Customer Story

DBM Reflex

Cuts mold set-up time by 40% with CATIA Knowledgeware

Our unique intellectual property for optical design of lens geometry is the lifeblood of DBM Reflex. CATIA Knowledgeware and CAA, with our custom application SIMOPTIC, are the heart that pumps our IP to all who need it.

Nesim Benrobi
DBM Reflex
President

Challenge

DBM Reflex needed to reduce CAD design and capture its sophisticated optical intellectual property to optimize reuse.

Solution

By expanding the functionality of its existing CATIA solution with Knowledgeware and using CAA Extended Development to leverage its IP, DBM Reflex is automating its processes and optimizing its products.

Benefits

CATIA Knowledgeware and CAA Extended Development allow DBM Reflex to shorten lead times, reduce costs, control pricing, raise profitability and deliver superior optical products.

DASSAULT SYSTEMES

Lighting the way to streamlined mold production

DBM Reflex, which is based in Laval, Canada, designs and manufactures reliable optical inserts and production molds for automotive tail lights. The company has been delivering specialty technologies, including reflex electroform inserts and the latest in automotive LED lighting solutions, to customers in more than 20 countries for more than 35 years.

DBM Reflex's large, complex tail light molds are so advanced at combining beautiful design with optimum light output that they are sought out by industry-leading automotive brands, including Audi, Volkswagen, Aston Martin and Citroën. With growth of the LED industry, DBM Reflex also has created a new DBM Lighting division offering the study, design, manufacture and production of auto tail light lenses using injection presses to create LED products.

Increased CATIA sophistication supports increasingly complex models

Optimizing the light output and aesthetics of an automotive tail light is a complex process that combines the precise science of advanced optics with the beauty of graceful design. Each lens must be designed to the automaker's exacting requirements. Companies that specialize in tail lights must be able to validate mathematically that their designs will achieve the promised performance, and must deliver not only the mold designs but also the documentation needed to build and use them.

For years, DBM Reflex has relied on CATIA for 3D modeling needs throughout its development and manufacturing processes. To meet the increasingly demanding standards set by automotive safety regulators and achieve efficiencies among the three DBM Reflex departments involved in moving products and molds from the design stage to the shop floor, the company sought to further streamline its processes and optimize its products to be faster and more cost-competitive.

DBM Reflex also wanted to leverage the full power of its extensive, proprietary intellectual property in every design. The challenge was how to equip each designer to take full and efficient advantage of everything the company knows about the complex science of optical geometry.

Before its automation and optimization initiative, DBM Reflex was generating at least three different versions of designs, each tailored to the individual needs of its Design, Methods and Manufacturing departments. Initial designs created by the company's Design department lacked many of the publications and geometries required by the Methods and

CATIA model data drives the 5-axis mill used for high-speed machining of the optical insert finish.

> It's really a more global approach we're using. With CATIA, we're sharing templates across departments so that everyone has access to the same knowledge.
>
> Jocelyn Allard, *PLM Project Manager at DBM Reflex*

In less than a day we can go from method to machining. Before optimizing with CATIA, it was taking two days.

Jocelyn Allard
DBM Reflex
PLM Project Manager

Machining departments. Downstream users of the designs needed additional detail to map out the processes and programming for mold production. This translated to long development times, high costs and high risk of error as models were worked and reworked, translated and retranslated.

"Our main issue was that our departments were not really 'talking' together when it came to designs," says Jocelyn Allard, PLM Project Manager at DBM Reflex. "The CAD models created by Design didn't really fit the needs of the Methods department because they lacked things like geometries and publications. We were doing designs over and over for each department."

CATIA Knowledgeware and CAA Extended Development automate and optimize processes

DBM Reflex expanded the functionality of its existing CATIA solution, adding Knowledgeware templates and macro development functionality with CAA Extended Development to fully capture and leverage the power of the company's intellectual property and address its automation and optimization needs. Using Knowledgeware, DBM Reflex has been able to create design macros that automate the incorporation of common parts, as well as the business process reengineering needed to automate processes related to its designs. With CAA Extended Development, a tool kit that allows code developers to work directly inside CATIA, DBM Reflex also is building custom processes that automatically apply its unique intellectual property for optical geometry into every DBM Reflex design.

"Now, when a designer wants to add a pocket inside a mold, for instance, instead of starting from scratch, he employs some macros that essentially design it for him," Allard says. "He can add publications directly into the design itself that will be used by the Methods and Programming departments. This way, what they need is already there – already built into the design."

The publications help workers in other departments use the same CAD models generated by designers without modifying the design. "It's really a more global approach we're using," Allard says. "We're sharing templates across departments so that everyone has access to the same knowledge."

Increased customer service drives increased market success

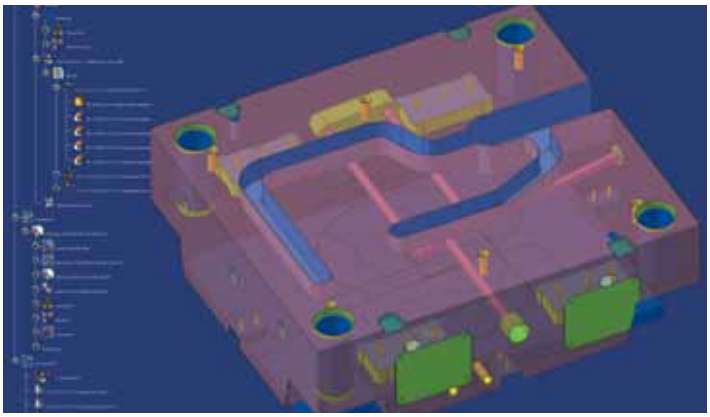
DBM Reflex is well known in the market for supplying its know-how to customers, and CAA Extended Development, a tool for CATIA developers, is helping to increase this added value as well.

"To be able to validate to our customers that our designs meet their unique standards and to prove that they will deliver the promised performance, we created a custom application called SIMOPTIC," Allard says. "SIMOPTIC is custom software, developed by DBM Reflex, that captures our intellectual property, applies it to every project, and generates the detailed documentation that our customers require. The CAA Extended Development tool kit helped us to create an interface between SIMOPTIC and CATIA that allows us to work faster and automate processes so that our users don't have to recreate them on each project. "

On an electroform study, for example, an automation macro created by DBM Reflex in CAA Extended Development enables users to generate a pin axis, which positions the

Incorporating publications into designs with CATIA CAA Extended Development allows departments throughout DBM Reflex to use that knowledge. Here, an assembly technician checks the fit of a two-section lens on the mold used to produce it.

This CATIA model includes a knowledge tree listing all the publications available for use by other departments.



tooling pin so that the reflection will be aimed in the optimum direction and automatically generate an undercut analysis.

Intelligent templates accelerate NC programming

Before the use of Knowledgeware, numerical control (NC) programming also was taking too long, says Eric Proteau, senior NC programmer at DBM Reflex. He suggested using Visual Basic algorithms (VBAs) to help streamline the process. The group built a menu-based system that lets designers select CATIA Knowledgeware macros that allow processes and publications to be created in the design trees of CATIA. Using macros, DBM Reflex is turbo-charging the intelligence of its templates, working inside CATIA and Knowledgeware.

"When the NC Machining department is going to use a CAD model, they open a knowledge template and then run a macro that reads all the standard publications and features into the design and uses them in the subsequent processes," Proteau says.

Each mold requires five to six set-ups. Although the group has only automated and optimized the first two, Proteau says DBM is already seeing a 40% time savings on those set-ups in the Method and Machining departments. In addition, the automation is allowing DBM Reflex to standardize on the best methods available, which are now used by all design contributors.

"We have gotten to where, for example, we need five tools instead of ten, which means less time for set-up," Allard says. "In less than a day, we can go from method to machining. Before, it was taking two days for just the Method and Programming departments to do their parts," an improvement of as much as 40%.

The reduction in cycle times is already allowing DBM Reflex to take on more projects and complete them with fewer hands – just one reason the group is pushing to extend automation and optimization to every set-up of the mold/electroform-making process. With expanded use of CATIA Knowledgeware and CAA Extended Development, DBM Reflex expects to continue to shorten lead times, reduce costs, offer more competitive pricing, raise profitability and deliver superior products to its most demanding customers.

DBM Reflex has cut the tooling required to produce its sophisticated designs by half, saving 40% on machine set-up times.

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Images courtesy of DBM Reflex.

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