

SITUATION

Sollac, a subsidiary of Usinor, one of the world's largest steel companies, produces sheet steel products for automotive, building, packaging and household applications. Its Automotive Products Technology division (ISOFORM), based in France, is tasked with helping automotive companies develop steel components that are cost, weight and performance competitive with products from other steel companies, as well as aluminum and plastics manufacturers. To better prove the strength of its designs and improve its productivity, ISOFORM officials sought an integrated design and simulation solution.

OBJECTIVES

Implement an integrated CAD/CAM/CAE system that would allow:

- ✓ A better understanding, earlier in the product development process, of the relationship between design parameters and performance throughout the entire design envelope.
- ✓ Performance optimization based on considering multiple design parameters simultaneously.
- ✓ Easy data exchange with the broad range of CAD/CAM/CAE systems used by Sollac's customers.

PROCESS VISION

- ✓ Provide an environment in which design intent can be captured for performance evaluation in all stages of product development.
- ✓ Quickly design and evaluate new concepts for weight, cost and performance.

ACTIONS

- ✓ ISOFORM formed a team to design a new brake pedal that would meet the safety and performance requirements as well as a weight target set by a competitive part from a plastics manufacturer.
- ✓ The ISOFORM team benchmarked three design and evaluation systems. They chose I-DEAS® for this project because it was the only system of the three to offer effective parametric design and evaluation, and because of its extensive suite of integrated analysis applications.

"While it's still early in our implementation, I-DEAS has already helped us reduce the weight of a brake pedal by 26%. We can now generalize the integrated development and analysis methodology we used on this component to a whole class of brake pedals."

- Michel Dittlo
ISOFORM
Managing Director

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- ✓ Using the design capabilities of I-DEAS, ISOFORM created a rough digital model of the brake pedal, based on past designs.
- ✓ ISOFORM then applied the integrated analysis capabilities of I-DEAS to evaluate the relationship between the brake pedal's geometric parameters and its performance.
- ✓ The ISOFORM designers then used the engineering results to consider all possible combinations of geometric variables and performance targets to determine the best possible design.

RESULTS

- ✓ The variational analysis capabilities of I-DEAS allowed the team to reduce the weight of a particular brake pedal by 26%, while maintaining the required stiffness and durability, and reducing the time to evaluate and arrive at the final design by 90%.
- ✓ For other projects, I-DEAS variational analysis was able to show that there was no other combination of design parameters that would produce the desired balance between weight, cost and performance, thus saving valuable time that otherwise would have been wasted on non-productive optimization.

PLANS

ISOFORM plans to expand its use of I-DEAS by integrating more of its proprietary and third-party applications into the I-DEAS environment to make further use of the I-DEAS collaborative engineering capabilities. ISOFORM would also like to extend I-DEAS into its manufacturing process by automating the stamp design for its components.

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