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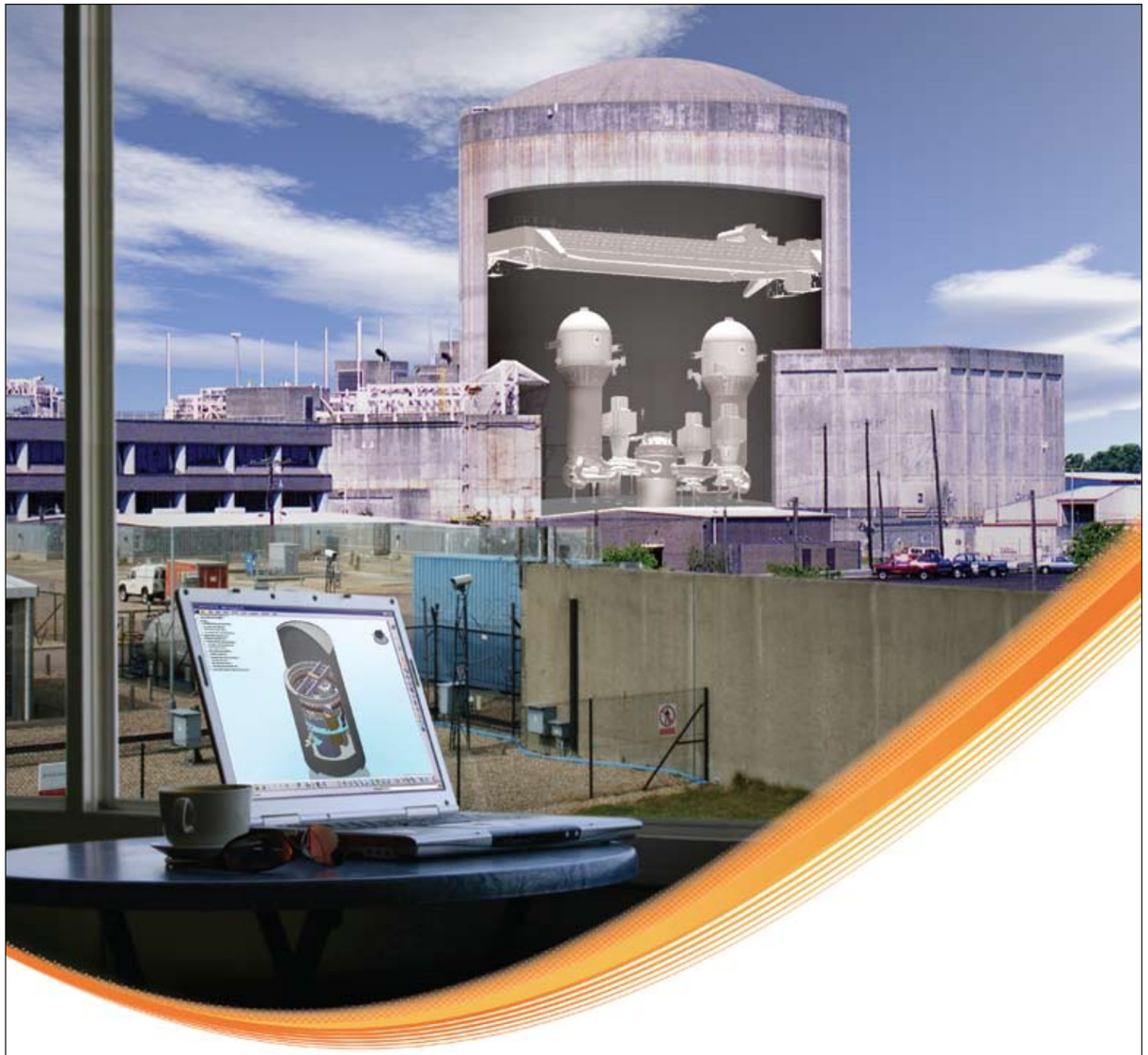
The Americas PLM Magazine

PLM Solutions for the Booming Energy Industry

featuring entergy nuclear

DASSAULT SYSTEMES



Plants of Tomorrow Require Innovative DS PLM Today

Dassault Systèmes (DS) Product Lifecycle Management (PLM) solutions transform the entire nuclear plant lifecycle. Whether it's a new build, outage planning or license renewal project, DS PLM helps plant owners/operators, EPC firms and NSSS suppliers minimize costly downtime, reduce risk, and meet stringent government and safety regulations. Our integrated software suite – including **CATIA, DELMIA, ENOVIA, SIMULIA** and **3DVIA** – delivers 3D, virtual simulation and project management tools for effective design, engineering, construction, operations and maintenance – allowing you to deliver projects on-time, on budget – every time.

Visit **www.3ds.com/solutions/energy** to learn how PLM will power your profitable future.

DASSAULT SYSTEMES

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Editorial

It appears the economic decline is slowing. Recovery may be on the horizon. Are you prepared to **Emerge with Advantage** by leveraging new and innovative products, creative business models and efficient work processes? Companies that do will capture customer demand and grow market share as the economy turns.

Evolving during tough times does not happen by accident. If you are reading this article, you probably have already invested in elements of PLM. By leveraging the full scope of PLM, you can seize opportunities now and adapt to the market challenges that will surely follow. Some key areas of competitive advantage include:

Minimize Waste. Eliminating waste (both assets and time), is a fundamental capability of PLM. Reduce physical waste and rework by simulating the design, production and behavior of products virtually before committing capital. Reduce wasted effort by establishing a single source of data for your enterprise to quickly find, re-use or modify what has already been done. Get a firm handle on your performance and costs with powerful decision dashboards.

Optimize IP. Intellectual Property is the value of your company. This intelligence can leave your business through reductions, retirement, redeployment or resignation. DS PLM helps you capture, re-use, and protect designs, data, and the knowledge of how to use it (methods and processes).

Improve Innovation. DS PLM, and the V6 architecture, use "the language of 3D" and a common data platform accessible anytime from anywhere to create an integrated, virtual environment to design, view, interact, and "play" – inspiring product variations or completely new concepts. Turn these concepts into reality with best-in-class authoring tools, process discipline and security.

Accelerate Time to Market. Efficiently accessing the collective IP of your company, designing and testing concepts virtually, and engaging with colleagues, suppliers and customers throughout tunes offerings to demand and delivers them to market faster.

Facilitate Collaboration. At the core of PLM 2.0 is the ability to move your design environment online and connect your extended enterprise in new ways. The DS V6 architecture moves beyond traditional PLM, increasing your ability to place the customer at the heart of your design process and dramatically improve communications (See What You Mean) within your company, across your supply chain, and with your customers, ensuring you get it right the first time.

No one welcomes an economic downturn. But once it is here, it is crucial to reassess and improve your processes and operations to **Emerge with Advantage**. Please contact your DS representative today to help you identify ways to realize more value from your existing PLM investments and evolve to capture future growth.

Tom Emmrich
President
Dassault Systèmes Americas

Americas

ds digest

solution spotlight

success story

feature

in practice

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HEAR DS LIVE AND IN PERSON AT CONFERENCES THIS FALL

Dassault Systèmes customers will have the opportunity to hear DS live and in person at a number of fall events, including the **COE Aerospace & Defense Workshop**, PDMA International Conference and SAE AeroTech Congress & Exhibition.

DS is a co-sponsor of the COE A&D Workshop Oct. 26-27 at the Fort Worth (Texas) Convention Center, featuring two days of industry-focused education and hands-on training on DS PLM solutions. Visit the DS booth in the TechniFair to experience our newest aerospace solutions. For more information, visit www.coe.org

Rosemary Grabowski of DS will present as part of a panel discussion on "Global Product Development: Best Practices versus Next Practices" at 1:30 p.m. Nov. 4 during the **PDMA International Conference** Oct. 31-Nov. 4 at Disneyland Hotel in Anaheim, Calif. PDMA is the premier resource for product development and innovation for professionals. For more information visit www.pdma.org

DS will be in booth 606 at the **2009 SAE AeroTech Congress and Exhibition** Nov. 10-12 at the Washington State Convention Center in Seattle. Julie Charland of DS will present "Human Factors: How Ergonomic Factors Effect Cockpit Design." For more information visit www.sae.org/events/atc/

For a complete listing of DS events in the US and Canada, please visit www.3ds.com/company/regional-spotlights/north-america

DS AND I-GENERATOR FORM FOOTWEAR INDUSTRY PARTNERSHIP

i-generator, an innovator in global footwear brand creation, will work with the Dassault Systèmes ENOVIA brand to design and deliver ENOVIA solutions to global footwear manufacturers and their supply chains. The goal is to help footwear manufacturers reduce cost and streamline their product development processes. ENOVIA also will work with i-generator in leadership initiatives, including its strategic customer council for footwear, as well as industry events and global sales activities.

"In today's market, global footwear companies can no longer afford slow, inefficient and out-of-date product systems and processes," says Peter Rueegger, partner, i-generator. "The speed of the marketplaces, changing consumer tastes, and the sheer scope of footwear product ranges no longer allow for these very costly inefficiencies, and therefore make PLM a competitive necessity."

SCHLUMBERGER ON-DEMAND E-SEMINAR DETAILS GLOBAL ENERGY LEADER'S PLM STRATEGY

The global oil business knows no boundaries, and with support from Dassault Systèmes PLM, neither does Schlumberger. Discover how global oilfield and information services leader Schlumberger leverages DS PLM to power its "design anywhere, build anywhere, access anywhere" strategy in an on-demand e-seminar featuring Doug Burgess, Schlumberger's global service delivery manager. Burgess led the shift for product development and manufacturing business processes as Schlumberger moved from a regional to a global model.

Produced by IndustryWeek, the one-hour event outlines how Schlumberger uses DS PLM to minimize project delays, reduce errors, speed design time, manage multiple manufacturing resource planning (MRP) sites and streamline processes to reduce waste, increase capacity and improve customer satisfaction – and how your company can, too. To register for an on-demand online showing, please visit: www.plmv5/schlumberger

DASSAULT SYSTÈMES WINS PACE AWARD FOR DELMIA AUTOMATION

The DELMIA Automation solution from Dassault Systèmes was recognized as a 2009 Automotive News PACE (Premiere Automotive Suppliers' Contribution to Excellence) Award winner. The PACE awards acknowledge automotive suppliers for superior innovation, technological advancement and business performance.

DELMIA Automation software was recognized in the PACE Information Technology category. DELMIA Automation makes it possible for manufacturing engineers to create a virtual production cell or line that includes all devices and their behavior, to test how a line will perform prior to any physical build. Using the virtual line with the actual PLC controller that will be on the factory floor, months before the line is assembled, saves weeks on commissioning the production line.

According to a study performed by ARC Advisory Group, early implementations of DELMIA Automation identify an average of 100 mechanical and electrical errors in logic, HMI, and drawings per manufacturing cell. Identifying and correcting these issues prior to physical build eliminates two to three man-weeks per startup.

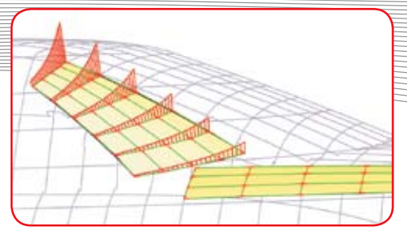
NEW DS ONLINE OFFERINGS SPOTLIGHT AEROSPACE & DEFENSE, INDUSTRIAL EQUIPMENT

DS is sponsoring two new industry-focused online sites: an independent community for Aerospace & Defense (A&D) industry leaders to share knowledge, and a DS Industrial Equipment Showroom designed to make researching the latest DS PLM solutions quick and easy.

AeroLeaders 2.0 is an independent community committed to knowledge transfer and mentoring of tomorrow's A&D leaders by executives at the director level or above. Sponsored by DS, the site offers an issues forum and the opportunity for A&D members to post news links on important industry issues. To apply for membership, please visit www.aeroleaders2.com.

The DS Industrial Equipment Showroom allows visitors to research DS solutions for the industry by job function. The top DS solutions for each function are profiled, with downloads for brochures, customer stories and videos, white papers and DS magazines. Additional industry showrooms are planned. To explore the Industrial Equipment Showroom, please visit http://interactiveshowroom.3ds.com

For more on these and other DS news items, please visit www.3ds.com/news-events/press-releases



Class A Surface Modeling with ICEM

With ICEM Shape Design, surface modeling technology leader ICEM brings its expertise to CATIA and sets a new standard for Class A. Users can now focus on surface quality throughout the development and construction process with a single system – without converting or losing data.

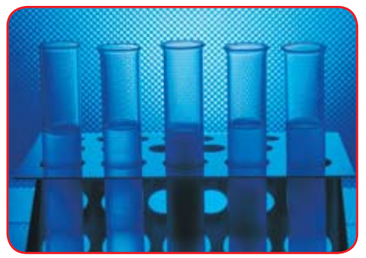
For a surface to qualify as Class A, it must be perfect in all conditions under any kind of light. From car manufacturers to yacht builders and from aircraft manufacturers to industrial designers, ICEM Shape Design is the gold standard for modeling Class A surfaces.

CLASS A IN CATIA – RIGHT FROM THE START

With ICEM Shape Design in CATIA, draftsmen and designers can develop their initial ideas in free-form on a computer, or develop data models from 3D scans or earlier drafts. The modeler can then adjust these drafts in ICEM Shape Design using simple push-pull "handles." Data models for subsequent stages in the engineering process can be used at any time. Changes in the surface model can be made at any point in the design process and, thanks to associative geometry, are then available in CATIA.

Want to learn more?
To read the full article, please visit www.3ds.com/contactmag-extra

For more information:
www.icem.com



Dassault Systèmes Invests in Intercim

Dassault Systèmes has acquired a minority stake in Intercim LLC, strengthening the currently available DS-Intercim V5 solution around 3D process planning and manufacturing execution with plans to revolutionize collaboration between manufacturing and engineering.

Intercim has been a DS partner since 2004, and this alliance tightly connects the physical world of Manufacturing Execution Systems (MES) with the virtual world of PLM. The partners will provide a dynamic, real-time ability to execute production orders exactly as planned by manufacturing engineers, closing the loop between engineering and the shop floor. Aerospace & Defense will be the first industry served by the partnership.

REDUCING COSTS, SHORTENING CYCLES

Intercim enables users on the shop floor and across the supply network to collaborate on manufacturing execution and quality management. Extending the as-designed and as-planned data to production offers manufacturers the ability to reduce errors and data re-entry, facilitate faster decision making, and hasten problem resolution. In addition to the companies' V5 solutions, Intercim and DS will jointly develop a new V6 production experience that combines the values of MES and PLM with real-time collaboration on product and production lifecycle data in a single online referential.

Want to learn more?
To read the full article, please visit www.3ds.com/contactmag-extra

For more information:
www.Intercim.com

Watch for the No. 44 Dassault Systèmes Dodge in the Pepsi 500, Oct. 11 on ABC.

success story

DS CATIA · DS ENOVIA · DS DELMIA

Richard Petty Motorsports Speeds New Designs to the Track 50% Faster with Dassault Systèmes PLM

What fuels our success is time-to-market and doing it for the best cost we can. DS PLM is an irreplaceable part of that success.

Tommy Wheeler, Director of Engineering Services, Richard Petty Motorsports

Officials at Richard Petty Motorsports believe mechanical prowess, the traditional source of advantage in NASCAR, is being surpassed by engineering excellence. DS PLM is a key contributor to the organization's success.

In the competitive world of NASCAR racing, the difference between first and last place is only fractions of a second per lap. Even minor improvements in the race car can spell success at the finish line. But improvements must be made at lightning speed – there's no time for trial and error in the shop.

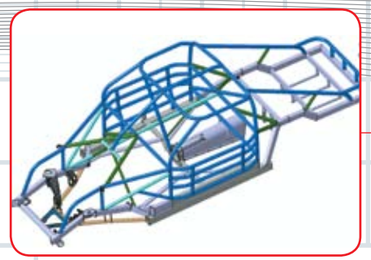
Richard Petty Motorsports, created in 2008 from two of NASCAR's most successful teams – Gillett Evernham Motorsports and Petty Holdings – is therefore committed to being one of the sport's most engineering-centric organizations.

"I have an 'open wheel' mindset that constantly pushes our teams, whether racing or engineering, to go further, faster, with better technology," says Mark McArdle, vice president and managing director of competition. "Dassault Systèmes Product Lifecycle Management, including CATIA, ENOVIA SmarTeam and DELMIA, is an important part of our win-through-engineering strategy."

The Petty organization owns 268 Sprint Cup victories since its first race in 1949. Gillett Evernham Motorsports tallied 15 victories since 2001. Richard Petty Motorsports, owned by George Gillett and Richard Petty, has four Sprint Cup teams.

AN INTEGRATED SOLUTION FOR AN INTEGRATED STRATEGY

Kellen Brown, senior project engineer, says the engine development team turns out a minimum of ten engines each week. Body configurations change rapidly, too, lasting no more than two months each. "The only certainty in our sport is change – and it's fast, it's real time," says Tommy Wheeler, director of engineering services.



Richard Petty Motorsports uses CATIA for virtual 3D modeling of every aspect of car development and production, from design to tooling and manufacturing. ENOVIA SmarTeam intelligently stores and tracks all of the team's CATIA product designs and engineering data for reuse, enhancing the team's ability to iterate from existing designs and freeing time for innovation.

In 2008, the team stepped up its capabilities with the addition of DELMIA Robotics as its 3D welding simulation solution. DELMIA allows the team to capture best practices and automate the repetitive work of robot programming, accelerating the speed at which it moves new designs onto the track.

CATIA: WHERE ENGINEERING EXCELLENCE BEGINS

Steve Oliver, deputy technical director of Design & Engineering, says his team designs nearly all of the components of a new engine using CATIA. "We're using it to be sure we have good fits and good documentation of all the components. CATIA is cutting about 50% off our development time."

The savings come in many forms, but knowledge capture and re-use is at the heart of the benefits. New designs are quickly looped through analysis, revision and reanalysis until target structural parameters are met. Existing machining and processing data is then updated in seconds. Fit and function are achieved with minimal prototyping and mockup, saving substantial time and money.

Seamless integration of Dassault Systèmes' suite of solutions makes all the difference, Oliver says. "Staying in one user interface for design, analysis and manufacturing really is a huge productivity gain. We just couldn't imagine going back to any other kind of system."

KNOWING WHAT YOU KNOW

CATIA also captures critical knowledge gained on the shop floor. "Before CATIA, if we had to make changes on the shop floor we didn't have a way to reverse engineer and that knowledge would be lost," Design Manager Eric Kominek says. "Now, that's all captured automatically in real time."

Once a part has been designed, getting it to manufacturing is simple and efficient. With ENOVIA SmarTeam's built-in revision control and management, everyone on the team is assured of having the most current, up-to-date copy of part drawings.

"When we save a design model in ENOVIA SmarTeam, the machine shop can pull that same part file into their software and create tool paths on the model we actually designed," says Kelton Sprinkle, the team's design/manufacturing engineer. "Accuracy just doesn't get much better."

Before ENOVIA SmarTeam, the organization lacked a strong process for prioritizing design and engineering projects. "With ENOVIA SmarTeam, we can rank and track projects. We can see and ensure that people are doing the right things – things that will move the team forward," Kominek says.

DELMIA MAKES ROBOTIC CONTROL A SNAP – VIRTUALLY

DELMIA's robotic simulation capabilities help the team save time and cut costs in the design of welding fixtures. "We can simulate the tool path of the welder and avoid any interference issues," Sprinkle says. "We know it's going to work dimensionally before we ever machine the first piece."

Virtual modeling eliminates scrap and re-machining of parts while avoiding time-consuming reprogramming. "All reconfiguring and iterations can be done in the virtual environment, where the only investment is the software operator's time," Sprinkle says.

The ability to create a program in DELMIA Robotics and then download it to the robot, versus manually programming the robot, is another notable savings. Utilizing DELMIA Robotics, Sprinkle estimates programming time has been cut 40-50%.

For more information:
www.richardpettymotorsports.com

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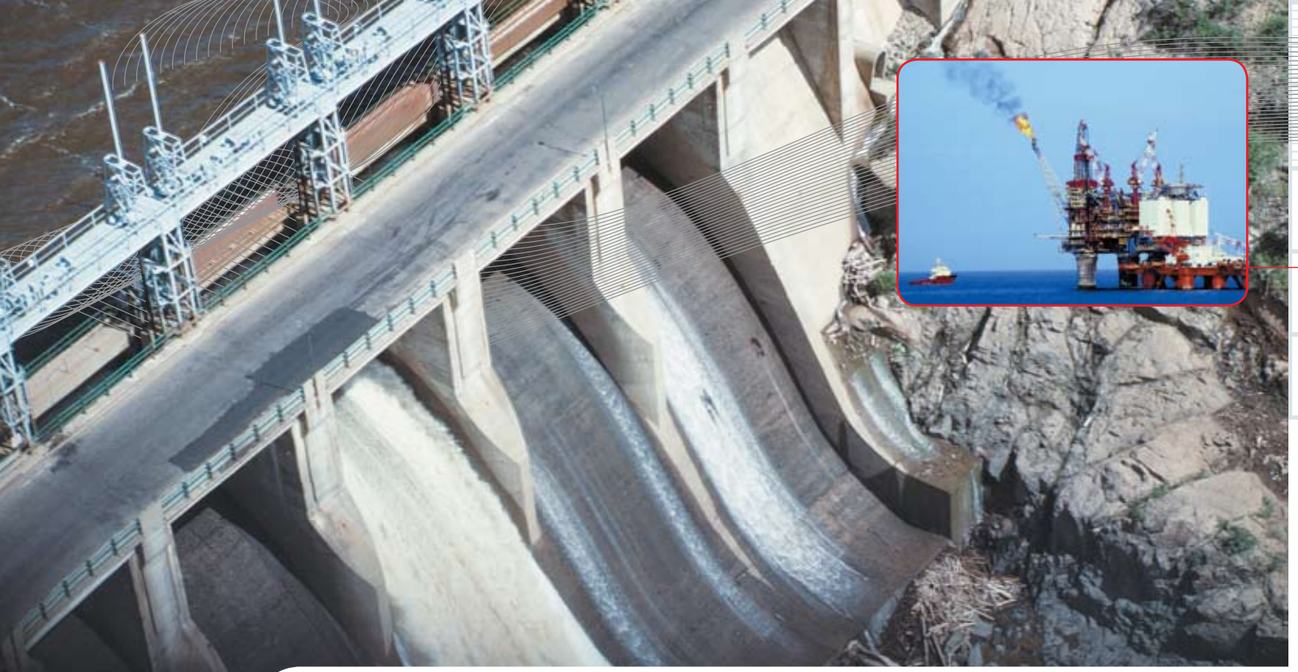

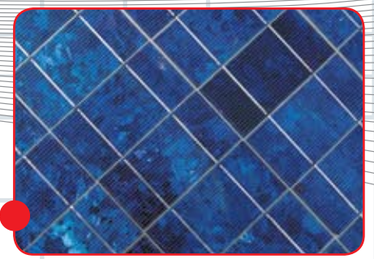

DS Solutions for the Booming Energy Industry

By **Rolf Gibbels**

PLM technology manages complexity and puts lifelike experience at users' fingertips to minimize risk.

The global energy industry is under pressure from every direction. Demand is growing exponentially, creating pressure for new, sustainable energy sources. New construction and maintenance projects are increasingly complex. Aging infrastructure must be upgraded and modernized to meet stringent quality, health, safety and environmental regulations. And all of these challenges must be met more efficiently than ever before, keeping the industry profitable despite increasing demands from regulators and consumers.

Given the nature of these challenges, the energy industry is actively searching for more efficient ways of working. Increasingly, leaders across the energy spectrum are coming to the same conclusion: The same Product Lifecycle Management (PLM) solutions that help manufacturers operate more efficiently are equally effective in designing, building, operating and maintaining *plants* – from nuclear and hydroelectric power to oil refineries and from offshore production platforms to solar and wind-energy farms.

REFURBISHING PROJECTS ON THE RISE

The need to extend, modernize and refurbish existing power plants offers significant challenges. Many upgrade projects involve hundreds of workers in unique or infrequent operations. Equipment weighing tons often must be moved through spaces with clearances measured in inches. Scheduling requires precise choreography to ensure each step occurs on time and in sequence – critical in limiting outages and meeting budgets. Safety considerations are paramount.

PLM technology manages complexity and puts lifelike experience at users' fingertips to minimize risk. DELMIA allows project managers to visualize their maintenance and installation activities and schedules as 3D simulations, helping to identify unexpected issues and determine optimal sequences. Reducing outage time pays off; each day of outage costs $1 million for replacement power at nuclear plants and $7 million for non-productive time at oil and gas installations. At Entergy Nuclear's Waterford 3 plant, for example, DELMIA simulations of a motor-replacement project identified a previously unrecognized obstruction that could have added one to two days to a planned outage (**see page 12**).

Once activities are planned, training with 3DVIA Virtools offers workers lifelike experience in a virtual, immersive setting. Crane operators, for example, can experience the actual "feel" of moving a heavy piece of equipment in virtual reality, allowing infrequent operations to be practiced efficiently and safely. Virtual training ensures worker readiness for project startup at the physical jobsite, without interrupting ongoing operations.

NUCLEAR POWER PLANTS: COMPLEX, LARGE-SCALE PROJECTS

Nuclear power is experiencing a renaissance, with more than 230 plants planned or proposed worldwide. Highly complex and costing as much as $10 billion each, plant construction requires efficient management of multi-disciplinary projects to meet budget and delivery obligations. The handover process from construction to the owner/operator is critical, requiring a mature, scalable collaboration and information-management platform.

Owner/operators, major equipment vendors and Engineering, Procurement and Construction (EPC) firms increasingly rely on fully integrated DS PLM environments to support a design-to-operations approach that concurrently optimizes design, construction and resources. The DS PLM virtual construction portfolio offers comprehensive capabilities for plant construction planning, scheduling and sequencing in a multi-CAD environment. Virtual definition and simulation reduces construction delays and improves collaboration. In-work product structures, digital mockups and engineering bills of material (BOMs) provide valuable early insights to project developers and construction planners.

MANAGING PROJECT COMPLEXITY AND GLOBALIZATION

To bridge the interoperability issues that complicate collaboration in a fragmented environment and achieve efficient collaboration with dozens of stakeholders, the energy industry needs a centralized and structured approach to managing data in all its forms.

At Lawrence Livermore National Laboratory (**see page 16**), for example, ENOVIA manages massive amounts of planning and construction data, while collecting and organizing data on daily operations and maintenance spanning decades. ENOVIA coordinates engineering data and processes across the complete product lifecycle and maintains consistency by propagating changes to related documents. ENOVIA also tracks project progress and overall productivity, and manages change orders and workflows to ensure milestones are met and projects progress efficiently.

DIVERSIFYING ENERGY SOURCES

The drive for energy independence and greenhouse gas reductions, wild swings in oil and gas prices, and rapid increases in total energy demand, are driving the development of local, sustainable energy sources such as hydro, wind, solar, wave and geothermal. From enabling advanced composites technologies for wind-turbine blades, to managing the vast resources required to develop reliable fusion technology or keep pace with soaring demand for solar panels, PLM helps alternative energy producers innovate, develop, manage and replicate projects while managing vast networks of installations. Pelamis Wave Power (ocean wave farms), ITER (nuclear fusion), Vestas Wind Systems (wind farms) and Solar Century (environmental energy system design) are just a few of the alternative energy leaders meeting the unique demands of their markets with DS PLM.

For more information:
Rolf.Gibbels@3ds.com

www.3ds.com/solutions/energy/overview

www.plmv5.com/delmiaenergy

The Energy Industry and PLM

Allan Behrens is a director at Cambashi, a management and marketing consultancy firm in the UK and US. Contact Mag spoke with him about the trends and challenges in the energy industry and the role PLM can play.

Q: WHAT ARE THE MAJOR TRENDS AND CHALLENGES IN THE ENERGY INDUSTRY TODAY?

A: Countries seek to diversify their energy sources. They no longer want to be at the mercy of a single supplier, but instead are adopting a pragmatic approach and breaking away from past habits by varying the origin and type of energy they use. Only diversification can provide energy security.

But it takes a lot of time to reach the new initiatives, and the amount of energy produced by renewable sources is less than what is required. We need to sustain and maintain existing plants until we have alternatives to replace them. Governments are taking a tactical approach, using proven methods and sources, like coal and nuclear, until new ones come along.

Q: WHY IS PLM RELEVANT TO THE ENERGY INDUSTRY?

A: The sheer size of energy projects makes PLM relevant. Power plants are large-scale projects. Companies require tools that are accurate at scales ranging from kilometers to fractions of millimeters. Companies also need multiple solutions to handle the design of the different plant components, and a single data management system to manage all these systems. It is also important to manage all the suppliers that participate in designing and building the plant. Only a robust PLM solution can orchestrate everything efficiently.

PLM also addresses the challenge of handover from the Engineering, Procurement and Construction (EPC) firm to the owner-operator. It is not possible, because of the complexity involved with operating a plant, to wait until the plant is finished. With downtime costing up to $1 million a day (in nuclear plants, for example), it has to be a progressive process so that operator training begins as soon as possible. A PLM system can help operators familiarize themselves with the different plant equipment to see how they function and how to operate them.

Finally, maintenance operations are greatly facilitated by a PLM system that keeps track of each component, the date it was serviced, what was done to it. With a PLM system, operators are able to simulate the different refurbishing tasks to ensure they can be done safely and without interference. This is a huge opportunity for PLM because it can help optimize on-site operator intervention.

For more information:
www.cambashi.com

Four Questions with EPRI: PLM and Nuclear Power

The Electric Power Research Institute (EPRI) is a global, not-for-profit corporation that performs collaborative R&D and technology deployment for its members, the owners and operators of electric power generation and delivery systems. John Gaertner, Technical Executive, and Ken Barry, Senior Project Manager, specialize in nuclear power.

Q: TODAY'S NUCLEAR POWER PLANTS ARE HAVING THEIR LICENSES EXTENDED FROM 40 YEARS TO 60 YEARS. WHAT ARE SOME OF THE CHALLENGES, AND HOW CAN PLM HELP?

A: About 20 years ago, experts realized the condition of the plants was so good that they should be able to run for much longer than 40 years. To do so, however, major maintenance and modifications are often needed that were not anticipated in the original design. So the industry is facing many new planning and logistical challenges, and investigating the contribution PLM can make. Owner operators can translate their paper blueprints into 3D CAD models. They can laser-scan the actual facilities to capture the changes and document dimensions to fractions of an inch. Then they can use PLM to simulate the maintenance operations, train workers, and manage information through the entire plant lifecycle.

Q: SO HOW HAS THE INDUSTRY MANAGED ALL THESE YEARS WITHOUT 3D PLM?

A: Very well, but at great expense. In the nuclear industry, you never do anything until you're sure you can do it right, so the industry invests significant time and resources in trying to anticipate and cover every possibility. PLM can be a much more efficient and effective way, because it allows you to plan virtually instead of physically. And it offers the potential to add that extra margin of safety and precision the industry constantly strives for, at a very attractive cost.

Q: WHAT IS THE BENEFIT OF USING PLM TO TRAIN WORKERS?

A: With lifelike 3D models, workers can see precisely what they need to do before they attempt it. That's especially helpful when you're tasked with doing something that has never been done before or is only done during an outage, which normally occurs only once every 18 to 24 months. With PLM, owner operators can develop simulations that work like video games to give the workers near real-life experience in a virtual environment, before they report to the job site.

Q: WHAT ABOUT PLM AND NEW PLANTS?

A: The benefits will be much the same as for existing plants, but they will be achieved more readily because the new plants are being designed in 3D PLM. Because they will be built from the ground up using these technologies, applying it to long-term maintenance will come more easily and naturally.

For more information:
www.epri.com

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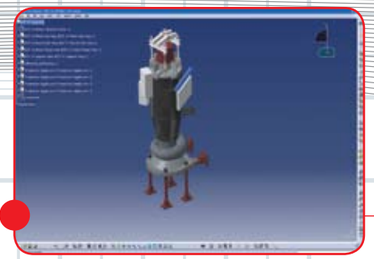
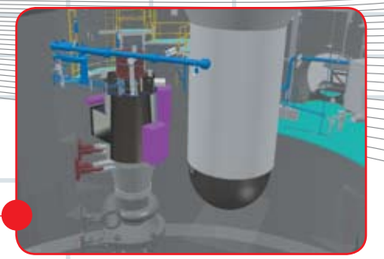




Entergy Nuclear Simulates Nuclear Plant Maintenance with DS PLM

The use of DS PLM during the planning process reduces overall risk and improves scenario planning for any major project.

John M. Mahoney, Innovation Leader, Entergy Nuclear

ENTERGY NUCLEAR

Entergy is a U.S. energy provider with nearly 15,000 employees, 30,000 megawatts of generating capacity, and 2.7 million customers. Entergy Nuclear manages the second-largest fleet of nuclear reactors in North America with 11,022 megawatts of capacity – roughly equivalent to the peak power demand of New York City in 2003.

Most US nuclear power plants are having their licenses extended, bringing their permitted life from 40 years to 60 years or more. Maintaining and updating the plants often require complex, one-of-a-kind maintenance operations. Many involve moving objects that weigh tons through spaces with clearances of as little as two inches.

Planners must have confidence the operations are feasible, safe and can be completed in brief maintenance shutdown periods. Traditional tools, including physical mockups, tabletop exercises and walkthroughs, are effective but expensive, and each day added to an outage by unanticipated issues can add $1 million to the cost.

In search of a better way, Entergy Nuclear chose Dassault Systèmes PLM for three projects at its Waterford 3 plant near New Orleans, Louisiana. Dassault Systèmes Industry Services (DSIS), the DS professional services arm, conducted virtual modeling and simulation for the projects, leveraging CATIA to create virtual models, DELMIA for virtual simulation, and DS-partner AREVA's laser scanning solution to capture updates to the plant not reflected in the original plans.

Waterford 3 has accepted the simulations for a project to replace a 9,700-horsepower reactor coolant pump (RCP) motor that weighs more than 57 tons. Other projects in process include analyzing the potential impact of a fire on a fire-control panel in a key plant area and replacing the in-core instrumentation (ICI) "thimbles" used to monitor core processes.

"We are using 3D PLM digital simulation for large projects where risk is high because of potential impacts on operations or electricity production, and wherever radiation exposure can be reduced," says John M. Mahoney, corporate innovation leader for Entergy Nuclear.

Entergy Nuclear officials estimate that if not identified and planned for in advance, the obstructions could have added one to two days to the outage, at a cost of $1 million-$2 million.

The RCP motor simulation was so successful – spotting two previously unrecognized obstructions that could have added one-to-two days to the project – Waterford 3 is investing in CATIA and DELMIA software and training to create future models and simulations in-house. Entergy Nuclear management also is evaluating ENOVIA for global collaborative lifecycle management for planning, construction and long-term maintenance of new nuclear power plants.

CATIA ACCURATELY MODELS COMPLEX FACILITIES

Waterford 3 began operating in 1984, long before 3D technology was available to the nuclear industry. DSIS used CATIA to create accurate 3D models of the RCP motor removal path and equipment. Models were built from the original plans for the facility, with dimensions validated to within 0.25 inches using AREVA laser scans. Mahoney notes that the models "provided project planners, workers and engineers with a true representation of plant areas that cannot normally be accessed during power operations."

DELMIA SIMULATIONS IMPROVE PLANNERS' "COMFORT LEVEL"

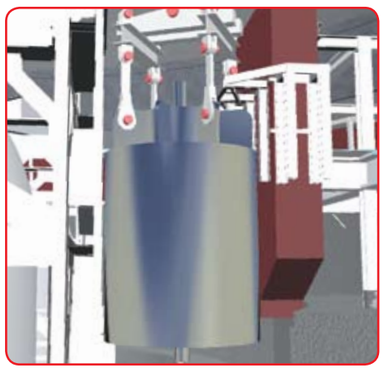
Once the 3D models were built, all underlying engineering processes were simulated in the DELMIA DPM Assembly package as an animated video. The simulation identified two previously unrecognized obstructions. Entergy Nuclear officials estimate that if not identified and planned for in advance, the obstructions could have added one to two days to the outage, at a cost of $1 million-$2 million.

DSIS DELIVERS ON-DEMAND SOLUTION

To validate DS PLM's effectiveness in simulating complex maintenance projects, Waterford 3 turned to the modeling and simulation experts at Dassault Systèmes Industry Services (DSIS). Working from engineering drawings, photographs and AREVA laser scans, DSIS modeled the complete environment in CATIA. It then simulated the removal processes developed by Waterford 3 in DELMIA to test for any unanticipated issues. The work, including data collection, modeling, and a complete simulation video, was completed in about six weeks.

MINIMIZING RADIATION EXPOSURE THROUGH SIMULATION

DELMIA provides for simulation of potential radiation exposure, a critical element of the ICI thimble replacement planning scenario. Although not currently in use at Waterford 3, radiation simulation offers the capability to accurately predict radiation exposures and test different scenarios and placements of workers to identify and develop procedures with the lowest total exposure.



CUTTING COSTS BY ELIMINATING PHYSICAL SIMULATIONS

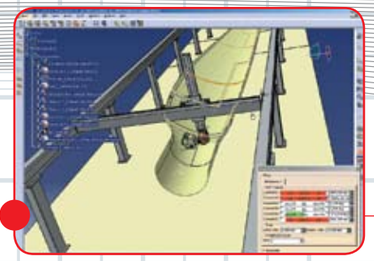
3D models, 4D visualization of the project and schedule, and simulations with DS PLM allow Entergy Nuclear to generate new engineering ideas and explore alternative solutions faster and at less cost than pilots with custom-built mockups. DS PLM also helps outage planners coordinate all tasks, test and change sequences, and boost contractors' productivity. "3D modeling and simulation with DS PLM was that extra check to gain the comfort level we had to have," says Don Marpe, the project manager who led the early use of DS solutions on the fire protection, RCP motor, and ICI thimble projects.

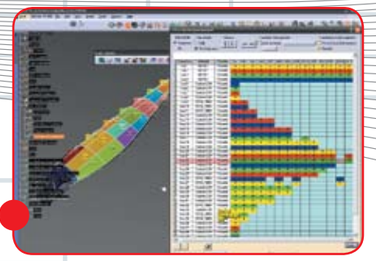
IMPROVING TRAINING AND CAPTURING INSTITUTIONAL KNOWLEDGE

Nuclear plant refueling, which occurs only once every 18-24 months, involves about 2,000 discrete tasks, half a dozen contractor companies and dozens of skilled craftspeople – few of whom have ever been inside the plant's containment building. 3D video simulations improve workers' familiarity with their surroundings and reduce the risk of human error.

For more information:
Entergy: www.entergy-nuclear.com

www.3ds.com/solutions/energy/overview





Wind Turbine Composites Design: Leveraging Aerospace Advances for Improved Durability

With wind-installed capacity growing at a rate of 35% per year, wind turbines are the composite industry's fastest-growing application. Ultra-light, strong and durable, composites are ideal for producing lightweight blades with tremendous performance capabilities.

Wind turbine manufacturers must rapidly develop best design and manufacturing practices that will help them meet market demand by reducing design lead time . . . and optimizing manufacturing processes.

Applying aerospace best practices to the challenges of wind turbine composites design and manufacturing creates the opportunity to effectively address common challenges.

With high hopes riding on this alternative energy source, the wind turbine blade industry is working hard to improve manufacturing efficiency and address blade failure issues. But challenges remain great, with failure rates as high as 20% within three years.

WIND TURBINES: MORE PLENTIFUL, POWERFUL

According to the World Resources Institute, production of wind turbines and systems has increased by a factor of 5.2 since 2000, and by a factor of 115 since 1990. In 2008, the Institute estimates that composite wind turbine blades worth an estimated $5.9 billion were delivered globally. Composites Market Reports (CMR) estimates that by 2017, the global value of all wind turbine blades will reach $34 billion.

Wind turbines are not only becoming more plentiful – they're becoming more powerful. Increased power is accomplished primarily by increased length; according to CMR, the fastest-growing segment of the market is for turbines with a capacity of 1.6 MW or higher – requiring blades of 37 meters (123 feet) to more than 60 meters (200 feet) and weighing 12,000 pounds each.

Composite materials are ideal for producing wind turbine blades, yet the structural complexity of these materials also presents difficult challenges in optimizing design and manufacturing methods – especially over such extensive lengths. As a relatively young and fast-growing industry, wind turbine manufacturers must rapidly develop best design and manufacturing practices that will help them meet market demand by reducing design lead time, improving blade durability, and optimizing manufacturing processes.

From a design and manufacturing standpoint, wind turbine blades have many similarities to helicopter rotorcraft blades and other aerospace structures. Wind turbine manufacturers, therefore, have the unique opportunity to adapt and apply the best practices developed and refined over several decades in the aerospace industry to help their businesses succeed in a tough competitive environment.

HARNESSING THE WIND WITH COMPOSITES

Composites dominate both the wind turbine blade and rotorcraft blade markets due to their superior fatigue characteristics and stiffness-to-weight ratio, their unique ability to fabricate complex geometries, and their potential for aeroelastic tailoring. In particular, the properties of composite blades can be tightly controlled and varied over their span through the appropriate selection of ply orientation, thickness and lay-up.

The ability to tailor composites to specific loads and other requirements is among their greatest strengths, but also increases the complexity of the design process. Optimizing the properties of the blades is critical to delivering the needed bending strength and fatigue performance while minimizing cost and weight. Common failure issues currently challenging the composite wind turbine blade industry include manufacturing errors, such as waviness or overlaid laminates; bad bonds, delamination and voids; leading-edge erosion; trailing-end splits; and damage caused by lightning strikes.

Lessons learned in the rotorcraft blade industry can be used to dramatically improve wind turbine design and manufacturing and reduce failure rates. The aerospace industry has developed best practices such as structural zone-based modeling and a grid-based approach using analysis thickness laws or stacking sequences that can be applied early in the lifecycle of a part. Both design approaches save time that can be used to create more iterations in pursuit of a superior design.

BEST PRACTICES FOR BETTER BLADES

Best practices pioneered in aerospace design can also substantially improve the analysis process by integrating design with finite element analysis (FEA) for fast design-analysis iterations in full associativity with the zones and plies definition. The latest FEA software provides engineers with advanced capabilities for simulating realistic composites behavior, including delamination and failure.

Aerospace best practices also use simulation to identify manufacturing problems in the virtual environment, making the first iteration of a design correct or very close to correct and eliminating the need for trial and error on the shop floor. Composites design and manufacturing data can also be linked to nesting, laser projection, and tape laying and fiber placement systems to streamline downstream processes.

Applying aerospace best practices to the challenges of wind turbine composites design and manufacturing gives manufacturers the opportunity to effectively address common challenges such as delamination, leading-edge erosion, trailing-edge splits and manufacturing errors such as overlaid laminates.

By borrowing best practices from the aerospace industry, wind turbine manufacturers can achieve better design and layout results that will deliver more reliable performance and help the wind energy industry continue to grow its contribution to a clean, sustainable energy future.

For more information:
To download a copy of the Dassault Systemès white paper "Wind Turbine Blade Composites Design: Leveraging Aerospace Advances for Improved Durability," please visit http://www.plmv5.com/composites

Lawrence Livermore National Laboratory Relies on ENOVIA PLM as it Tackles Pressing Energy Challenges

ENOVIA Engineering Central is at the core of our Enterprise Configuration Management System.

Bernie Merritt, NIF Configuration Management and Integrations Manager, Lawrence Livermore National Laboratory

Lawrence Livermore National Laboratory

Lawrence Livermore National Laboratory (LLNL), a US Department of Energy (DOE) research and development facility, pursues research projects ranging from energy independence and environmental protection to national and nuclear security.

At the National Ignition Facility (NIF), legions of LLNL scientists, engineers, technicians and designers have developed the world's largest laser system. At least 60 times more powerful than any previous laser, NIF will direct 500 terawatts (a thousand billion watts) of light at a nugget of frozen hydrogen isotope smaller than a pea.

Temperatures greater than 100 million degrees Celsius will start a nuclear fusion reaction – the same process that makes stars shine – and release up to 20 times more energy than that used by the laser. The technology could be applied to create fusion-driven power plants to generate vast amounts of clean, inexpensive electricity from hydrogen fuel.

NIF recently demonstrated the ability to focus the high-energy laser onto a target, with plans to achieve fusion ignition in 2010 – a feat never before accomplished. Practical use of the technology for power plants could follow in about ten years.

CHALLENGES OF A VAST R&D FACILITY

As one of the most ambitious projects ever undertaken at LLNL, NIF faced significant challenges in managing massive stores of data associated with the project – especially regarding equipment design and safety protocols for the system's nuclear materials. This included data for current work, plus thousands of legacy documents from the previous ten years and hundreds of thousands more expected throughout the 30-year NIF lifecycle.

This daunting task was addressed with an Enterprise Configuration Management System (ECMS) based on Dassault Systèmes ENOVIA PLM. With more than 1,600 users throughout LLNL, ENOVIA Engineering Central provides a single digital source of information across the complete product lifecycles of various business units. By controlling CAD models that drive many other documents, the system effectively ensures that all related documents reflect all revisions. Pioneered by NIF, ECMS is now used by eleven other LLNL business units.

"We're not just controlling drawings and documents, but managing the underlying data within the CAD model," says Bernie Merritt, NIF configuration management and integrations manager. "By managing this source data, we maintain strict control over data and processes required by DOE regulations."

With the total cost of NIF at $3.5 billion, DOE and Congressional reviewers maintain close oversight of funding, especially in light of a desire for increased transparency into how tax dollars are spent.

"The system provides a granular overview of productivity and the overall progress of the project in monthly status reports to the DOE," says Frank Papp, NIF CIO. "It demonstrates our ability to meet major project milestones within a fixed budget and available resources."

BROAD SCOPE OF ENOVIA

"ENOVIA was selected based on numerous factors, but certain capabilities are particularly well-suited for ECMS," says Michael McDaniel, PLM process leader and Engineering Records Center manager.

Ease of use is critical to ensure quick training and greater productivity, especially given the matrix organization of LLNL, in which personnel move in and out of projects as needed. Out-of-the-box functionality with configurable solutions helps adapt the system to particular LLNL processes. Tight integration with other software supports external business systems required for electronic data transfers among downstream processes.

"By allowing the organization to streamline work processes and leverage design data, ECMS has increased operational efficiency in engineering processes, as well as downstream procedures in groups outside of engineering, including those in ERP and Procurement," McDaniel says. "As the data-driven engine of ECMS, ENOVIA Engineering Central has resulted in significant enterprise-wide efficiency gains."

At the LLNL Engineering Records Center (ERC), documents are stored for long-term retention per DOE and National Archives Records Administration guidelines. Integrating ENOVIA Engineering Central with the ERC process automated many formerly manual steps, increasing ERC throughput by six times – from 15 documents per day to more than 100 per day.

Five-fold productivity gains were achieved in processing engineering change requests (ECRs) and engineering change orders (ECOs). Documents are now routed electronically based on detailed workflows in Engineering Central. ECRs and ECOs that formerly took up to a week to process can now be completed in a day.

"Some of the greatest gains in productivity and accuracy have been achieved in the creation and handling of bills-of-material (BOMs)," says Ed Krieger, PLM strategist at NIF. "By automatically extracting BOM data directly from Engineering Central into ERP, we eliminated substantial workload and potential for error." Support documents for bids and quotes that once took a week or more to process are usually completed in less than a day. Similar gains were made in an automated warehousing system.

"As our research efforts move into the future, we must rely on the state-of-the-art technology and process control that continues to be built into ECMS," says Darwin Dobson, PLM enterprise manager at LLNL. "Without the capabilities of state-of-the-art PLM systems, such projects would not be practical".

For more information:
www.llnl.gov

To download the expanded flyer, visit:
www.3ds.com/contactmag-extra

ENOVIA Engineering Central helps LLNL demonstrate good stewardship of taxpayer resources to the Department of Energy.

Frank Papp, NIF CIO, Lawrence Livermore National Laboratory

By Fabien Fedida

V6R2010 brings PLM 2.0 to Mid-Market and Non-Expert Users

With a new offer specifically tailored for mid-market businesses and small teams, plus groundbreaking direct-modeling capabilities and realistic simulation solutions for non-experts, V6 Release 2010 helps to deliver on the promise of PLM 2.0 – PLM Online for All – for a broad new spectrum of users.

V6 PLM Express, a key component of V6R2010, is the first set of V6 solutions specifically tailored for mid-market businesses. Designed for rapid deployment, V6 PLM Express is offered as a pre-packaged, ready-to-use environment.

PLM 2.0 FOR THE MID-MARKET

V6 PLM Express benefits from more than a decade of DS experience in providing leading mid-market PLM solutions and builds on key V5 PLM Express values, including ease of use, deployability, low cost of ownership and mid-market, role-based functionality.

DS took the needs of mid-market users into consideration from the beginning of V6, serving various types and sizes of customers by combining the best of ENOVIA MatrixOne, VPLM and SmarTeam on a single, open, scalable platform with a web services architecture. Implementations can literally start with a handful of V6 users engaged in design and grow seamlessly to more than 100,000 users in a broad range of functions – from design and simulation to requirements management and sourcing.

V6 PLM Express leverages the single-platform approach to open up key PLM 2.0 values to mid-market users, including real-time seamless collaboration, online-enabled design-anywhere functionality, and global collaborative innovation. For example, online-enabled design makes it possible for a designer to log into a central office database from a remote location and edit a model directly over the web. Global collaboration makes it possible to do so in real-time with co-workers located anywhere worldwide.

THE GROWING V6 FAMILY

The Dassault Systèmes V6 collaborative platform has been adopted in a wide range of industries, including Apparel (**Guess, Under Armour, Trent Ltd.**); Consumer Packaged Goods (**Procter & Gamble**); Life Sciences (**Beckman Coulter**); High Tech (**Lexmark International, novero**); Semiconductor (**Dialog Semiconductor, INSIDE Contactless**); Energy (**Oceaneering, Stork GLT**); Aerospace (**Piaggio Aero Industries, Eaton Aerospace**); Automotive (**Eaton, Great Wall Motors, Johnson Controls**); Business Services (**TÜV Rheinland**); and Construction (**Skanska**).

Under Armour

Oceaneering

Dassault Systèmes brings V6 to new communities and advances the simplicity, accessibility and readiness of PLM 2.0.

V6 PLM EXPRESS: EASY, RAPID DEPLOYMENT IS BUILT IN

V6 PLM Express solutions have been engineered from the ground up for rapid deployment.

For example, V6 PLM Express is **easy to buy**, with a role-based packaging that allows mid-market users to quickly and easily identify solutions that match their needs. Out-of-the-box configurations make V6 PLM Express **easy to install and implement**. Because the offerings of V6 PLM Express are a tailored subset of the larger V6 portfolio and use the same interface, paradigm and data model, they also are **easy to grow** to a full range of V6 applications.

The solutions are **easy to use**, thanks to the intuitive, award-winning V6 interface and full integration with the familiar Microsoft environment. Users can manage PLM objects and documents within V6 using the "cut and paste" and "drag and drop" functions of Microsoft Windows, or save, browse and navigate product content from within the Microsoft Office suite of applications. Users also benefit from design methodologies consistent with those in V5, making them **more productive more quickly** with minimal training.

All V6 solutions share the same interface and data model, enabling **easy supply chain integration** between mid-market suppliers and OEMs. Finally, lean solution packaging by role ensures that V6 PLM Express is priced to **fit the needs and expectations** of the mid-market.

Beckman Coulter

EXPERT TECHNOLOGIES FOR NON-EXPERT USERS

Revolutionizing the user experience is a key value of V6. V6R2010 delivers, bringing the power of expert technologies to new communities of non-expert users with key features of CATIA Live Shape and SIMULIA DesignSight Structure.

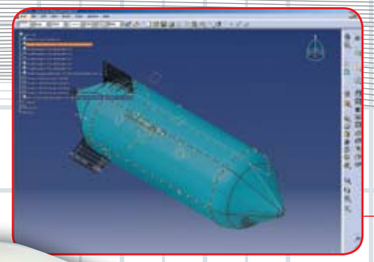
Now even non-CAD users can quickly create or modify design concepts in 3D as if they were working with modeling clay – even if the designs were created in a non-DS CAD system – for viewing and editing in CATIA Live Shape or CATIA workbenches. Meanwhile, SIMULIA DesignSight Structure makes advanced simulation technology for non-linear finite element analysis accessible to non-expert users, including designers. Also, DS Dymola technology and component libraries allow CATIA Systems users to easily simulate the dynamic behavior of systems.

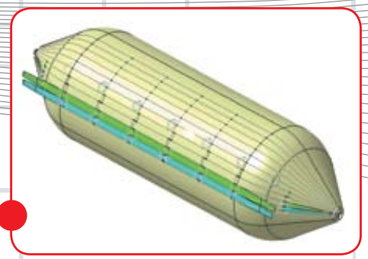
Within its customer base, DS directs this first mid-market release to its CATIA file-based users. Future releases will be designed to address the needs of existing ENOVIA SmarTeam users. ENOVIA SmarTeam V5 will continue to be sold, supported and enhanced. No "end of life" is planned for V5 in general or ENOVIA SmarTeam V5 in particular. DS will continue to invest in, maintain, enrich and sell V5, and remains committed to its more than 8,000 ENOVIA SmarTeam customers worldwide.

RENAULT CHOOSES THE FULL V6 PORTFOLIO

"To transform our engineering processes worldwide, …we needed to replace multiple existing solutions with a single, integrated and globally deployable one," says Odile Desforges, EVP Engineering and Quality, Renault. "We chose the full V6 portfolio because its integrated PLM environment perfectly responded to our requirements in terms of real-time collaboration and online-enabled design. V6's inherent integration to the supply chain means our teams will be able to collaborate seamlessly with suppliers."

For more information:
And other key enhancements of V6R2010, please visit:
www.3ds.com/products/v6/welcome





success story

AVENTEC

DS CATIA

21st Century Airships Increases Design Efficiency by 60% with DS PLM

Using CATIA, we've improved efficiency by at least 60% when you consider labor, overhead, construction costs and other factors, so we can take on more work with the same staff and improve our profitability. Tim Buss, Director of Engineering, 21st Century Airships

Leveraging CATIA has improved our efficiency and, in turn, our profitability. It helps us bring this very 'green' form of transportation to even more markets.

Hokan Colting, President, 21st Century Airships

21st Century Airships Team Inc.

DESIGNING EARTH-FRIENDLY AIRSHIPS MORE EFFICIENTLY

21st Century Airships, based in Newmarket, Canada, designs helium-filled aircraft with distinct environmental advantages. The company, in business since 1988, has crafted airships for use in geo-surveys, military surveillance, weather monitoring and to support temporary infrastructure such as cellular towers during disasters.

Today's airships are an earth-friendly, fuel-efficient and vibration-free alternative to conventional aircraft, says Tim Buss, director of engineering at 21st Century Airships. Airship popularityis growing because they offer the extended range, duration and stability required for remote access and sensitive monitoring operations.

"No power is required to keep an airship in the air," Buss says. "Power for the engines is for propulsion only, not for lift, so they use far less fuel to do the same work as other aircraft, making them a much more efficient form of flight."

Since its inception, Buss says, 21st Century has researched and developed approximately 18 unique airship designs, incorporating different configurations and levels of technology. Its latest offering, recently tested in Alabama, demonstrates a new hull design and bio-fuel capability. "This airship actually uses diesel fuel made from oil produced by algae," he says.

CATIA INTRODUCES NEW DESIGN ERA

Despite the innovative nature of 21st Century Airships' business, it spent 18 years creating its designs on paper, scaling them up, and then building physical prototypes to uncover the small errors that became exaggerated when scaled. It was a slow, cumbersome process that required significant trial and error, time and materials.

In 2006, 21st Century left its paper-based methods behind in favor of computer-aided design (CAD). The company selected CATIA because it is the design standard throughout the aviation industry. "It was definitely the right platform for us to be using, particularly when you consider regulatory compliance," Buss says. "It's what the FAA (Federal Aviation Administration) is used to dealing with."

The transition to CATIA has enabled many efficiencies and improvements in the company's processes. "The repeatability that comes with using CATIA is one of the key improvements we've seen," he says. "Once we've designed the envelope (the airship's outer shell) in CATIA and sectioned it up, we can repeat those same gores all the way around without error. Everything is an exact replica of the previous one. No flaws or errors are being perpetuated. We're definitely producing a better quality airship with CATIA."

Buss, who is not an engineer, says learning to use CATIA was easy. "I took a one-week course, and I definitely know enough to get by when our engineer is out," he says.

CATIA also allows designers to use their previous practical experience to ensure structural support is incorporated in the right places and to perfect a ship's design before it is built, saving time and the cost of discarded materials. By leveraging CATIA's ability to factor in component properties, designers can ensure balance and accurately predict positioning of systems and loads.

FOCUS ON AVENTEC

Training, Buss says, was a snap with support from DS business partner Aventec, thanks to the company's knowledgeable staff and extensive experience. "They were great on working through our requirements and helping us find the right CATIA package and price that fit our needs," he says.

Having the kind of local support Aventec provides has been particularly advantageous when installing CATIA initially and during a switch to new hardware, Buss says. "Working with Aventec, CATIA has been pretty much bulletproof."

CATIA OPENS NEW DOORS

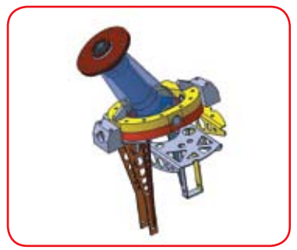
CATIA also has proven to be a significant advantage in dealing with the company's partners. Engines, actuators and other components are provided by external suppliers. Because many of the company's suppliers also design with CATIA, 21st Century Airships can pull its suppliers' models for parts directly into its own designs.

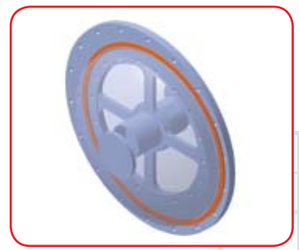
In fact, 21st Century is merging with one of its manufacturing partners. Once the merger is complete, both companies will use CATIA to ease the transition from design to manufacture. They also are considering 3DVIA Composer, which generates fully associative product documentation directly from CATIA models, to produce assembly documentation.

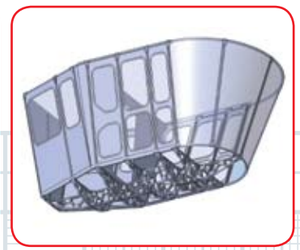
"Efficiency's gone way up," Buss says. "We can handle a lot more projects at the same time and still keep track of everything. Using CATIA, we've improved efficiency by at least 60%, so we can take on more work with the same staff and improve our profitability".

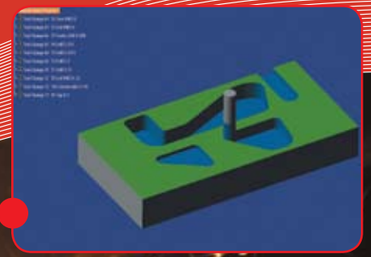
For more information:
www.21stcenturyairships.com

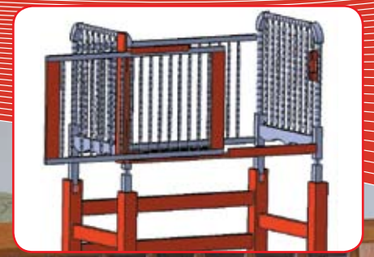
www.aventec.com











By Cameron Griffin,
Adaptive Corp.

Knowledge-Based Machining with DS PLM Delivers Quick Returns

To overcome the economic pressures of downsized staffs and the recession-driven competition to produce parts faster and at lower cost, companies increasingly are turning to knowledge-based machining (KBM).

KBM enables improved use of high-value machine tools, helps reduce production part cycle times, advances Lean Manufacturing initiatives, and helps improve external supplier audit results. Successful knowledge-based machining initiatives can result in ROI in excess of 200%, with the potential for first-year payback.

PROTECTING YOUR GREATEST ASSET – KNOWLEDGE

Knowledge-based machining with CATIA defines manufacturing processes and captures company-specific information about the materials, geometries, tooling paths, machining speeds and feeds, fixturing, holding devices and strategies required to manufacture parts. Once cataloged in CATIA, these processes leverage all of an organization's resources, technology and best practices to ensure manufacturing needs are addressed in the most cost-effective and productive manner.

A commonly referenced industry statistic indicates that 5-7% of a corporation's knowledge is lost every year because the people who know it leave the company. Knowledge-based machining with CATIA ensures that all of the required parameters for each machining operation are captured as pre-defined best practice methods. Once the standards are established, creating tool paths can be done automatically, saving time and money and raising quality to unprecedented levels.

Knowledge-based machining also minimizes the "gap" between design and manufacturing. People who have never generated an NC program in their life can step through the application interface and create successful programs. The software intuits the toolpath directly from the design, accomplishing in minutes what an NC programmer would take hours to achieve. Once the toolpath is complete, a visual simulation can be run for formal verification by an expert prior to production.

GETTING MORE OUT OF YOUR WORKFORCE

Knowledge-based machining with CATIA also helps improve contract programming by providing contractors with a company's specific processes and tool catalogs to ensure machining consistency. The work contractors perform can be made to fall within an organization's standards.

It is not uncommon to see 20-50% improvements in programming time following the incorporation of process catalogs and knowledge-based machining. Although many NC programmers fear this, improved efficiencies can be a lifesaver for resource-strapped companies in times of economic slowdown. When economic recovery occurs, the most strategic companies capture the time saved for higher-value work.

For more information:
www.adaptivecorp.com

www.3ds.com/catiamachining

To download the expanded flyer, visit:
www.3ds.com/contactmag-extra

University of Detroit Mercy Makes Dreams Come True with CATIA

Designing with CATIA is always a rewarding experience, but engineering students at the University of Detroit Mercy (UDM) get to see the benefits of their work up close and personal – in the grateful smiles of disabled persons who benefit from the products they design.

The program, a joint effort between the UDM College of Engineering and Science and medical experts from its College of Health Professions, pairs budding mechanical designers with clients seeking assistive devices so specialized they cannot be produced at affordable prices commercially.

Mechanical engineering professors Drs. Darrell Kleinke and Nassif Rayess conceived and lead

the program, known as Using Research to Aid Persons with Disabilities (RAPD). Designs completed to date include a modification to add a toddler seat to a wheelchair; a crib modification to allow wheelchair access by elevating the crib and sliding the gate side-to-side rather than up and down; and an interchangeable table accessory for power wheelchairs. The designs are custom-built by local craftsmen who volunteer their time, and plans are available free to anyone through the program's website.

Kleinke and Rayess say the program helps students develop design skills and gain meaningful, lifelong experience by directly aiding individuals with disabilities. "RAPD really makes engineering come alive for our students," Kleinke says. "We call it putting faces on design."

Rayess says the program is a popular draw for students. "A lot of students like mechanical engineering, but not necessarily things with wheels and engines," he says.

Mark Fazi, an undergraduate in the program, says RAPD has given him a chance to put all of his studies to practical, hands-on use with CATIA, the state-of-the-art 3D virtual product design solution used by employers worldwide. "With visual images that look like photographs, you get a really good idea of what a part will look like in real life, and the human modeling tools in CATIA let us design projects and adjust them for realistic use by our clients."

Kelsey Kleimola, who received a modified crib, says the design helps her care for her son. "The height on the crib is perfect, making it easy to pull my chair up as close as necessary to reach him. This takes a huge weight off my shoulders, as I no longer have to worry about how I will care for him when my husband is not home".

For more information, sample plans, or nominate a project for the program, please visit:
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