



Flambeau[®] INC.

TECH report

Shaping the Products of Tomorrow... in Plastic[®]

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Flambeau International

Manufacturing & Sales Facilities

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Flambeau Europlast, Ltd.
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Flambeau Trading (Shenzhen) Co., Ltd.
Shenzhen, Guangdong, China

Flambeau Engineering Services

Flambeau Technologies Tool Group
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Metal to Plastic Conversions

With over 70 years of thermoplastic molding experience, Flambeau can be counted among the pioneers of metal-to-plastic conversion. Helping customers break free of manufacturing reliance on metal as a structural component is one of the many mutually beneficial product solutions Flambeau has to offer.

▼ Metal-to-plastic conversion addresses various challenges and, in most cases, solves them.

Often, a Flambeau customer's goals to lower system costs or reduce the weight of a part are influenced by factors other than a basic desire to increase profit. Increased pressure from competitors is often a factor and leads to the need to reduce cost. The continuously evolving preferences of consumers can be addressed with plastic and its benefits. Also, greater marketability demands the development of improved product applications, which leads to creative solutions in plastic.

Before a customer leaves a metal part behind, Flambeau conducts a study with the customer to confirm converting the part to plastic is beneficial and does not give up essential aspects of strength and quality. In many cases, the advantages of a newly engineered plastic part become more and more convincing as the benefits of conversion outweigh or eliminate reasons to stay with a metal component.

Right off the bat, the most common benefit is cost. Though resin prices fluctuate like any market commodity, metal cannot compete. Weight reduction is also a consideration when converting to plastic, which leads to various cost savings. A few more examples of qualities commonly associated with parts converted to plastic include higher productivity, longer product life, material qualities contributing to safety, flexibility in design, and reduced secondary operations.

Many Flambeau customers have reaped the benefits of converting their metal products to plastic, and here are just a few of those examples:

▼ Air-intake Manifold for a Small Engine:

Originally die cast, this air-intake manifold was converted by Flambeau to be lighter and more cost efficient. This legacy part has been used in a small engine, manufactured in plastic for over 20 years for a long-time client and leading manufacturer of small engines.



Air-intake Manifold for a Small Engine

Four pieces were injection molded, assembled with six (6) threaded and non-threaded metal bushings, and vibration-welded together into one part.

▼ Water Outlet for a Diesel Engine Cooling System:

During a site visit to a well-known customer's diesel engine manufacturing plant, Flambeau engineers identified a metal part as a potential metal-to-plastic candidate. It was a water outlet to the cooling system of a pickup truck diesel engine.



Water Outlet for a Diesel Engine Cooling System

Despite anticipated challenges for the design process, the customer's engineers agreed to collaborate with Flambeau engineers to launch the conversion project.

Flambeau guides its customers through the complex task of converting more expensive and heavier metal components into less expensive, less labor intensive and lighter-weight thermoplastic parts.

One issue was tied to the customer's plans to utilize the converted part in two engines. The engines were configured differently, and this led to clearance challenges for one of them. Flambeau's solution was to design two versions of the water outlet with interchangeable inserts instead of tooling two separate molds.

Flambeau saved this customer substantial tooling costs by allowing both versions of the part to be molded with the same tool. Flambeau anticipates an annual order of approximately 150,000 for this converted part for this valuable customer.

▼ Components for Lube/Fuel Filter:

A leading filtration manufacturing customer began converting its lubrication and fuel filters from metal to plastic with Flambeau over two decades ago. Ever since, components in this user friendly spin-on filter have been injection molded by Flambeau, including the housing, nut plate, and inner plates.



Components for Lube/Fuel Filter

These parts were engineered by Flambeau to be easily mated with the other system components during assembly, which is performed by the customer at its plant. Flambeau anticipates an annual order of approximately 500,000 for converted filters by this prominent customer.

▼ Reservoir Tank:

Flambeau learned of a unique manufacturer requiring a new tank for its ethylene generating machines. Used to safely produce ethylene gas in fruit ripening rooms, the machines formerly utilized stainless steel reservoirs crudely welded together.



Reservoir Tank - Before (Original Metal Design)

The company had more reason than lower cost to convert this part to plastic. This drop-in replacement tank would be a repeatable, nonconductive part with increased wearability, durability and insulation properties.



Reservoir Tank - After (New Plastic Design)

Flambeau guided this new customer through several design iterations to achieve its application goals and intended price point. While the annual demand is of relatively low volume compared with other Flambeau parts, this customer achieved its goal to improve its overall product with a superior plastic end product.

▼ Conclusion:

Flambeau guides its customers through the complex task of converting more expensive and heavier metal components into less expensive, less labor intensive and lighter-weight thermoplastic parts.

These conversions have provided Flambeau's customers with lower costs, greater margins, and lighter weight end products, giving them more marketable advantages in their respective marketplaces.

What can Flambeau do for you? Give us a call or e-mail today to learn how.

For more information on Metal to Plastic Conversions at Flambeau:

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