



THE METAL CASTING MARKETPLACE OF THE FUTURE

# NETCASTER

Issue 10, 2004

## Liberty Bell Cast by buyCASTINGS Member Used to Ring in Freedom at the Opening of the Iraqi Stock Exchange

ENTER

Buyers/Designers  
of metal castings

buyCASTINGS cuts costs and adds value

ENTER

Foundries

Reduce cost, access new markets

ENTER

Suppliers

to foundries  
buyCASTINGS expands markets

buyCASTINGS.com supplied the Liberty Bell to commemorate the opening of the Iraq Stock Exchange. This replica of the original liberty bell is a bell bronze casting which rings with a powerful tone that was used to open the exchange on July 19th. Let Freedom Ring is the logo on the bell cast at BIMAC Corp. of Dayton, Ohio, one of the foundries participating in the buyCASTINGS network of metal casting foundries.



"We have a great history behind the making of this bell which is a scaled replica of the Liberty Bell ..." said Mr. Bob Dzugan, President, buyCASTINGS. Ms. Ann Exline Starr, working with the Philadelphia Stock Exchange found buyCASTINGS.com and the liberty bell posted on it's site through the Internet and called in to place a rush order for the bell. In 1996, the bell replica was originally produced by a Dayton

**"This is a great testament to the power of e-networking – for buyers to find sellers and for our suppliers to find buyers for any type of casting or supplies through an internet site like buyCASTINGS.com"– Neil Chaudhry, COO buyCASTINGS. Aug. 17, 2004**

area team of companies to prove out new technologies like reverse engineering, rapid prototyping, rapid tooling and investment casting

technology under an EMTEC sponsored project. Here are some of the more interesting points to note about the original bell:

- The bell cracked the first time it was rung.
- The bell weighed 2080 pounds when it was cast.
- The strike note of the Bell is E-flat.
- On June 6, 1944, when Allied forces landed in France, the sound of the bell was broadcast to all parts of the country.
- When the Liberty Bell first cracked, it was given to Pass & Stow to recast. A replacement bell was ordered from Whitechapel Foundry in England. The Pass & Stow bell was completed and installed before the new one came from Whitechapel.

**"Proclaim Liberty throughout all the land unto all the inhabitants thereof"**

Tradition tells of a chime that changed the world on July 8, 1776, with the Liberty Bell ringing out from the tower of Independence Hall summoning citizens to hear the first public reading of the Declaration of Independence by Colonel John Nixon. The Pennsylvania Assembly ordered the Bell in 1751 to commemorate the 50-year anniversary of William Penn's 1701 Charter of Privileges.



Penn's charter, Pennsylvania's original Constitution, speaks of the rights and freedoms valued by people the world over. Particularly forward thinking were Penn's ideas on religious freedom, his liberal stance on Native American rights, and his inclusion of citizens in enacting laws.

Please contact Mr. Neil Chaudhry at [nchaudhry@buyCASTINGS.com](mailto:nchaudhry@buyCASTINGS.com) or call 1-866-buyCASTINGS to learn more about the liberty bell as well as buyCASTINGS membership programs.

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Fall 2004

## Castings Make Plastic Hose Manufacturing Easier

The next time you look under the hood of a new car and see some of the corrugated plastic hoses for vapor recovery you may wonder how a metal casting made them possible.



Cast Aluminum Hose Fixture



Fixture with Hose

Doug Caldwell, a Senior Production Engineer in the automotive industry, needed to find a better way to form the raw hoses to the final shape needed by his customer. Previously, they formed the hoses and cured them in fully machined aluminum/epoxy fixtures. While these fixtures accomplished the job, they were costly, had a long lead time, and did not transfer heat as well as an all-aluminum fixture.

Doug was referred to buyCASTINGS and wondered if a cast aluminum fixture could be made cost effectively. After looking at multiple sources that could provide the aluminum castings, buyCASTINGS recommended Specialized Castings of Tipp City, Ohio. Specialized Castings took the CAD file of the hose and created a CAD model of the pattern to be used to precision sand cast the tubes (See photos). They cast 60 fixtures each of 2 designs and delivered all the castings in less than 2 weeks. The machined fixtures would have taken months. This allowed Doug to meet his production schedule on the tubes.

The fixtures were usable as-cast with no machining required. The all-aluminum fixtures also provided a greater ability to extract heat during the curing of the tubes.

Castings affect our lives in amazing ways – sometimes in ways we don't even realize.

### Industry Leader Predicts U.S. to Rebound in Manufacturing.

Milwaukee Journal Sentinel, 9/15/2004  
"In some areas, like textiles, we will never compete." said John Byrd III, the president of the Association for Manufacturing Technology. "But in areas that are technology-driven, rather than labor-driven, we can do very well." Byrd predicts rising international shipping rates, changes in foreign currency values and the escalating worldwide demand for raw materials will level the playing field, and in turn, help the U.S. better compete in some manufacturing industries.

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## U.S. Manufacturing -- Let's put this in perspective

Despite all of the "major losses in manufacturing jobs in the U.S." as proclaimed in the media; despite all of the "manufacturing moving to China"; and despite all the negatives that we have been hearing about manufacturing for the past 20-plus years or "forever" it seems, here are some interesting points to note:

The United States is still the world's leading producer of manufactured goods!

Standing alone, the U.S. manufacturing sector would represent the fifth-largest economy in the world—larger than China's economy as a whole!!

The U.S. manufacturing sector leads in innovation, accounting for more than 90 percent of all U.S. patents registered annually!

We are still the economic and the manufacturing superpower of the world, but nobody reports that.



The U.S. manufacturing sector is one of the most productive in the world – output per worker went from \$55,200 in 1987 to \$96,549 in 2003.

Growth in technology intensive sectors correlates directly with growth in mfg productivity.

We do need to continue to invest in technology and innovations to lower cost, increase productivity, and gain back markets. What we don't need are more regulations, more barriers, more taxes, and greater government involvement.

We do however need the help of the government to address the legal issues, health care issues, and energy dependence all of which push overhead costs too high.

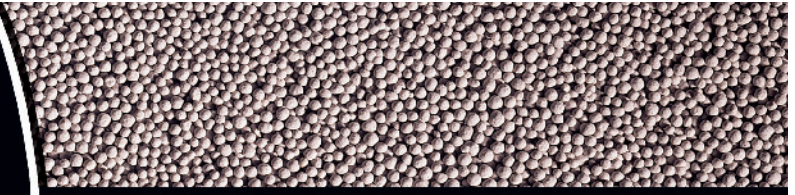
We need to figure out how government policies can foster an environment in which American manufacturers and their workers are the best trained in the world.

And, equally important, how we can ensure that success in the global marketplace is based on economic strength, rather than on government intervention that creates artificial advantages?

We don't have all the answers but we do want to put things in proper perspective, so we can all make intelligent decisions in helping the future course of manufacturing in the U.S. We love to hear from you – how can we do better and how can we help you...call 1-866-buyCASTINGS and ask for Bob, Neil, or Lee.



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Conference in Toledo, Ohio,  
October 19-21st!



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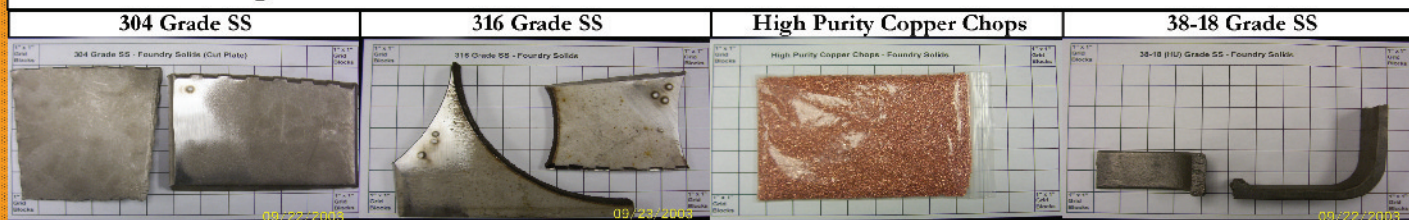
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## Foundry Materials that will EXCEED your needs!

For 60 years OmniSource has concentrated on just one thing - scrap metal! Scrap processing and transportation, marketing and brokerage, management and consulting. This singular focus has fueled our growth into one of the leading scrap recycling companies in North America. Our 1400+ employees, located in 32 facilities, handle over 6 million tons of ferrous and 600 million pounds of non-ferrous metals annually, generating sales revenue in excess of one billion.

In addition to our own network of facilities, OmniSource has developed strategic relationships with industrial scrap generators and consumers. As a pioneer in scrap management and consulting, the company has designed, installed and manages customized programs for industrial manufacturing companies at more than 100 locations throughout North America.



Just some of our Foundry Products we can offer you:

### Gray and Ductile Materials -

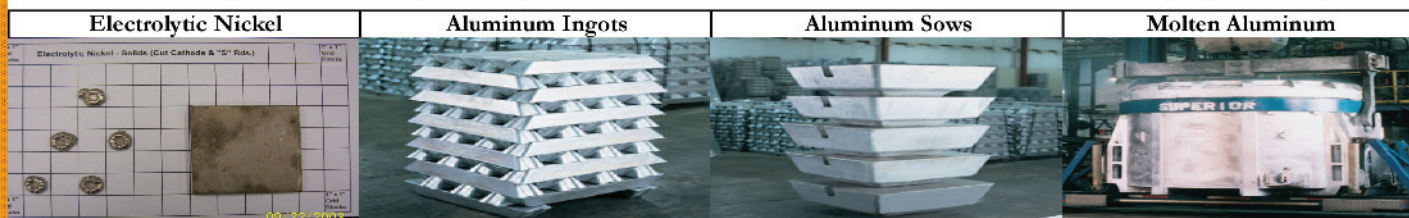
- \* Low 1000 Series Punch
- \* #1 Busheling Foundry Grade
- \* Low Manganese Busheling
- \* #1 and # 2 Shredded Grades
- \* Gray and Ductile Cast Grades
- \* Cast Iron Borings and Briquettes
- \* Basic and Foundry Pig Iron
- \* 2 ft. (P)late & (S)tructural
- \* 2 ft. Rail Crops and OTMs

### Stainless and Alloys Materials -

- \* 304 and 304-L Grades
- \* 316 and 316-L Grades
- \* 309, 310, 330 Grades
- \* HH, HK, and HT (25-12, 25-20, and 35-15)
- \* 420 and 430 Grades
- \* 17-4 and 15-5 Grades
- \* INCO 600, 601, 617, 718, and 800
- \* Electrolytic and High Purity Scrap Nickel
- \* High Purity Copper and Aluminum Chops

### Through Superior Aluminum Alloys (SAA), we offer -

- \* 3% Zinc Alloys: A-380.1, 383.1, and 384 (Ingot, Sow & Molten Metal).
- \* 1% Zinc Alloys: B-380.1, ADC-12, B-390.1, 319.1, SR-319, and AE-103 (Ingot & Sow).
- \* Low Cu Alloys: A-360.1, 356.1, 413.1, and 339 (Ingot & Sow).
- \* Piston Alloys: F-132, 334.1, AE-425, AE-413, 332.1, M-132P, SR-332.1, Z16, 124R, 124M (Ingot & Sow).



### OmniSource Corporation Foundry Sales:

For Sales, please contact:  
**Jason Redden - Sales Manager**  
 Phone: (260) 423 - 8627, Fax: (260) 423 - 8528  
 Email: JRedden@omnisource.com

### Superior Aluminum Alloys (SAA) Sales:

For Sales, please contact:  
**Pat Carlin - Sales Manager**  
 Phone: (260) 749 - 7599 x238, Fax: (260) 749 - 7598  
 Email: pcarlin@superioraluminumalloys.com

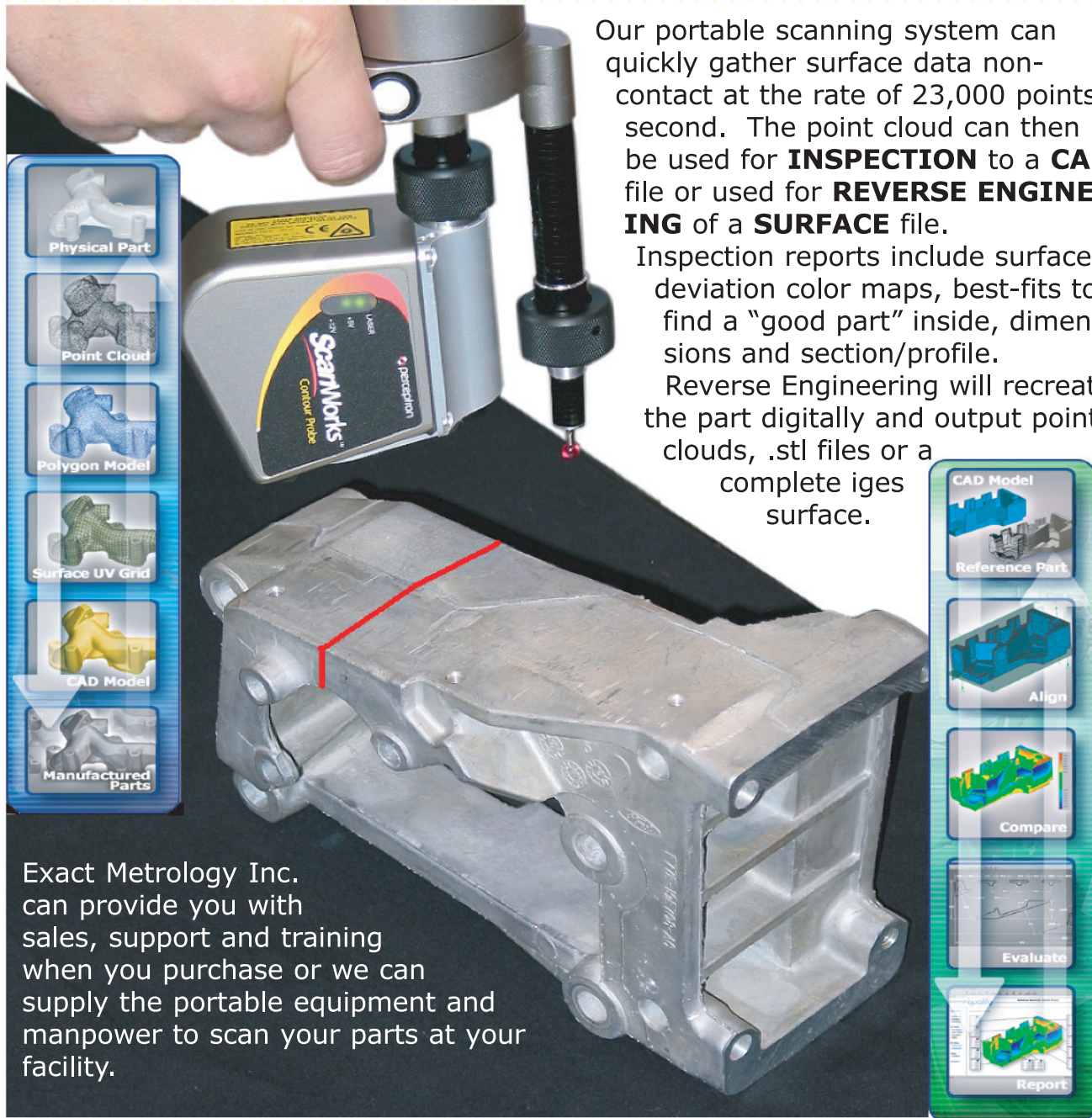
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**PROCESS:** The basic PVD Ion Sputter Plating Process (ISP) was developed by the Atomic Energy Authority of Great Britain for the application of extremely consistent ultra-thin film coatings in nuclear reactor applications. Daryl A. Blessing, using SAC modified ISP technology, developed the deca-elemental, single layer coating Laser-Cut 964<sup>®</sup> in 1993. Laser-Cut 964<sup>®</sup>, a patentable product, provides superior performance characteristics over that of other currently available single or multi-layered coatings using the conventional Evaporative Coating Process. These include coatings such as: TiN, TiCN, TiAlN, AlTiN, CrN or ZrN.

**SAC International, Inc.** is presently producing the fourth generation (G4) Laser-Cut 964<sup>®</sup>. The improvements provided broadened application range, consistency and performance. Expansion of the SAC Modified ISP process and Laser-Cut 964 G4 technology lead to the development of Super Tin<sup>®</sup> and Xtend-Cut 973<sup>®</sup> in 2001, AlTiMAX<sup>®</sup> and Xtend-Wear 971<sup>®</sup> in 2002. In our efforts for continuous improvement and value, other new coatings are on the drawing board by our R&D staff.

<b>Laser-Cut<sup>®</sup> Properties</b>	
<b>Coating Process:</b>	<b>SAC Modified ISP</b>
<b>Coating Time:</b>	<b>11 to 14 hours</b>
<b>Coating Thickness:</b>	<b>.000065" to +/- .00002" (1.5µm +/- .5µm)</b>
<b>Coating Coefficient of friction:</b>	<b>.027</b>
<b>Coating Hardness Vickers:</b>	<b>4800</b>
<b>Coating Temperature:</b>	<b>825° F +/- 5°</b>
<b>Coating Vacuum</b>	<b>10<sup>-3</sup> Torr</b>
<b>Operating Temperature Range</b>	<b>1400° F constant 1800° F Intermittent</b>

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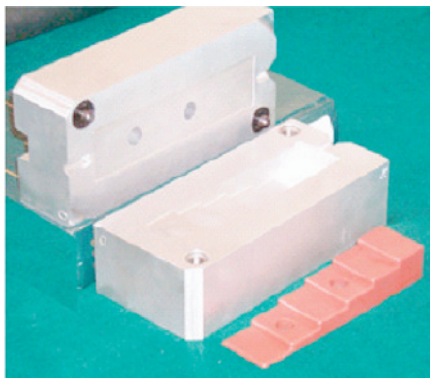


# Technology Being Developed to Help with Tooling and Casting Dimensions

The Oak Ridge National Laboratory (ORNL) is the main investigator on a casting research program titled "Predicting Pattern Tooling and Casting Dimension for Investment Casting". The \$1 million plus program is funded by the Department of Energy with more than half of the amount contributed by industrial partners.

**Goal:** To establish software to predict the tooling dimensions from the electronic file and taking into account the geometry, type of wax used, the ceramic shell used, and the metal being poured.

**Background:** Determining the pattern tooling dimensions is crucial to the dimensional control of the investment casting processes. Pattern dies are used to create wax patterns by injecting wax into dies. The wax patterns are used to create a ceramic shell by the application of a series of ceramic coatings, and the alloy is cast into the de-waxed shell mold. The final linear dimension of the casting depends on the accumulative effects of the linear expansions or contractions in each step of the investment casting process. The program will consider filled waxes, thermo-mechanical behavior of shell molds based on fused silica, and a high temperature alloy (17-4PH steel).



**Objectives:** Maintain direct industry support, direction, and cost share for ORNL Predicting Patterns Program. Objectives include recommendation, design and build of wax molds, review ORNL research, provide casting trials, and technology transfer to industry. Coordinate in-plant trials, data acquisition, and documentation.

This is a subtask that has been categorized under the E-SMARRT Innovative Casting Processes for Yield Improvement/Revert Reduction work breakdown structure heading and supports the IPT and industry objectives of Designing Castings for New Markets, and Improved Metalcasting Processes.

The program involves several investment casting foundries, wax suppliers, ceramic suppliers, tool makers and end users of castings. The program is managed by Nick Cannell of EMTEC (call Nick at 216-408-7706 for more information). The industry oversight is being provided by the AFS 4L Investment Casting committee that is headed by Bob Dzugan of buyCASTINGS (Bob can be reached at 937-259-1341.)

*Issue 10, 2004*

### buyCASTINGS by the Numbers

- 612+ Foundries Worldwide
- 1200+ Buyers Worldwide
- 300+ Suppliers to Foundry Industry
- Average 100,000 "hits" per month
- 100% Focus on the Metal Casting Industry

### Cumulative Dollar Volume of Quotes

Month	Volume (Millions)
Mar '01	0
Jun '01	5
Sep '01	10
Dec '01	15
Mar '02	25
Jun '02	40
Sep '02	60
Dec '02	80
Mar '03	100
June '03	120
Sep '03	135
Dec '03	145
Mar '04	150
June '04	150

## What our customers are saying...

*"You guys are great, keep up the good work getting us new opportunities"* — Foundry executive, Cleveland

*"We have to use buyCASTINGS more; you brought us some great jobs"* — Foundry Exec. Ohio

*"Hey, that was quick! Thanks Bob, I appreciate your help."* — Buyer, Indianapolis

*"Just got an order from the customer... It totals about \$210,000.00. Thanks for sending this one my way."* — Foundry owner, Utah

*"How do you find these things, we would have never come across it"* — Foundry Exec, OH

*"I am very, very pleased with the results and your team's efforts. ....team pulled us out of a tight spot."* — Buyer, New York

**VISIT US AT THESE '04-'05 TRADE SHOWS**

**WE ARE ALWAYS LOOKING TO BRING NEW BUSINESS TO OUR MEMBERS**

<p><i>September 19-22, 2004</i> Investment Casting Institute Cincinnati (Covington, KY)</p> <p><i>October 18-21, 2004</i> ASM Materials Solutions Conference &amp; Exposition, Columbus, Ohio</p> <p><i>October 26-28, 2004</i> Fabtech International Cleveland, Ohio</p>	<p><i>Nov. 29-30, 2004</i> Power Generation Orlando, FL</p> <p><i>April 3-7, 2005</i> 3D NASUG Tucson, AZ</p> <p><i>April 16-19, 2005</i> AFS/NADCA CastExpo '05 St. Louis, MO</p>
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## Aluminum Castings Congratulate Winners of The Fastest Motor Sports Event on Earth

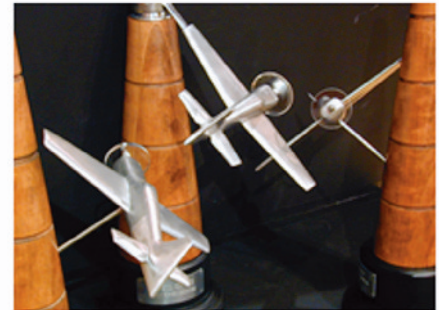
The winners of the **Red Bull Air Race at the 2004 National Championship** Air Races and Air Show in Reno Nevada, Sept 16-19, 2004 were congratulated with trophies made in part by a buyCASTINGS foundry.



**"And the Winner is...."**

The air races takes air racing to new heights as pilots execute gravity-defying aerobatics while navigating through a twisting race course of pylon obstacles stationed 500 feet in front of spectators. It is the fastest motor sport on earth. "It's a style of racing that's never been seen before in the U.S.," says three-time U.S. Aerobatics Champion Kirby Chambliss, who loves flying low to the ground while performing incredible aerobatic maneuvers. "We're right up in your face."

Artist Peter Weiss, head of operations at Arts Industria, a New York City design company contacted buyCASTINGS only one week prior to the Reno event and wanted to get some replicas of racing planes to become the centerpiece for the trophies. Using its large consortium of foundries buyCASTINGS quickly found an Ohio aluminum foundry willing to take on the challenge. The Arts Industria's clay model was overnight shipped to the foundry and arrived Friday. The foundry used the model as a loose piece pattern for its plaster molding process. Molds were made late Friday, cast Saturday and finished Sunday and shipped to Arts Industria on Monday. Tuesday Arts Industria mounted the planes on the trophy base (see photo right) and overnight shipped them to arrive the day of the race.



**And the Winner's Trophy is...  
Cast Aluminum "Flying Planes"**

Peter Weiss, head of operations at Arts Industria was quoted as saying "I am very, very pleased with the results and your team's efforts. ....team pulled us out of a tight spot." So, the next time you need a winning strategy and want to be the first to the finish line, feel free to put the buyCASTINGS network to work for you! Call Bob at 937-259-1341.

**ASHLAND** 800-848-7485

Delivering Metal Casting Solutions One Customer At A Time

### CRUISE WITH buyCASTINGS JUNE 2005

buyCASTINGS joins the 3D North American Stereolithography Users Group on a wonderful 7 day Southern Caribbean cruise on Royal Caribbean's Adventurer of the Seas. The cruise leaves from San Juan on June 12th. We have some great group rates and you may even win a cruise. (Given to one of the cruisers during the cruise.) Call Bob @ 937-259-1341.



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