



Hitchiner Expands Rapid Prototyping

Collaboration with expert vendor ensures quality results

Since the early 1970s, Hitchiner has made hundreds of prototype castings of all sizes without tooling (Figure 1). The advent of CAD in the 1980s and the development of several different CAD-driven pattern- and moldmaking methods in the 1990s dramatically changed the way castings were made without tooling. It became common, and, in many cases standard, practice to construct a model or pattern of every new design to enable an engineer to “touch and feel” the part, checking all features. Three-dimensional CAD then became so good and low-cost that parts could be checked in all respects, including assembly of various components, without making physical models.

Companies expert in using CAD files directly to form patterns and molds capable of producing fully functional prototype parts are now located around the world. They specialize in quick delivery of patterns and molds from CAD files sent over the Internet. When using such services, the engineer should remember that CAD files do not always contain complete detail; CAD-driven pattern- and moldmaking sources should have fully competent engineering staffs. Further, ordering the prototype part from the foundry that will make the casting can help to ensure that shrink factors and other foundry considerations are handled properly.

After first installing its own patternmaking capability then working with several external

sources, Hitchiner established a close working relationship with Brookfield Rapid Solutions in nearby Hudson, New Hampshire (Figure 2). Because it makes models for many other industries as well as investment casting, Brookfield has the volume needed to maintain efficient operations and develop a high level of expertise in all phases of rapid prototyping. Hitchiner customers using this service benefit by both Brookfield’s expertise and Hitchiner’s ability to assure that foundry considerations are addressed properly. This relationship has yielded successful rapid prototypes not only of investment castings but also of sand castings made for Hitchiner licensee customers around the world (Figure 3).

Hitchiner usually processes rapid prototype patterns and molds in one of two ways: If the design falls within its manufacturing capabilities and production requirements are immediate, the appropriate plant takes the order and makes the part under production conditions. Otherwise, Hitchiner’s corporate marketing development group takes the order and processes it through Metal Casting Technology, Inc.

MCT is a joint research and development venture of Hitchiner and General Motors Corp. It has many processes (even sand casting) and capabilities not available in Hitchiner’s production facilities and can cast all structural metals, including titanium. Specially assigned MCT personnel give rapid prototype casting jobs top

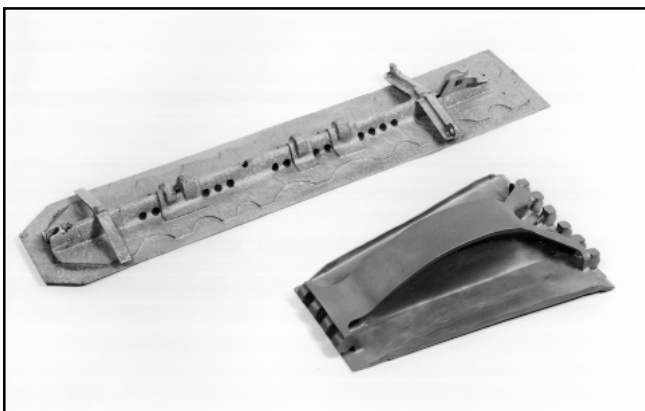


Figure 1. Jet engine castings first hand-constructed from wax sheets by a skilled patternmaker in the early 1980s.



Figure 2. SLA-7000 rapid prototyping system used by Brookfield Rapid Solutions to produce prototype casting patterns for Hitchiner and its customers.

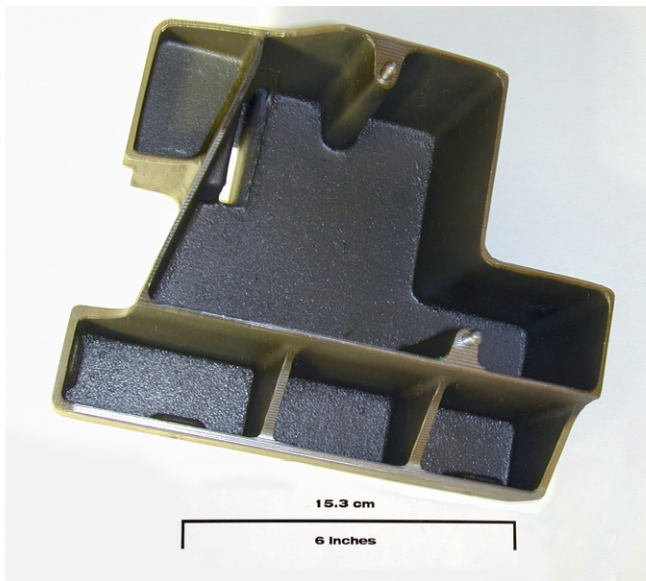


Figure 3. IPT Buick platform car frame bracket made from a Brookfield Rapid Solutions' CAD-driven pattern in 1010 steel by Metal Casting Technology, Inc. for Hitchiner using General Motor's patented, thin-walled sand casting process.

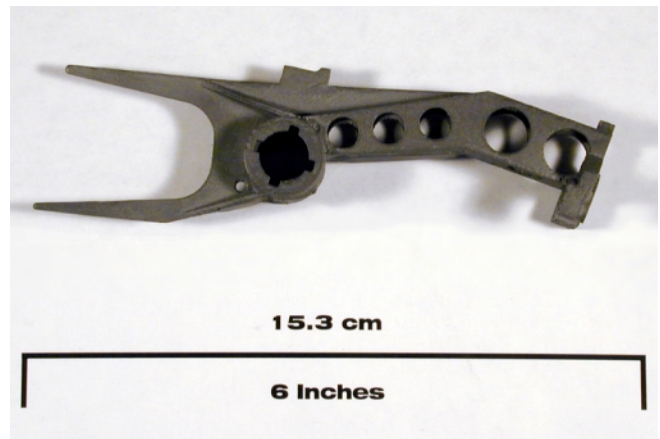


Figure 4. An advanced technology prototype cast by Metal Casting Technology, Inc.

priority. (Figure 4 shows a recently produced rapid prototype.)

Hitchiner's use of Brookfield Rapid Solutions for pattern- and moldmaking and its manufacturing plants or MCT (or both) to process the casting at top priority using specially assigned personnel makes it a unique and valuable source of rapid prototypes for its many customers.

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