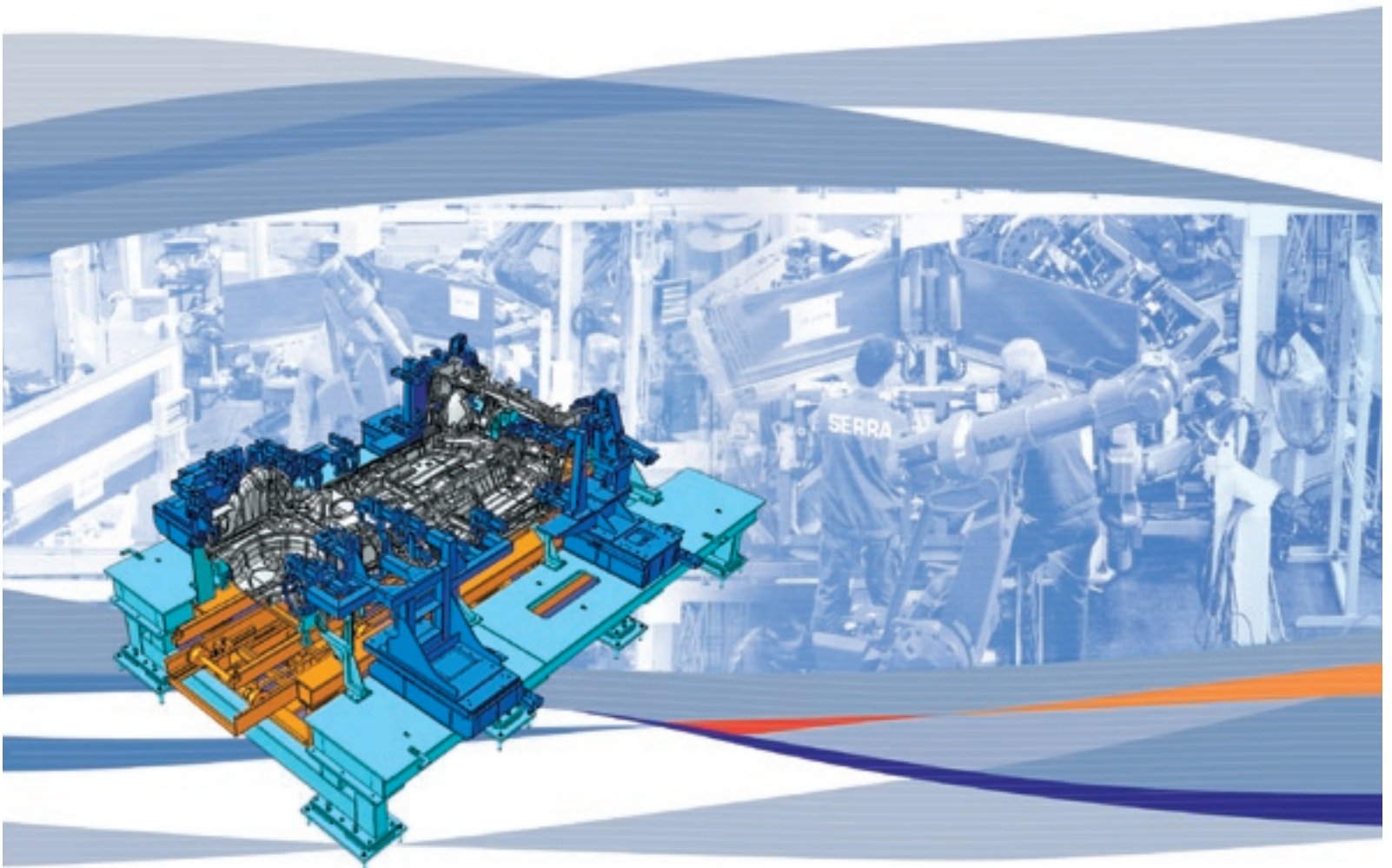


- Automotive & Transportation
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- Electrical & Electronics
- Machinery & Industrial Equipments
- Shipbuilding & Offshore

SERRA SOLDADURA

Gaining the edge through
CATIA V5 and DELMIA.

In the face of customer demands for reductions in time and cost, SERRA SOLDADURA turned to CATIA V5 and DELMIA PLM Solutions to provide the competitive edge it needed. As a result, the company now boasts design cycle time reductions of up to 40%, and improved quality through one-off reusable designs. Today, SERRA SOLDADURA has consolidated its leadership position in assembly and welding systems and counts many of the world's major automotive manufacturers among its clients.



Company overview

Founded in 1934, the Serra family has expanded a small Barcelona-based welding systems workshop, into a world-class company with plants in Spain, France, Portugal and Brazil, and 800 employees worldwide, including 380 at its Barcelona Headquarters.

Today, Serra Soldadura, S.A. is a leader in its sectors, designing and producing turnkey automated welding installations for the automotive Industry and big sized assembly lines and tooling in the aeronautic field.

The company's success stems from its continuous investment in personnel and technology, enabling it to develop innovative concepts which are capable of competing in foreign markets. Clients include major automotive manufacturers, such as Volkswagen AG and General Motors, Daimler Chrysler AG, Renault SA and PSA or Aeronautics as AIRBUS.



Business challenges

- + Continuously and dramatically reduce time-to-market
- + Reduce substantially costs throughout the supply chain
- + Capture company know-how to define and leverage company assets



Solution

In 1998, Serra Soldadura was working mainly in a multiple system, 2D environment with cumbersome and manual processes that slowed response time and increased costs.

This had far-reaching drawbacks:

- Drawings were inconsistent due to repeated changes during the implementation phase
- It was impossible to re-use designs to improve design time and reduce errors
- Assembly errors occurred as pre-production validation was impossible.
- It was not possible to program robots before the welding lines were installed.



"Only CATIA V5 and DELMIA PLM solutions fit all of our requirements. We have harmonized our installation with 40 CATIA V5 seats: We can really leverage V5 potential as our engineers concentrate on one system,"

Blai Felip, Engineering Director, Serra Soldadura.

Situation

Today, the lifecycle of a vehicle has been shortened as a result of changing consumer expectations and intensive competition. This means that automotive suppliers are required to continually upgrade their processes to ensure their long term survival.

Reduce time-to-market

Major OEMs demand dramatic reductions in time-to-market. This has resulted in a faster response from SERRA. "4 years ago, we could design, develop and install a welding line in 18 months, today's target is 6 months, tomorrow it will take only 4 months," says Blai Felip, Engineering Director, Serra Soldadura.

Lower Costs

Testing, simulation, manufacturing, raw materials and on-site integration account for some 60% of assembly line costs. Early pre-design validation has a direct impact on downstream manufacturing costs and therefore the company profit margins.



"We must meet these three challenges as quickly as possible to remain durable. The market is extremely volatile: this year three of our Spanish market competitors folded,"

Kenneth Sandven, General Manager, Serra Soldadura.

Capture Know-How

"Our challenge is to preserve the know-how contained in our workforce. Capitalization and leverage of our expertise will enable us to increase added-value and consequently our margins," says Blai Felip.

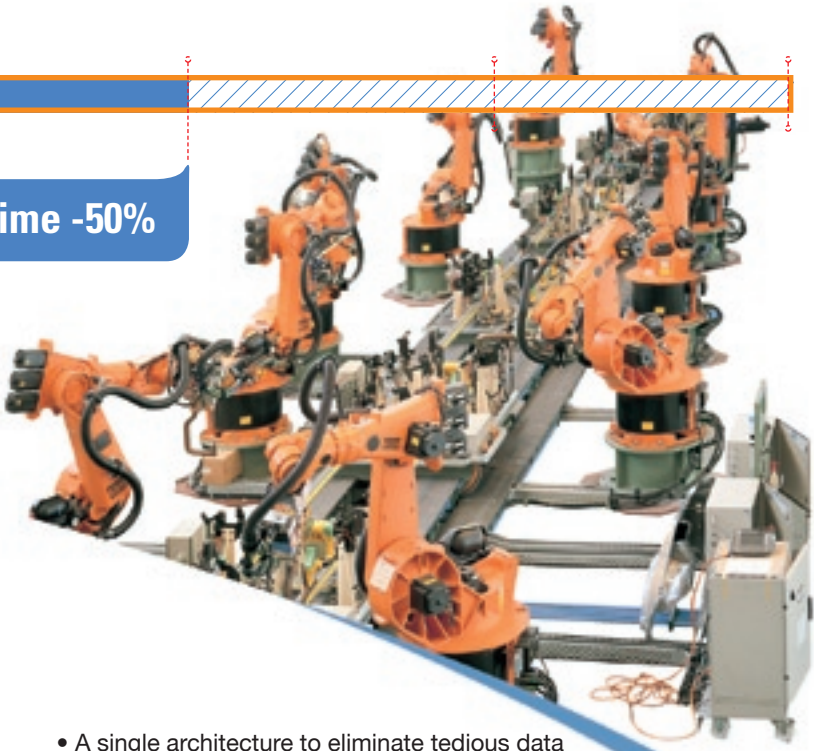
CATIA V5 and DELMIA, the right choice of PLM

To beat their competition, SERRA's management decided to completely re-engineer their design-to-manufacture processes. Their aim was to be able to re-use existing designs and validate manufacturing early on to produce the right product more rapidly. "We were looking for a unified PLM (Product Lifecycle Management) solution which combined powerful 3D product development capabilities with digital manufacturing solutions," says Blai Felip.

SERRA had clear-cut requirements.

- An across-the-board process centric solution, from conceptual design to FEA (Finite Element Analysis), to digital manufacturing simulation.

- A single architecture to eliminate tedious data transfer, providing multiple iterations between design and manufacturing simulation in order to optimize designs and produce the right product the first time. "The unified V5 architecture which manages Product, the Processes and the Resources (PPR) in a seamless environment weighed heavily in our decision," says Blai Felip.
- To reduce technology gaps when meeting future demands: "we need a solution for today but also for tomorrow: It's clear to us that CATIA V5 and DELMIA are next generation solutions whose unique technology differentiators will cover our future needs," says Blai Felip.



Results

Serra Soldadura, S.A. has reaped clear and tangible benefits from CATIA V5 and DELMIA implementation.

Smooth Process Reengineering

It was necessary to implement IBM and Dassault Systèmes PLM Solutions without having to tie up any machines or personnel while the company continued to fill its outstanding orders.

With support from IBM Business Partner CADTECH, this went smoothly, particularly through customized CATIA V5 training which allowed the progressive training of 100 engineers operating 40 workstations over two shifts.

“It usually would take up to five years to train an expert tool designer. By combining this approach with the intuitiveness and the power of CATIA V5, SERRA can now turn a beginner into an expert designer in 12-14 months thus reducing training time by 75%,” says Blai Felip.



“The business value resulting from successful bids has increased by about 30 percent over previous years when CATIA V5 and DELMIA were not in use,”*

Mateu Guiu, Sales Director, Serra Soldadura.

Reusing Knowledge to Reduce Time-to-market

Jigs & fixtures are often very similar in design therefore designs can often be reused in the same project. CATIA V5 provides easy-to-use and automated solutions for reusing previously validated designs. Flexible parameterization provides unrivalled capabilities for modifying and adapting existing designs to a new environment. This reduces development time and cuts costs while ensuring standardization and design quality. “CATIA V5 has provided us with new ways of thinking when using standard parts libraries, parametric design and in reusing validated designs in new projects. This is a powerful solution with enormous potential. In addition, the immediate visualization features of CATIA V5 and DELMIA helped us to sell our project,” says Jaap Wegbrans, Sales Department.

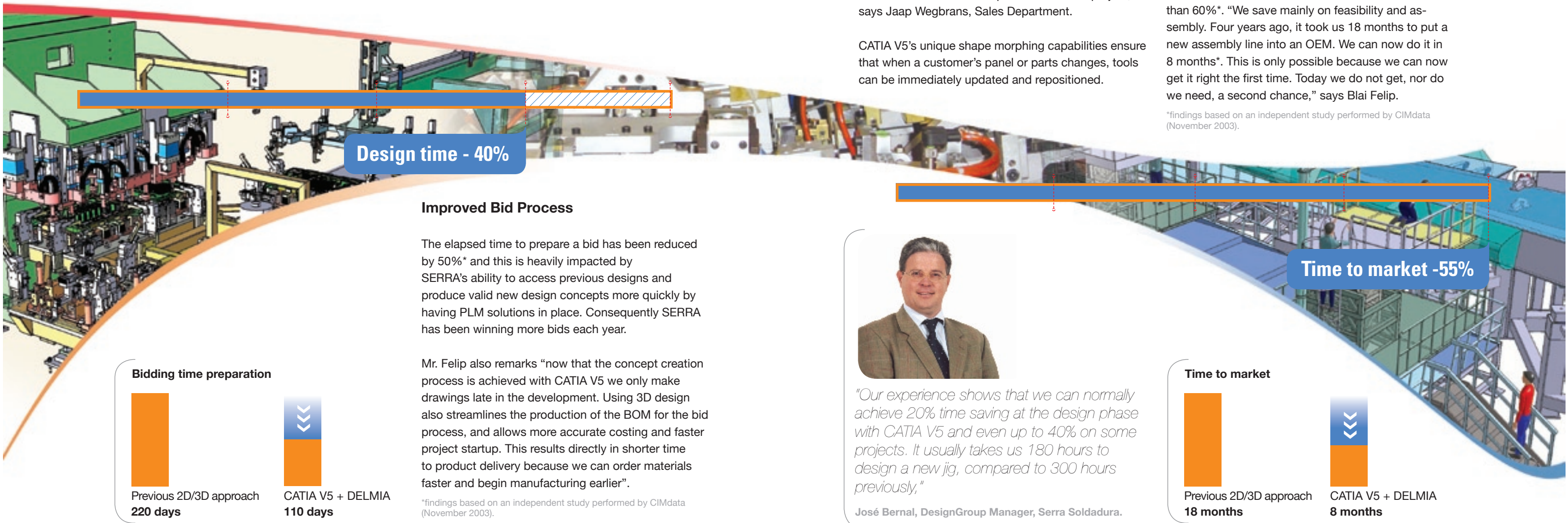
CATIA V5’s unique shape morphing capabilities ensure that when a customer’s panel or parts changes, tools can be immediately updated and repositioned.

Complex Products Right the First Time

The advanced simulation capabilities of IBM and Dassault Systèmes’ PLM solutions make it possible to produce an error-free product the first time. With CATIA V5, designers can virtually simulate kinematics and structural analysis at a very early stage in product development. DELMIA IGRIP is used to optimize robot locations, motions and cycle times while the DELMIA DPM Assembly Product optimizes the assembly process, as well as planning and verification.

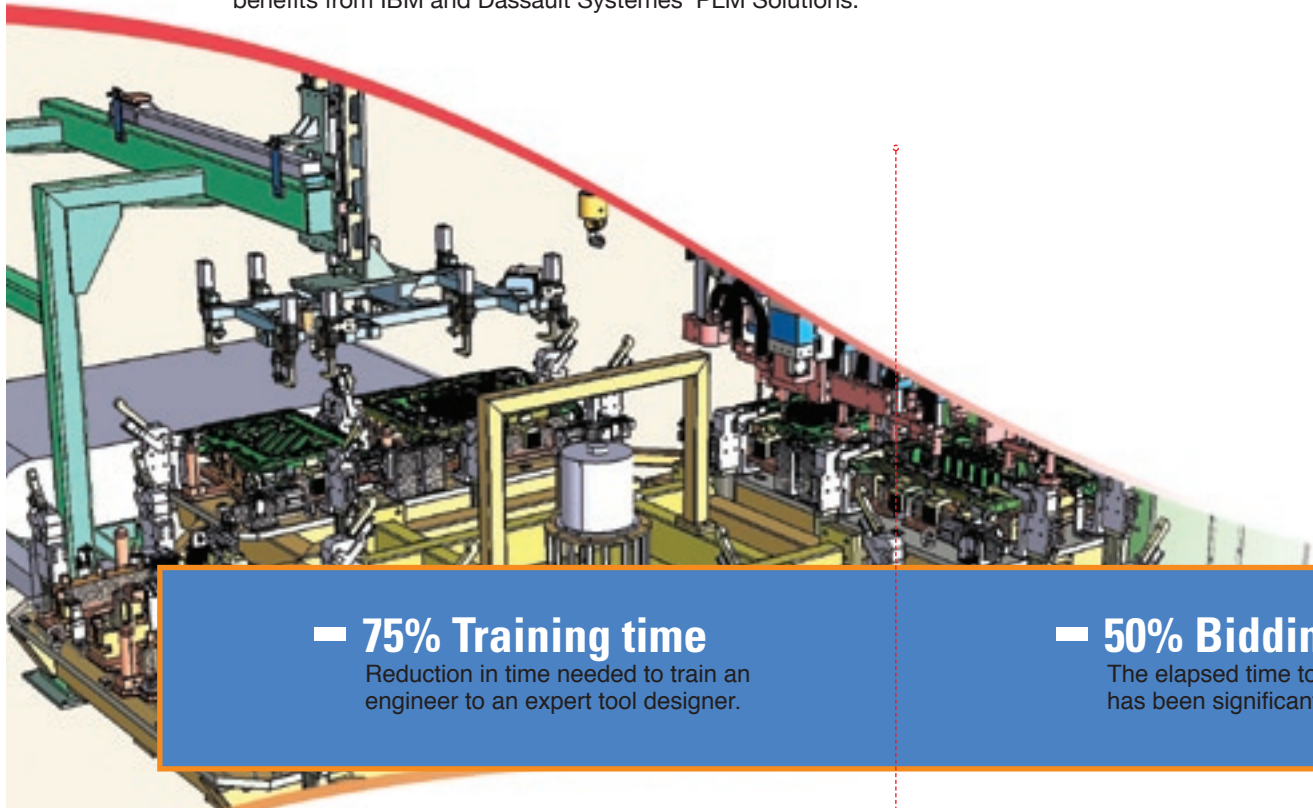
Both CATIA V5 and DELMIA operators can access the same data. In addition, the NC programming cost has decreased by 66%* because this work is now done directly on the design models in CATIA. Likewise, assembly line layout costs have decreased by more than 60%*. “We save mainly on feasibility and assembly. Four years ago, it took us 18 months to put a new assembly line into an OEM. We can now do it in 8 months*. This is only possible because we can now get it right the first time. Today we do not get, nor do we need, a second chance,” says Blai Felip.

*findings based on an independent study performed by CIMdata (November 2003).



Challenges met

CATIA V5 and DELMIA provided SERRA SOLDADURA with the competitive edge it needed to reduce its design phase and to improve quality by designing right the first time. Today SERRA has reaped clear and tangible benefits from IBM and Dassault Systemes' PLM Solutions.



75% Training time

Reduction in time needed to train an engineer to an expert tool designer.

50% Bidding time

The elapsed time to prepare a bid has been significantly reduced.

40% Design time

Design phase was improved by moving from 2D to 3D solutions.

55% Time to market

Time-to-market for new assembly lines has been cut from 18 to 8 months.

Future

Serra Soldadura plans to implement more solutions from the IBM and Dassault Systemes portfolio to extend PLM benefits to the entire company.

SERRA's main mid-term objective is to accelerate concurrent and collaborative engineering, and to expand its digital manufacturing capabilities. SERRA is on the road to even greater success by reorganizing engineering design and simulation operations through integrated CAD.

Robotics Simulation

Implementing DELMIA Robotics V5 will improve SERRA's automatic layout elements recognition and made it possible to create a 3D model directly from a 2D layout. In addition, DELMIA Robotics V5 will generate tools for I/O (Input/Output) connections between robots which optimizes station cycle time.

Generative Tooling deployment

Dassault Systemes has developed unique and evolving set of PLM practices for automating and accelerating Tooling design. By combining this Generative Tooling Solution for Jigs & Fixtures with its own expertise, SERRA will be able to adapt predefined toolsets that incorporate standard components, design rules, and past experience. By removing manual design phases and facilitating automatic tooling reconfigurations, the Generative Tooling Solution drastically cuts engineering and manufacturing costs and speeds up design creation and modification.

With the Generative Tooling Solution, SERRA will go far beyond traditional tooling design methodology. It will experience the full power of PLM and reap the benefits of faster time-to-market, reduced errors and costs, and greater quality and innovation.

Return on investment

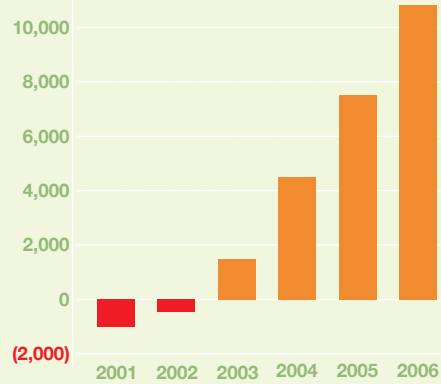
CIMdata performed an independent ROI study at SERRA Soldadura

CIMdata performed an independent Return On Investment (ROI) study on SERRA SOLDADURA implementation of IBM and Dassault Systemes PLM Solution. The study was based on interviews with SERRA executives, and on data about the benefits of the PLM Solution as well as the cost of its implementation (Software, Hardware, Training, Maintenance, and Administration). CIMdata's ROI model calculated the overall ROI for a six-year period. Serra Soldadura's overall ROI is impressive with a reasonable payback period and a very high internal rate of return.

The findings are as follows:

- the pay back period is 1.7 years
- the net present value of the investment (the cumulative discount cash flow) over 6 years is 10,606 k€
- the internal rate of return is 162%.

Cumulative Discounted Cash Flows - k€



CIMdata is a leading and independent worldwide consultancy specialized in PLM strategy

Nov 2003 - CIMdata

Conclusion

Serra Soldadura chose Dassault Systemes and IBM PLM solutions for their capacity to support both current and future requirements.

The CATIA V5 and DELMIA combination has demonstrated its power. These PLM solutions have opened up previously unimagined new worlds. Results are clear-cut and impressive as SERRA benefits from the incremental business it has been able to win.

CATIA V5 allows SERRA to work in the same design environment as its OEM customers and combined with DELMIA 3D manufacturing solutions, SERRA are confident that they design right first time.

Cycle times for a new assembly line have been cut from 18 months to 8 months and using their libraries of standard parts validated designs can now be reused across various projects.

With the Dassault Systemes and IBM Generative Tooling approach, Serra Soldadura are well placed to realize yet more potential from their PLM system in the future and continue to remain ahead of their competition.



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