



Your One Stop Source for All Metal Castings

NETCASTER

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Buyers/Designers

of metal castings

buyCASTINGS cuts costs and adds value

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Foundries

Reduce cost, access new markets

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Suppliers

to foundries

buyCASTINGS expands markets

Digest



Page 2
Rapid Mfg.
Preferred Service Provider

Page 7

More About FOPAT
bC by the Numbers
What Customers Say
Trade Shows

Page 8

ICI 4-L
Foundries Cut Energy Costs



We've Waited 5000 Years for This...



Throughout the ages, ever since metal castings have been around, the lost-wax process has been virtually the only way to make investment cast parts...until now.

FOPAT, a **FO**am **PAT**tern material has been introduced. Being dubbed **The Next Generation Investment Casting Pattern Material**, FOPAT is multi-component foam that is pushing the design envelope of wax-based investment cast parts.



The benefits offered by FOPAT over wax patterns include:

- Minimal pattern shrinkage gives stable pattern
- No shell cracking due to little or no pattern expansion
- Can withstand temperatures up to 200 F
- Cost effective for a given pattern
- Durable patterns for thin sections
- No chills in waxes
- Shippable patterns - good handling & stability
- Potentially quicker and lower cost tooling

FOPAT work began in the 1990's but was accelerated during the past few years through the efforts of a team of industry members working with government sponsored programs. The program would not have happened had it not been for the insight and funding by the sponsors at the Department of Energy and the Department of Defense. Over the past two years, almost a million dollars in funding has been allocated to help complete the feasibility and viability analysis which will now be followed by scale-up, tooling, and process optimization work.



Rapid Prototyping Growing into Rapid Manufacturing

Rapid prototyping has continued to grow at 10 to 40% per year over the past few years such that people are more and more talking about "rapid manufacturing" for production of industrial parts directly from CAD data. While the old processes and material properties have been a road bump to mainstream acceptance, the new materials and properties available are growing quickly and showing promise.

According to industry sources, the current global market for rapid prototyping is valued at around \$1 billion and growing at about 20% per year. New machines, processes and materials continue to crop up. According to Design News, "there are more than 50 machines from which to choose, and there are nearly 100 materials to use in these rapid prototyping devices."

For small lot orders, a quick turnaround and no tooling are the two main attractions for rapid prototyping. "In the end, rapid prototyping can reduce the construction of complex objects to a manageable, straightforward and relatively quick process at an often-far-lower cost than using conventional techniques", according to an industry observer.

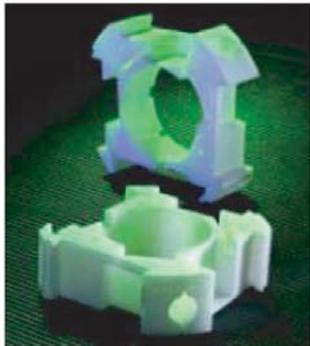
As costs come down especially for small size parts, inkjet-based systems, 3-D printing is arguably the most popular and fastest-growing form of rapid prototyping. Proven to be a viable tool rather than a poor substitute, these devices are finding their way into companies of all sizes. However, the dimensional accuracy available with 3-D printing (although in the low microns) is NOT what one requires for precision parts.

Stereolithography and laser sintering are also two very common rapid prototyping processes. Both processes allow users to export CAD files to rapid prototyping machines and in a short period of time create a physical prototype of the CAD model. Right now, both machines are not only very expensive, they are physically large and require specialized personnel to operate. The advantage, however, is that both processes create fairly accurate and durable prototypes or part patterns.

Other processes include fused deposition modeling, which allows users to build prototypes quickly with a computer-controlled valve system, and computer numerical control machining (CNC), which allows users to export a CAD file to a network of milling machines to reduce the cost in time and labor.

However, as was the case 15-years ago, ultimately, the materials used in rapid prototyping are still a major limitation to future growth and acceptance. Yet the range and properties available are growing and currently include various plastics, waxes, resins, ceramics, metals and papers. In fact, as noted by Design News at the recent Rapid Prototyping & Manufacturing show:

The new class of high-end systems that produce fully dense, metal parts received a lot of attention. These machines push the technology well beyond form, fit and function while addressing the demand for the abundance of parts not made of plastic. The thought of producing one-off parts in stainless steel or titanium, without any tooling, proved to be a strong desire for many of the aerospace, automotive, medical and consumer products companies in attendance.



buyCASTINGS Becomes a Preferred Service Provider for 3D Systems

buyCASTINGS founders, Mr. Bob Dzugan and Mr. Neil Chaudhry have been active in the Rapid Prototyping, Rapid Tooling, and now Rapid Manufacturing industry from literally Day-1. Going back to early 1990's, the first machine SLA-1 was made by 3D-Systems and given to the University of Dayton for a project conducted by the Edison Materials Technology Center, EMTEC. Bob and Neil were Technology Transfer Managers at EMTEC, involved in several technology projects including Rapid Prototyping, New Metal Casting Technologies, New Materials, Modeling, Process Optimization, and numerous others.

To this day, fifteen years later, we continue to work with industry and military customers who need to develop new part designs and get parts for testing quickly. The need for quick turn-around parts using rapid prototypes as patterns for investment casting is growing strongly as more and more design, engineering, and product development work is done in the US while the production may occur world-wide. From Teledyne to Alcoa, and the Army to Air Force, and Proctor and Gamble to General Electric, the need for limited quantity cast parts without the expense of tooling delivered in 4-6 weeks is extremely appealing.

buyCASTINGS continues to see the demand grow for the RP projects in the foundry industry. Therefore, it was a natural fit for 3D Systems to elect buyCASTINGS as one of it's Preferred Service Providers. The PSP Program is a network of key partners working with 3D Systems, the inventors of the rapid prototyping SLA process and one of the leaders of the industry. The PSP Program has ten key qualified, professional service organizations that can provide customers with a variety of rapid modeling, prototyping, tooling or parts production services.



Preferred Service Providers

Click on service provider for more information.

[Scicon Technologies](#)

[Proform AG](#)

[Dynacept Corporation](#)

[Teufel Prototypen](#)

[ProtoCam](#)

[Ogle Models and Prototypes, Ltd.](#)

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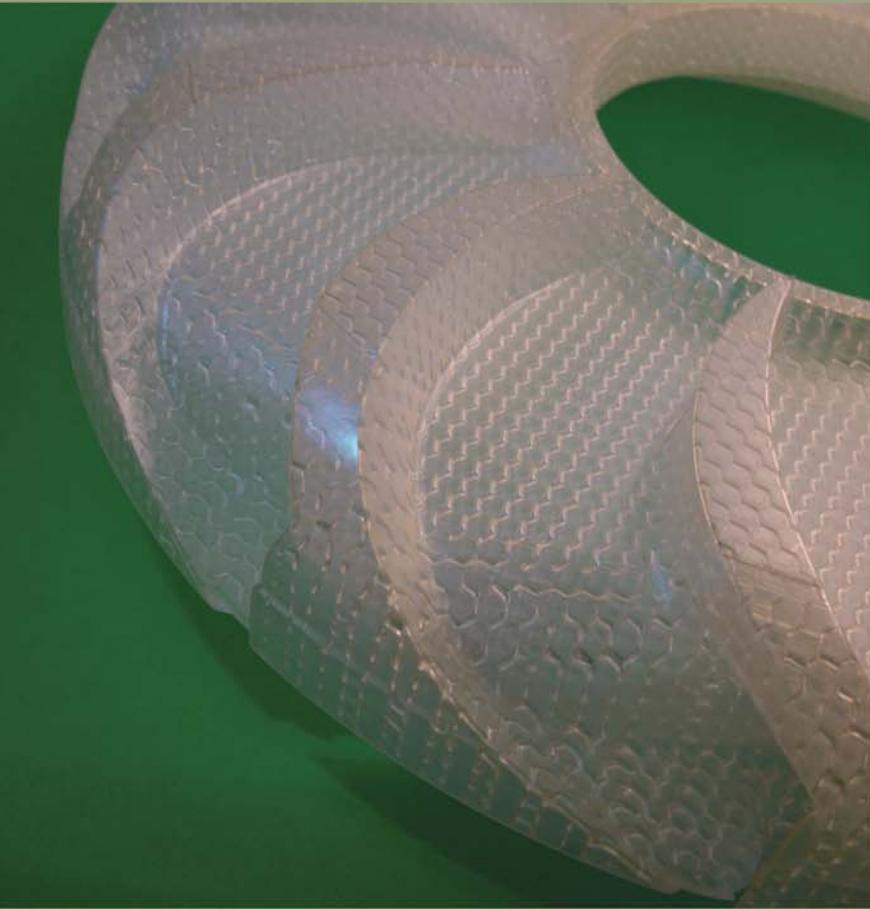
[Realize, Inc.](#)

[buyCastings.com](#)

Please contact Mr. Bob Dzugan at rdzugan@buyCASTINGS.com or call 1-866-buyCASTINGS to learn more about the various buyCASTINGS projects including the RP projects and services.

American Precision Prototyping can provide rapid investment casting patterns that are high-quality and delivered on time...

SL Quickcast Patterns



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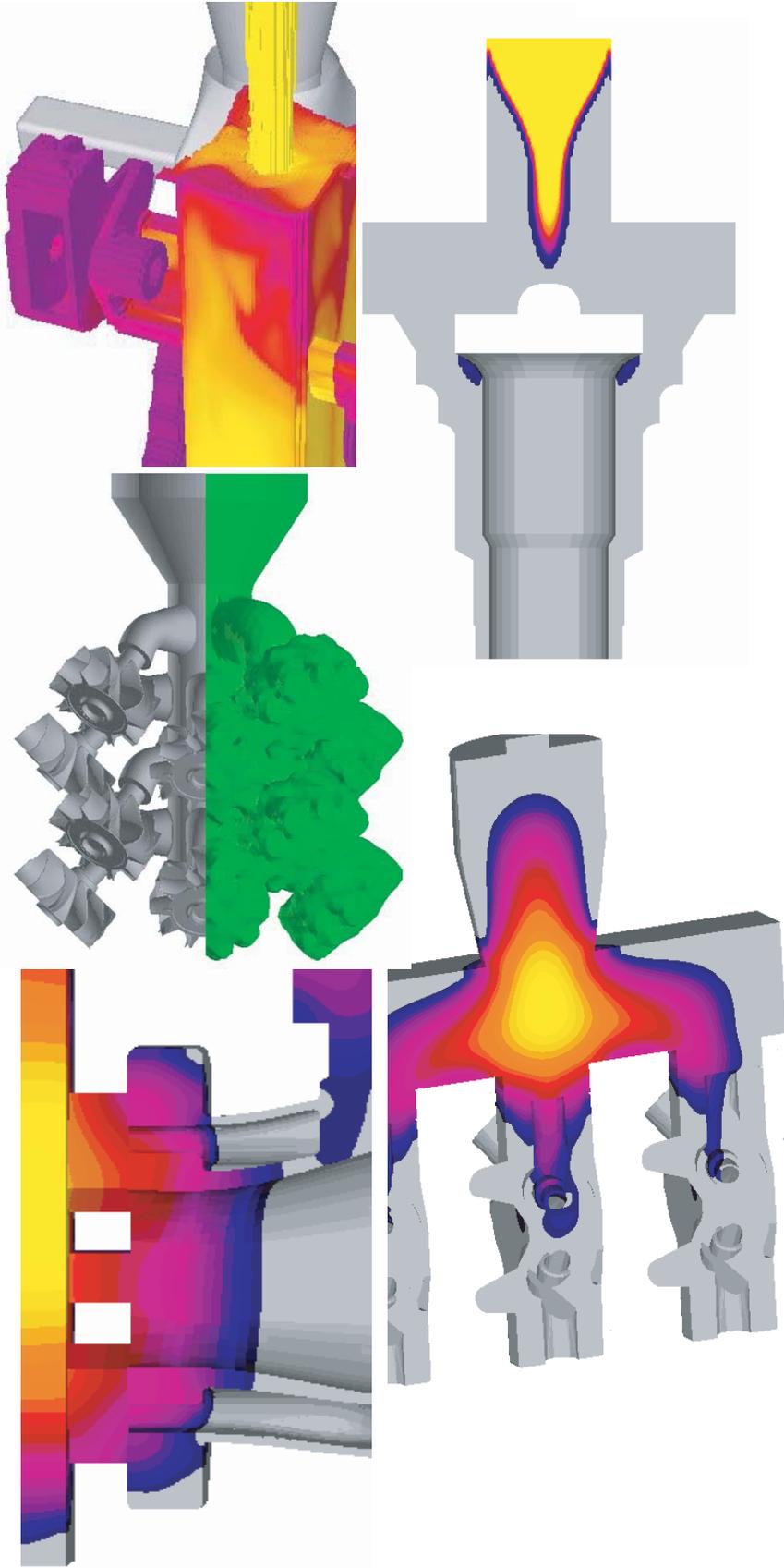
ThermoJet Wax Patterns

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Tools such as the **Riser Design Wizard®** help you gate and riser castings correctly, the first time through. Full simulation tools like **FLOWCast®** for flow simulation, **SOLIDCast®** for solidification simulation and **OPTICast®** for true automated yield optimization allow you to fine-tune designs for minimum cost and maximum quality before any patterns, molds or production castings are made.

Features such as automatic shell creation, radiation heat transfer, insulating blankets and others make **SOLIDCast®** the natural choice for design and simulation of investment castings.

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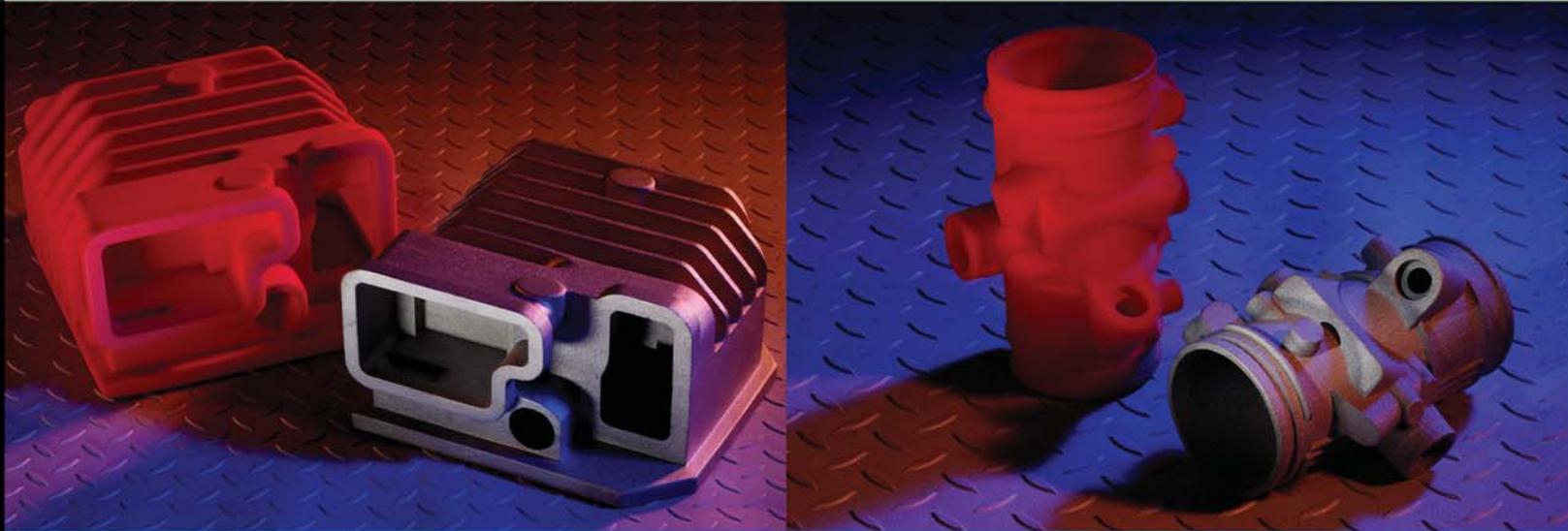
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Competition demands fast product development cycles. **GT Signature** helps you meet your customers' demands for parts by creating casting patterns directly from CAD files.

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The SLS Process for Pattern-making

- Step One:** We take your CAD file (or your customers') and create patterns directly from polystyrene.
- Step Two:** The parts are then dipped in standard foundry wax.
- Step Three:** The patterns can then be shipped to you or cast in a variety of alloys at one of our partner foundries.

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Controls, Each
with mold
handling line
including
jacket/weight
shifter and mold
dump conveyor.**

Recently Purchased Investment Casting Foundry, Items F.O.B. Chicago, IL Warehouse, Items Include: C-Powers Industries Auto Clave Model DCS-4248, Serial Number 2764, (3) Three Mixing Tanks with Agitator 36" Diameter X 44" Height, STA-WARM Wax 20 Gallon Melting Pot Model V903, Serial Number 4730 22" Diameter X 27" Height, (2) Two RITE-HITE 80 Gallon Wax Melting Pots Model TR, With Agitators, 36" Diameter X 48" Height, LEYDEN Wax Press, Hydraulic, With Wax Tank, 9" X 10" Between Posts, ACE Wax Press Model H-12-20, Serial Number 9-90-545, Hydraulic, With Wax Tank, 16" X 20" Plate, Dust Hog Dust Collector, High Speed Hammer, Automatic Cut Off Saw

Induction Furnaces in stock:

Inductotherm Power Trak, 75 Kw, 3000 Hz, 50 lb Hydraulic Furnace, 1996
Inductotherm Power Trak, 125 Kw, 3000 Hz, 500 lb and 300 lb Furnaces, 1991

Inductotherm/PVT Vacuum Induction Melting System, Model VIP Power Trak 20-96, S/N 84-49315-246-11, 20 Kw, 9600 Hz, 440V Output Capacitors, 480/3/60, 25 Lb. Coreless Melting Box, Water Cooled Power Cables, PVT Pressure Vacuum Control Panel, Stokes Vacuum Pump, R&D Only!!

6



Check our website for more than 1000 machines

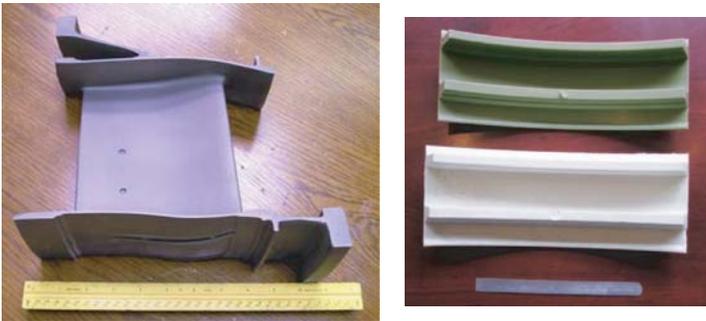
www.foundry-eqpt.com

We've Waited 5000 Years...Con't

FOPAT LLC was created to commercialize the new technology with the support of the following sponsoring programs and supporting organizations:

- Dept. Of Energy, Inventions & Innovations Program
- Dept. Of Defense, US Air Force, Small Business Innovation Research Program
- GE, P&W, PCC, and Others

The project details will be presented at the upcoming Investment Casting Institute's 54th Technical Conference & Expo in Milwaukee, WI, October 22 - 25, 2006. However, in brief, there are several cost and energy savings, which are being explored and quantified in the Phase II SBIR project by the FOPAT team. A few examples of the patterns, tooling, and some of the castings are shown below:



FOPAT offers the potential for saving energy, reducing cost, and extending the design capabilities of investment cast parts for defense and commercial components.

Project Mission Statement

Develop an Advanced Pattern Material to Enable More Affordable Higher Performance Investment Castings for Production of Jet Engine Components



Please contact Mr. Neil Chaudhry at nchaudhry@buyCASTINGS.com or call 1-866-buyCASTINGS to learn more about the various buyCASTINGS technology development and collaborative projects.

buyCASTINGS by the Numbers

- 777+ Foundries Worldwide
- 1650+ Buyers Worldwide
- 378+ Suppliers to Foundry Industry
- Average 100,000 "hits" per month
- 100% Focus on the Metal Casting Industry

Cumulative Dollar Volume of Quotes



What our customers are saying...

"You guys have been very helpful. I plan to continue using you in the future. I appreciate the follow-up. Thanks."
Dayton Area Manufacturing Company, March 24, 2006

"Your efforts, on behalf of our project, have been amazing."
Maryland Manufacturer, June 27, 2006

"This is good news - I'll crunch some and get back to you for projections on production processes. Thanks."
New York City Company, August 22, 2006

"I'd like to thank you for the sterling work you have done for us. You have been very diligent and it is a quality we don't get with all our vendors! Regards,"
California Design Manufacturing Co., September 11, 2006

"This seems like very good news. We are anxious to start the process and very much look forward to moving forward."
Washington State Manufacturer after being presented with a foundry to make their parts, September 1, 2006

"Thanks buyCASTINGS and it has been a real pleasure working with you on this. I hope it lasts a long time."
NC Company, July 17, 2006

VISIT US AT THESE UPCOMING TRADE SHOWS

October 22-25, 2006
Investment Casting Inst. Tech. Conference & Expo
Milwaukee, WI.

November 27-30, 2006
PowerGen Int'l Orange County Convention Center
Orlando, FL.

November 27-29, 2006
Defense Manufacturing Conference
Nashville, TN.

March 17-20, 2007
3D Systems North America Stereolithography Users Group
Daytona, FL.

May 15-18, 2007
AFS Casting Congress
Houston, TX.

buyCASTINGS President to Present AFS 4L Committee Paper at the 2006 Investment Casting Institute Conference

Newly released research on computer modeling to obtain tooling dimensions for investment casting

Bob Dzukan, President of buyCASTINGS.com Inc. and current Chairman of the AFS 4L Committee on Investment Casting, will present a paper entitled "[Computer Simulation to Predict Wax Tooling Dimensions](#)" at Investment Casting Institute's 54th Annual Conference and Expo in Milwaukee, WI, Oct. 22-25, 2006. The paper will detail the progress made by research at Oak Ridge National Labs funded by the Department of Energy through the AFS, ATI and SCRA groups.

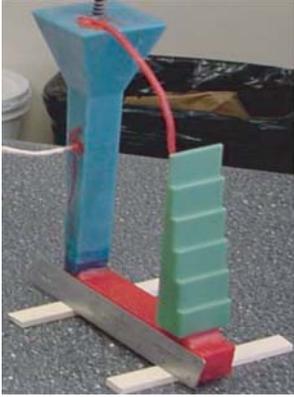
The objective of the research is to provide to industry a commercialized computer model that will allow a user to predict the dimensions needed for the wax die to produce an investment cast metal part that will dimensionally meet the drawing.

This will be accomplished by inputting critical properties of the wax, shell and metal into a computer modeling system. The critical properties needed, will also be determined during this program.

The research involves a multitude of industrial companies such as:

- Johnson & Johnson; Schrey and Sons; Precision Metalsmiths; S&A Consulting; buyCASTINGS.com
- Ping Golf; Advanced Tech Inst.; General Aluminum; MCM Precision; Independent Tool
- ESI (Procast); EMTEC; Seacast; Argueso; Hitchiner (MCT); Minco; Jim Gardner (JEM)
- Vulcan Engineering; PCC; S. Carolina Research Auth.; Precision Casting of Tenn.

Beta testing is underway at the University of Alabama and the wax portion of the modeling is also included in the latest release of ESI's ProCast solidification modeling software.



Energy Cost Reduction
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WE ARE LOOKING FOR A FEW GOOD FOUNDRIES WHO WISH TO CUT THEIR ENERGY COSTS... IF YOU ANSWER YES TO TWO OF THE THREE ITEMS BELOW, PLS CONTACT US AT 1-866-buyCAST AND ASK FOR OUR NO COST, NO OBLIGATION ENERGY COST REDUCTION PROGRAM!
1) Melt ferrous metal using at least two induction furnaces? 2) Plant demand greater than 2000Kw? 3) Demand charge greater than \$6/kW?

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