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MITSUBISHI HITACHI POWER SYSTEMS EUROPE

Mitsubishi Hitachi Power Systems Europe significantly enhances multi-domain communication and engineering quality with IC.IDO

THE CHALLENGE

Mitsubishi Hitachi Power Systems Europe (MHPSE) needed an efficient tool to convince potential customers about their solutions by using innovative differentiators during the bidding phase. They also needed to reduce the cost of errors and penalties due to project delay because of late error detection and last minute design adjustments. Reduced engineering cycle time while improving collaborative decision making with subcontractors was also a very important challenge for MHPSE. Unfortunately, their established engineering tools were not sufficient to enable them to address their challenges.

THE BENEFITS

- Mitsubishi Hitachi Power Systems Europe (MHPSE) significantly increased its competitiveness during public tenders, thanks to a more efficient communication with contractors via IC.IDO
- MHPSE's engineering teams are today able to identify critical situations/errors before it is too late to halt the construction process, avoiding excessively cost overruns and huge project delay penalties.
- MHPSE decreased time-to-market by enabling Concurrent Engineering by using IC.IDO.

The global energy sector today faces an unprecedented number of challenges. Companies that plan, design, construct and operate power plants need every day to be more flexible, to innovate incessantly, and to reduce costs. In addition, they face tough competition, particularly from emerging countries.

In this context, Mitsubishi Hitachi Power Systems Europe (MHPSE) decided in 2006 to look into new tools that would enhance collaboration with the numerous stakeholders (contractors, subcontractors) involved in any capital-intensive power plant construction project. It is often very complex for companies like MHPSE to control the quality of the work of subcontractors' spread all around the world. However they are very dependent on their subcontractors, and are constantly under pressure relative to project milestones. Any delay or defect in project deliverables can lead to huge penalties.

"Using IC.IDO allowed us to detect numerous failures in our power station 3D mock-ups, before it was too late to halt the construction process. By identifying these kinds of critical mistakes, Mitsubishi Hitachi Power Systems Europe has avoided significant time loss, and the costly penalties we would have paid. The ROI of IC.IDO is indisputable. ESI helped Hitachi not only detect errors but actually prevent them."

Christoph Kastl, Head of technical IT
at Mitsubishi Hitachi Power Systems Europe.

Examine your Virtual Prototypes in a truly realistic way from the very earliest stages of design to safeguard the engineering process for optimal designed products.

"In some cases, the penalties can amount up to millions of Euros. This is why we needed a tool that would enhance the communication with contractors and subcontractors and decrease the risk of critical errors during the engineering process. IC.IDO Virtual Reality was clearly the best solution," declares Christoph Kastl, Head of technical IT at Mitsubishi Hitachi Power Systems Europe.

Immersive Virtual Reality: place yourself in your 3D mock-up

MHPSE had been using with solid models as a basis for iterations between different project participants for a long time. One of their pain points was the inability to interact or experience the digital mock-up and instead having to rely on generating screenshots circulated via email. Static pictures were not an effective basis for discussions between all involved parties.

With IC.IDO, MHPSE is able to fully experience their 3D prototype in a highly immersive environment. They experienced their 3D mock-up in real-

time and at real size, moving around it; perceiving, identifying and pointing out potential errors and inconsistencies in a very intuitive way. IC.IDO enables a true collaboration;bridging the gap between different engineering domains, generations, languages and cultures.

Integration of Virtual Reality in Mitsubishi Hitachi Power Systems Europe's existing engineering processes.

MHPSE decided to invest in a Virtual Reality room, including a Large-Scale 3D Visualization Powerwall, equipped with ESI Group's Virtual Reality solution IC.IDO.

At this point MHPSE was able to share the benefits of 3D immersive visualization with a wider audience. The acceptance was immediate, not only from MHPSE's contractors and sub-contractors, but also from their engineering department. All were very impressed when they realized that they could perform highly efficient engineering reviews in real-time, real size, with very little data preparation and a short amount of time. They felt very comfortable with the user interface. Indeed, all the tools and features they needed were available within the 3D environment: collision checks, creation of snapshots, meta-data visualization, markers, transparency mode, and even the possibility to create vocal notes and events that are automatically linked to the extracted PDF report following the immersive review. IC.IDO clearly appeared as a very powerful solution for them.

Witnessing the high level of acceptance of Virtual Reality at Mitsubishi Hitachi Power Systems Europe, Christoph Kastl, supported by ESI's Virtual Reality consultants, decided to go one step further and to put in place further processes that would significantly optimize data preparation and upload, and make Virtual Reality much more accessible.

Initially, a MHPSE engineer would have needed to send his 3D data to IT 8 hours ahead of an immersive engineering review. Today, thanks to automated processes, IT needs less than one hour to prepare the full dataset a power station.

After that short delay, the engineer who placed the request receives an automatic confirmation that the data set is ready in IC.IDO.

"Sometimes, when the engineers need to deal with a very specific area of the plant with a subcontractor, we just upload a part of the 3D data. Visualization of the entire power plant requires more time, but that is still only one hour at most. During the review, when engineers detect something that should evaluated in more detail (collision, defaults) they instantaneously create marker points and snapshots," explains Christoph Kastl.

MHPSE has succeeded in integrating Virtual Reality to their engineering processes and to involve multiple stakeholders, each with different preoccupations and facing specific day-to-day challenges.

"Although we have come a long way since we implemented IC.IDO, we are absolutely sure that the perspectives of Virtual Reality for our industry are still infinite. Never-the-less, we can today claim that we have met our initial objectives. Virtual Reality contributes to developing a more innovative and efficient image of Mitsubishi Hitachi Power Systems Europe ; a great advantage in the face of competition." concludes Mr. Kastl.

MHPSE's decision-making process is running much smoother than before the implementation, thanks to a full-acceptance of IC.IDO by their engineers. Today these achievements allow MHPSE' to prove very easily the tangible effects of IC.IDO integration on their internal processes.

ABOUT Mitsubishi Hitachi Power Systems Europe

Mitsubishi Hitachi Power Systems Europe GmbH (MHPSE), a subsidiary of globally operating Mitsubishi Hitachi Power Systems Ltd., designs and constructs fossil-fired power plants. The plant constructor also supplies key components such as utility steam generators, environmental engineering equipment, turbines and pulverizers. Including subsidiaries, approx. 2000 staff is on the company's payroll (as of February 2014). As a market and technology leader - in utility steam generators, for instance - MHPSE relies on modern, ecologically sound and economic plants.

ABOUT ESI GROUP

ESI is a pioneer and world-leading provider in Virtual Prototyping that takes into account the physics of materials. ESI boasts a unique know-how in Virtual Product Engineering, based on an integrated suite of coherent, industry-oriented applications. Addressing manufacturing industries, Virtual Product Engineering aims to replace physical prototypes by realistically simulating a product's behavior during testing, to fine-tune fabrication and assembly processes in accordance with desired product performance, and to evaluate the impact on product use under normal or accidental conditions. ESI's solutions fit into a single collaborative and open environment for End-to-End Virtual Prototyping. These solutions are delivered using the latest technologies, including immersive Virtual Reality, to bring products to life in 3D; helping customers make the right decisions throughout product development. The company employs about 1000 high-level specialists worldwide covering more than 40 countries. ESI Group is a French company listed in compartment C of NYSE Euronext Paris.

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