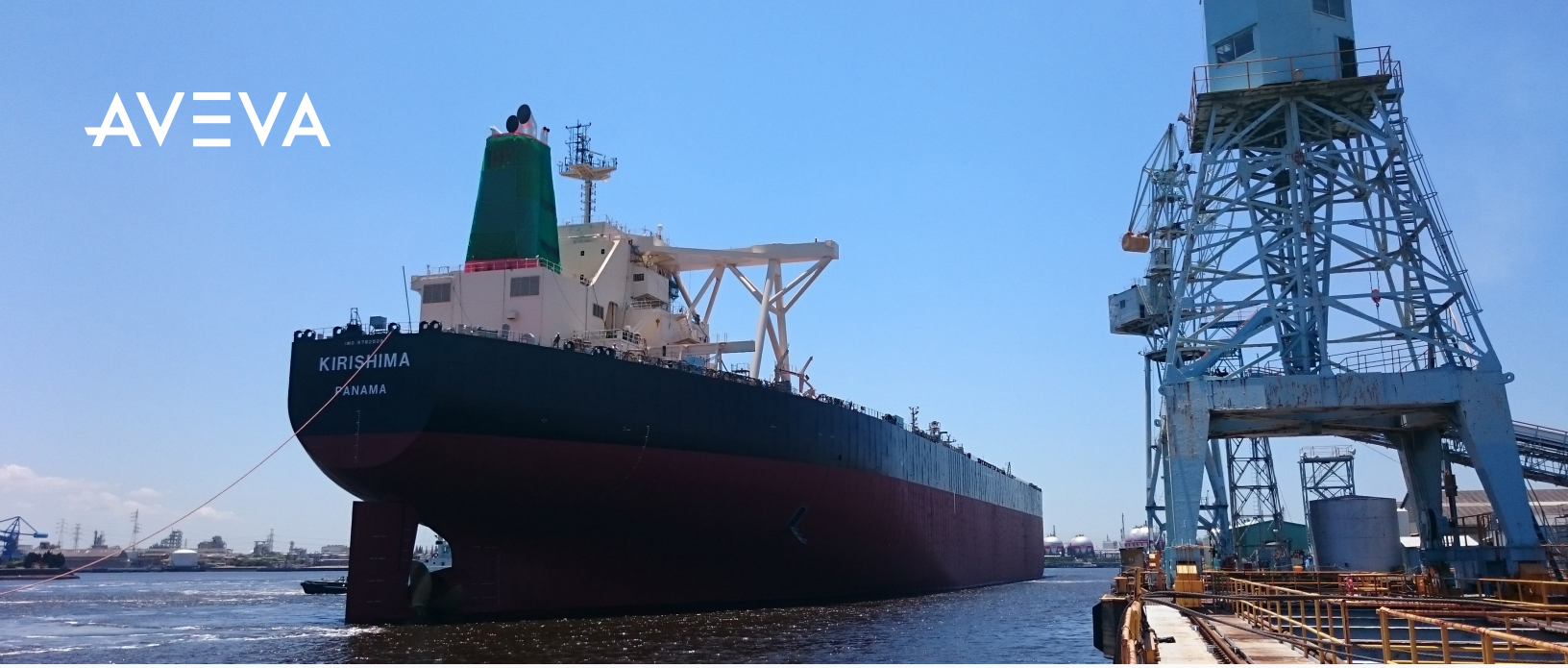

CUSTOMER CASE STUDY

Mitsui improves efficiency and competitiveness through working with AVEVA software solutions.

Mitsui
Industry - Shipbuilding

Goals

- To reduce time and costs of innovative marine design.
- To integrate drawing/modelling and conversion from scanned data to 3D data.
- Improve the quality of outcomes.
- Enhance job satisfaction for the design team.

Challenges

- Scanned data could not easily become 3D data.
- Less efficient processes did not allow the team to service as many customers as they wanted to.

AVEVA Solution

- Hull & Outfitting
- Schematics
- E3D Insight
- Engage

Results

- 30% reduction in design lead time.
- Duplication has been minimized.
- Integrated design approach has streamlined project delivery and reduced timescales.

AVEVA Software Streamlines the Processes for World-leading, Multi-discipline engineering and Shipbuilding Company

TOKYO, Japan – Mitsui E&S Shipbuilding (Mitsui) is a world-leading, multidiscipline engineering company, headquartered in Tokyo. Since it was founded in 1917, Mitsui has expanded from building complex ships into design, engineering and construction services, the manufacture of marine diesel engines and cranes, waste treatment facilities and petrochemical plants.

Mitsui has a global reputation for excellence in naval vessel construction. The company's particular expertise lies in LNG carriers, floating production, storage and offloading vessels and oil tankers. Among its notable shipbuilding achievements is the Supramax 66BC, a world first in the new generation of eco-ships, which operates with 30% lower CO2 emissions compared to average vessels. Mitsui also constructed the world's largest ore carrier, the Brasil Maru, which was awarded 'Ship of the Year' by the Japanese society of Naval Architects and Ocean Engineers in 2008.

The challenges of ageing technology

Mitsui began using 3D CAD systems to design its vessels over thirty years ago. As ships became more complex, the company began to experience problems with their old 3D CAD systems. They were incapable of coping with the complex demands of modern ship design and the evolving construction infrastructure needed to create innovative vessels. The old 3D CAD system had not been developed specifically for new shipbuilding. It was unable to incorporate lead time, work load and quality control data variables.

Mitsui's teams resorted to using multiple different applications for different aspects of the design work. This led to integration problems: each in-house or out-sourced discipline, from pipework layouts to hull design, had to be entered separately into its own 3D design system. The 3D system itself was incapable of creating 3D imaging that encompassed all the design data.

And, because it was not possible to integrate data and create a single Digital Asset, errors and inefficiencies crept into the design process. This meant that the team had to spend considerable time reworking designs, which delayed project delivery timescales and added additional cost. At worst, these inefficient practices amounted to extra hours in designing each vessel. This inefficient way of working was impacting Mitsui's competitiveness.

Personnel issues further compounded these problems, as new generation designers found the old CAD systems difficult to work with. Gradually, the team came to rely on the skills and expertise of just three in-house software developers, who were familiar with the old CAD technology.

A reliable solution

Mitsui first considered making a switch from the old CAD to next-generation 3D CAD technology back in 2008. This move coincided with the global economic downturn and plans had to be shelved. Some years later, the initiative was revived by Mr Koji Fujiwara, System Group Manager, Naval Ship Dept. Mr Fujiwara and his team had a background in shipbuilding systems and brought extensive experience of diverse technologies from previous roles. They initiated a Proof of Concept (POC), using AVEVA's Integrated Engineering & Design solution, AVEVA Marine.

> "Our design problems arose mainly from using old technology solutions that have long been improved upon by more sophisticated and streamlined approaches."
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> **Mr. Koji Fujiwara,**
> Systems Group Manager, Naval Ship Dept., Mitsui

As more than 600 customers world-wide have adopted AVEVA Marine solutions and 90% of the top global shipyards are AVEVA customers, one of the strengths of working with AVEVA is the wealth of useful references that the team can share. Because they invested in top-level software, Mitsui benefits from continuous software updates and the additional features and functions that AVEVA offers. This has enabled Mitsui to build a competitive position in the market, boost productivity and take advantage of best practice in shipbuilding, while differentiating themselves from other companies.

Point proved

Mitsui started by selecting the hull and outfitting software modules from the AVEVA Marine suite. These modules were seamlessly integrated and could share data between them, enabling the team to import and manipulate 3D models, which had not been possible under the old CAD regime. The team began by introducing AVEVA Hull & Outfitting, which enables design consistency and efficiency of 3D modelling across teams and disciplines, without time-consuming rework.

This also meant that the design team could work in a streamlined way, importing hull and outfitting models into the system. Next, Mitsui introduced AVEVA Schematics. In this module, the AVEVA information management platform allows teams to access digital asset information to drive collaboration and streamline workflows. Mitsui is also training its new designers on the AVEVA Marine solution to underpin its future business.

This provides a significant benefit in the current climate of a skilled labour shortage in ship design within Japan, as well as globally. AVEVA Marine products offer an intuitive interface that enables new users to acquire appropriate 3D design skills quickly. As they progress, the software helps the designer to focus on the job in hand, using all the data he or she needs, in one complete system. This allows them to produce top quality designs with world-class lead times.

Discovering wider benefits

Mitsui is extending its use of AVEVA products beyond the shipyard. Using AVEVA Marine, Mr Fujiwara and his team have developed a pipe factory interface. This system allows drawings developed with standard AVEVA Marine tools to be transposed directly into the plant environment, and will concentrate on drawing with standard functions. Previously, the Mitsui team believed that only traditional CAD software was capable of production design as well as 3D design, but seeing the interoperability of the AVEVA Marine suite in action has changed their minds.

Building competitive advantage

Mr Fujiwara and his team implemented AVEVA's comprehensive marine solutions over two years. Today, these tools form the backbone of Mitsui's complete shipbuilding process. The team is now rolling out the system at Mitsui's Tamano and Chiba works and at DASH Engineering in the Philippines, as well as at the Group's German subsidiary, TGE. Mr Fujiwara believes that AVEVA software has enabled Mitsui to work in a more flexible and agile way across large-scale and complex shipbuilding projects.

The company has saved time and cut costs, because the team can now complete design projects much more quickly. This offers significant business benefits, as he explains,

"We keep investing in high-end software and, accordingly, we can make good use of the continuous software updates that AVEVA offers, along with additional features and functions. This continuous improvement allows us to build our competitiveness in the market, by providing high productivity and best-in-class in shipbuilding services, while differentiating us from other companies."

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Mr. Koji Fujiwara,
Systems Group Manager, Naval Ship Dept., Mitsui