

# INVESTMENT CASTING MARKET OVERVIEW NORTH AMERICA

INVESTMENT CASTING INSTITUTE  
SPRING MANAGEMENT MEETING

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Executive Director



## ■ Overall Industry

- **Recovery on the horizon ?**
- **Globalization**
- **Significant Offshore Sourcing (S.O.S.)**
- **Consolidation continues**
- **Inventories depleted**



## ▪ **Segment summary**

- **Aerospace – commercial – recovery in 2005  
military – increased demand**
- **Power Generation – appears to have stabilized  
overcapacity in N. America**
- **Automotive - activity in complex applications**
- **Sporting / Recreational – limited opportunities**
- **General Industry – should grow with overall economy**



- **Aerospace**
- **Industrial Gas Turbines**
- **Automotive**
- **Sporting/Recreational**
- **General Industry**



## ■ **Aerospace**

### ➤ **Jet Engine**

- ◆ **Blades & Vanes (Airfoils)**
- ◆ **Integral Wheels & Nozzles**
- ◆ **Hardware and Structures**

### ➤ **Airframe**

- ◆ **Hardware and Structures**

### ➤ **Missile & Rocket Components**

### ➤ **Other Military Ordnance**



- **Industrial Gas Turbines**
  - **Blades & Vanes (Airfoils)**
  - **Hardware and Structures**
  - **Turbine and Combustor Components**



## ■ **Automotive**

- **Valves**
- **Turbocharger Components**
- **Complex Powertrain Parts**
- **Chassis Applications - Passenger Car and Motorcycle**



- **Sporting/Recreational**
  - **Golf Club Heads**
  - **Other Recreational Equipment**
    - **High Performance Bicycles**
    - **Skate Boards**
    - **Roller Blades**
    - **Personal Water Craft**





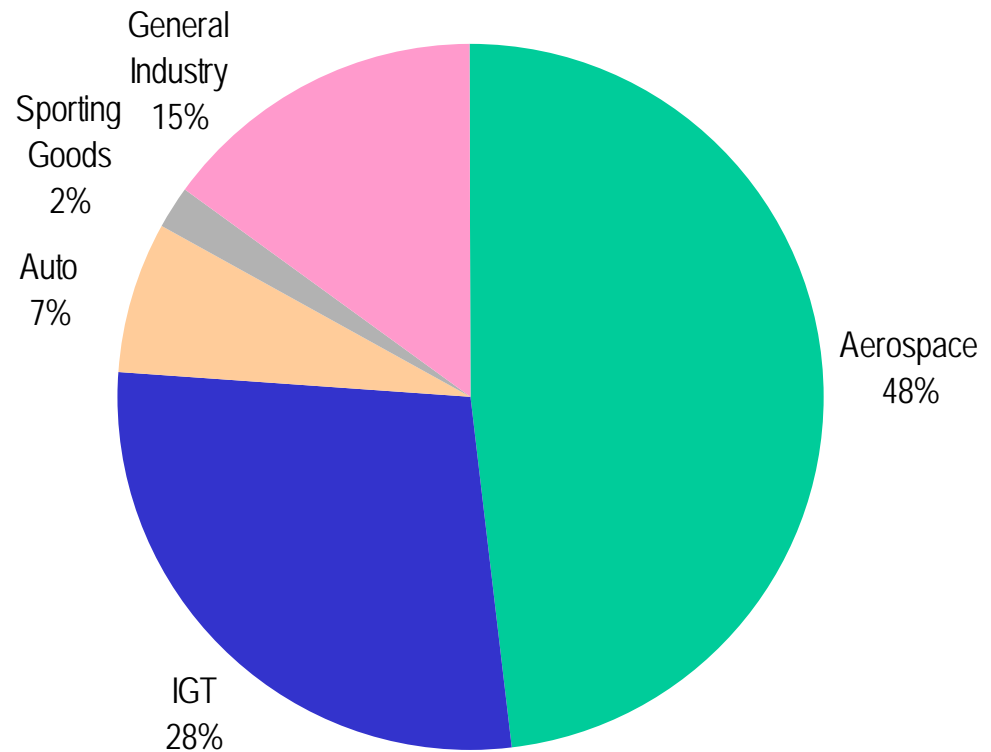
- **General Industry**
  - **Medical**
  - **Industrial Valves / Pumps**
  - **Petrochemical**
  - **Food Processing**
  - **Off-Road Equipment**
  - **Firearms**
  - **Building Equipment**
  - **Hand & Power Tools**

# North American Investment Casting 2003 Sales (\$ Million - USD)



Aerospace	1,450
IGT	850
Automotive	200
Sporting / Recreational	70
General Industry	460

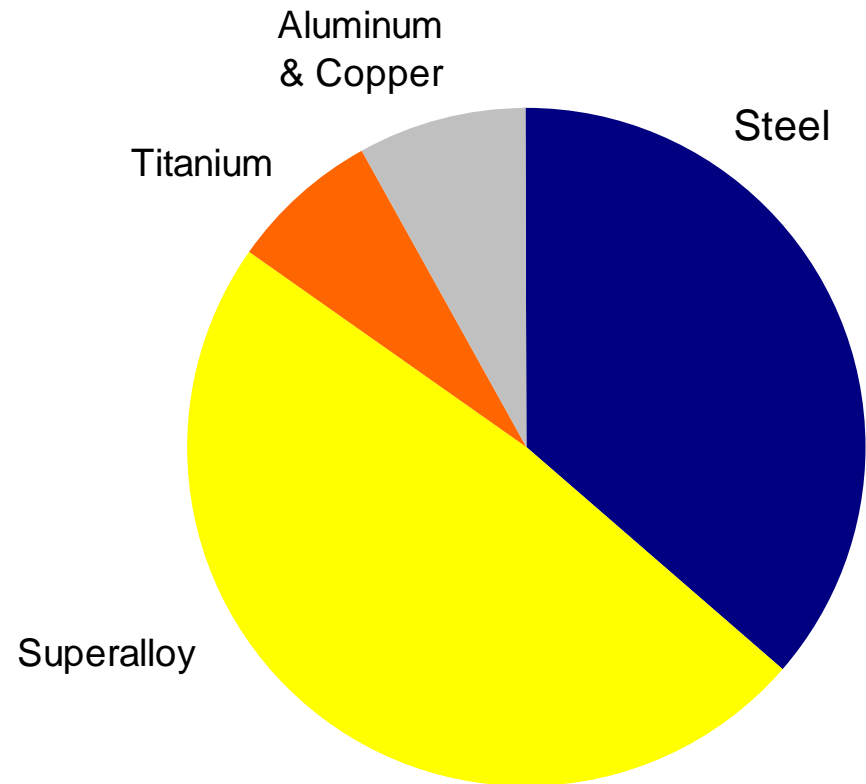
**TOTAL: \$3,030**



# North American Investment Casting Market by Alloy Type

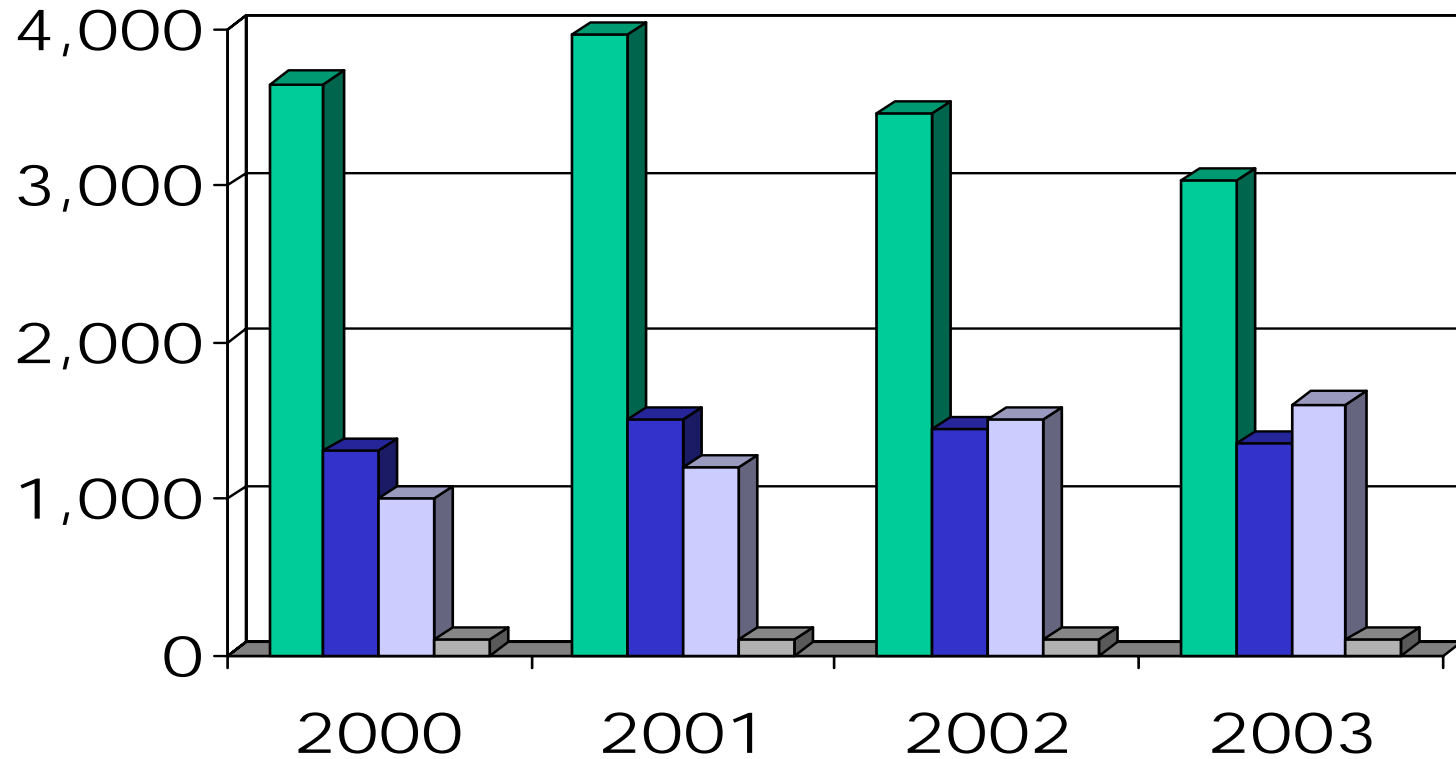


Aluminum & Copper:	8%
Titanium:	7%
Steel:	37%
Superalloy:	48%

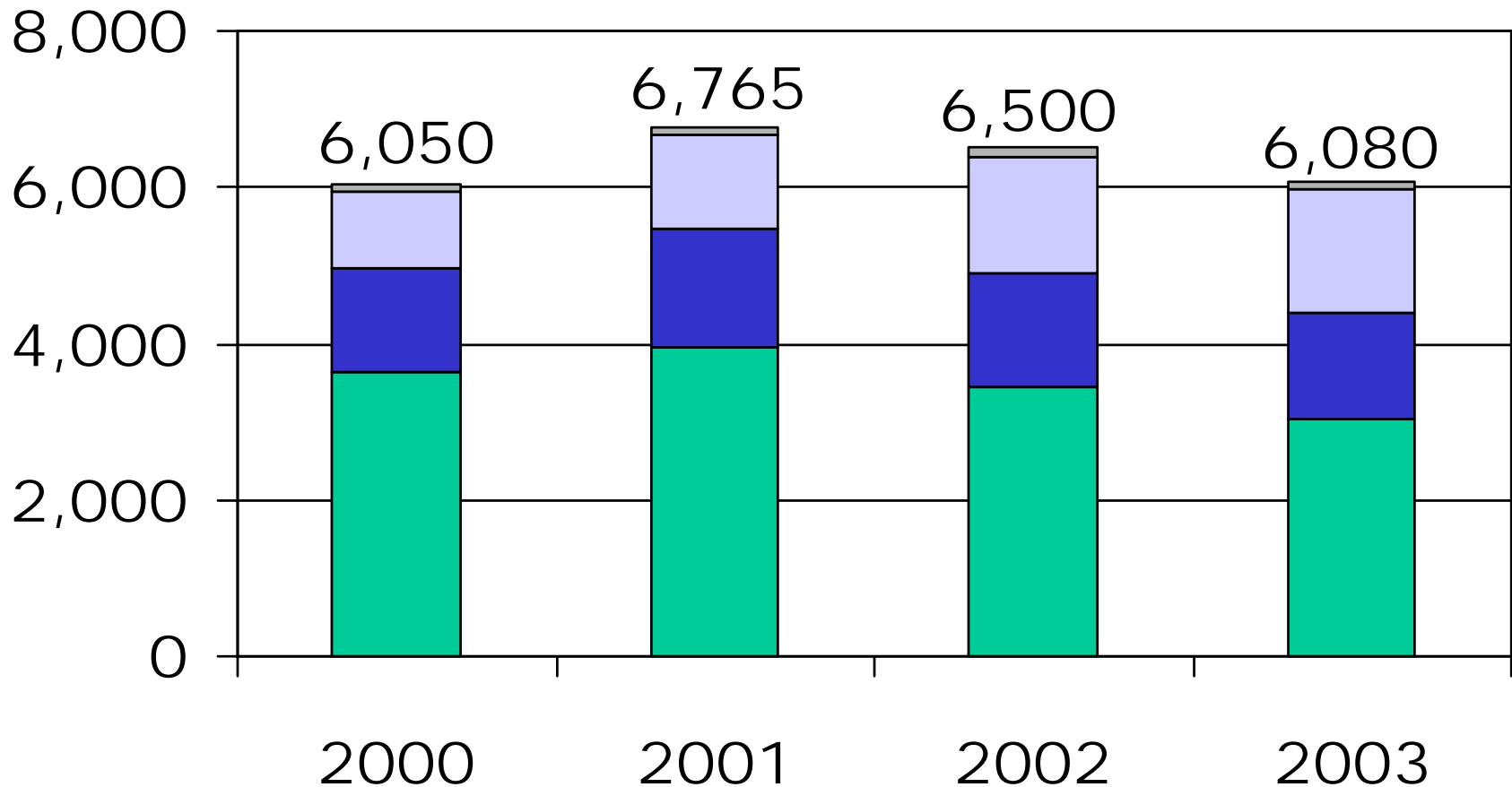


**2003 Casting Dollars  
\$3.030M**

# Investment Casting Worldwide - \$(million)

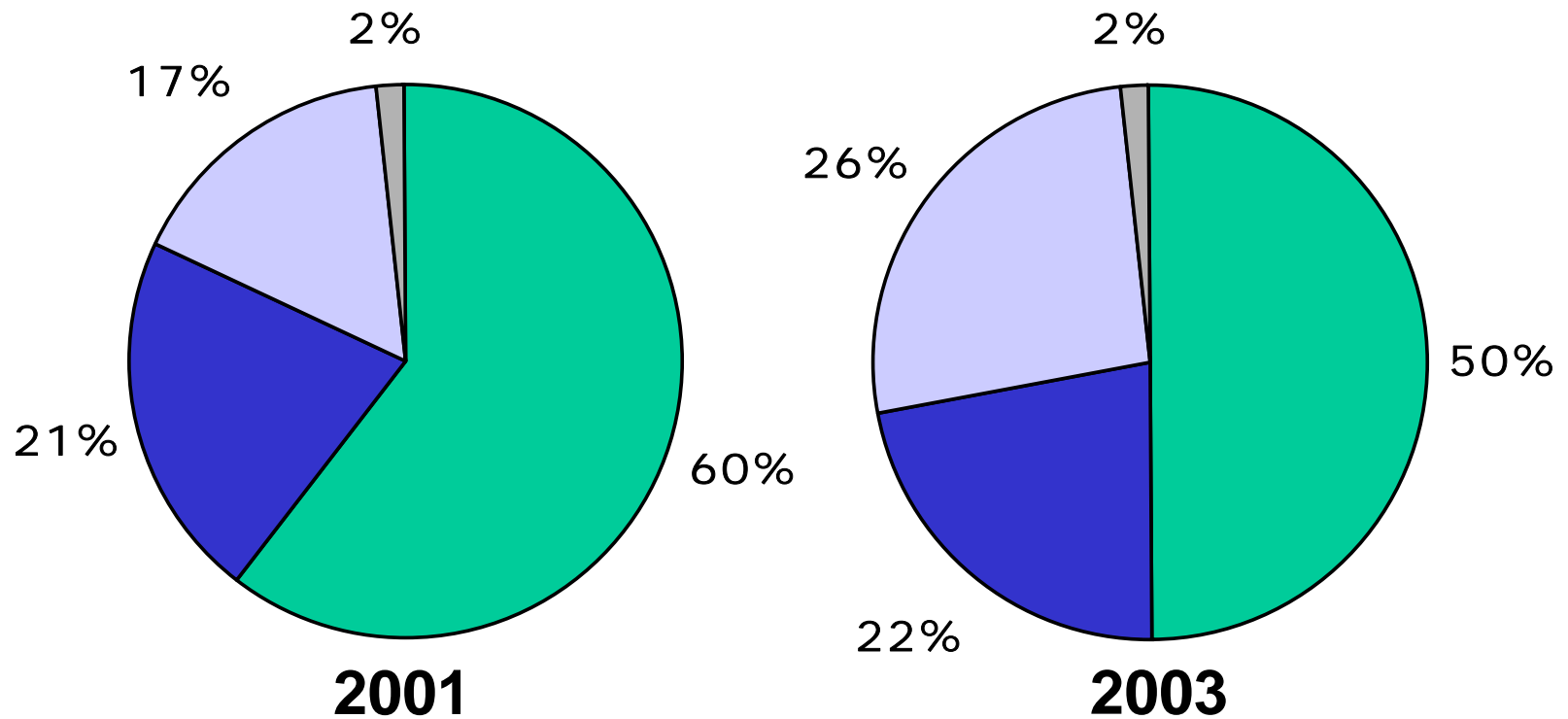


# Investment Casting Worldwide - \$(million)



■ N. America ■ Europe ■ Asia ■ Other

# Investment Casting Worldwide

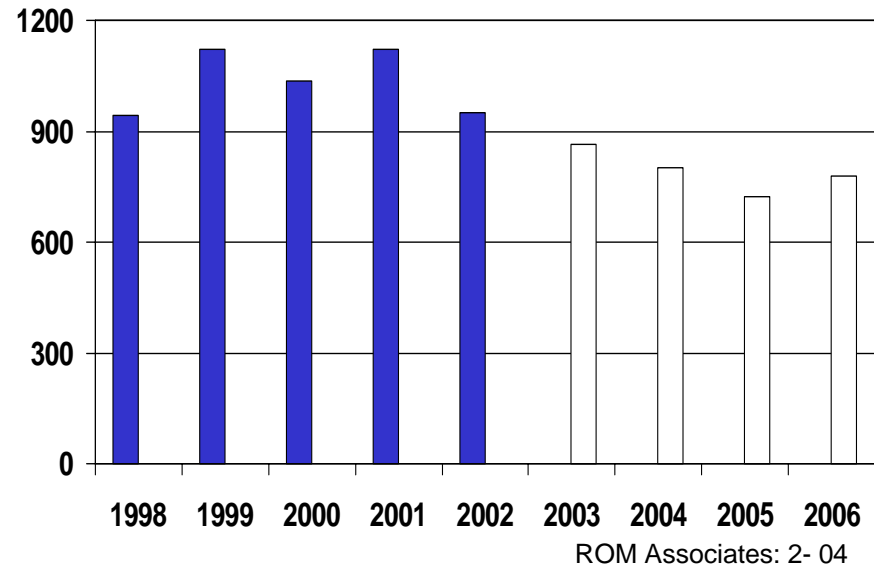




## *Some positive signs*

- Increase in traffic
- Increase in load factor
- Decrease in Parked Aircraft
- 2004-2008 build forecast avg. 800 / year
- Large Asian Market
- New Programs
  - A380
  - 7E7
  - China Regional

## New Aircraft Builds > 50 Passenger





## *Still some concern*

- **Airline losses continue**
- **Fuel prices still high**
- **Future of several large carriers in doubt**
- **USA Regional retrofit complete**
- **Recovery assumes no additional external shocks**





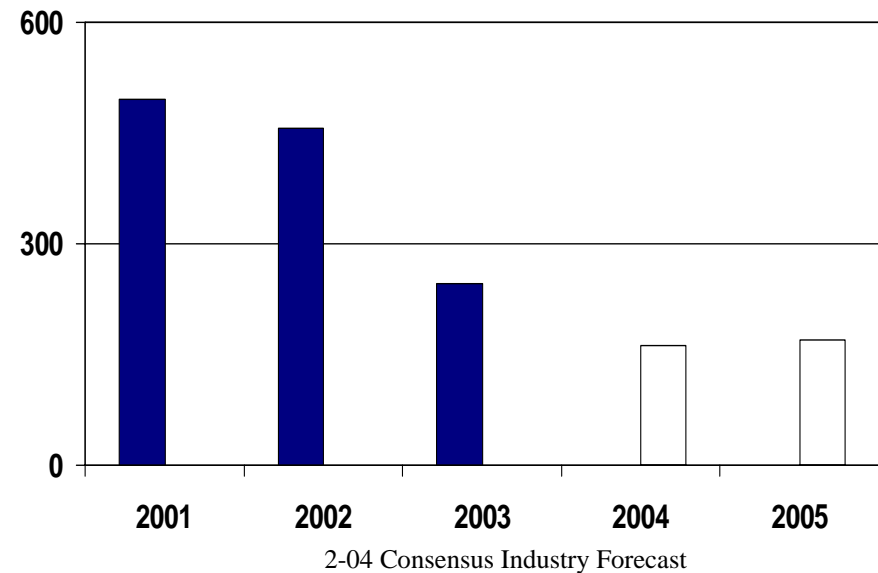
- **Iraq War increases demand**
- **Inventories Depleted**
- **Activity in engine spare parts for Fighter, Helicopter and Transport aircraft**
- **Advanced Missile programs, Smart Munitions / UCAVs**
- **Rapid Deployment**
  - **Lightweight Armament**





- **Casting Market has bottomed out**
- **Modest growth forecasted**
- **Overcapacity in N. America**
- **Spare parts increasing with installed base**
- **Short term – Iraq requirements – 50Hz**
- **Long term growth in Asia**

**New Land-based  
Turbine Builds – 50MW +**





- **Growing market for new casting applications**
- **Driven by new emission standards and fuel efficiency**
- **Significant Turbocharger activity**
- **Trend toward complete assemblies with design & warranty responsibility**
- **Increasing interest in Titanium and Titanium Aluminide alloys**
- **Long time required to introduce new castings**



- **Primarily stainless steel & titanium golf club heads**
- **Business continues to migrate to Asian sources**
- **“Fad” market**
- **Recent trend toward forged designs**



- **Widely dispersed among many casting suppliers**
- **Significant sourcing activity in Asia, Mexico and Eastern Europe**
- **Overall, should improve with growth in economy**
- **Inventories need to be replenished**
- **Need to find Niche market applications**
- **Need to develop new casting applications with Value Added operations**

# North American Investment Casting 2004 Estimated Sales (\$ Million - USD)



		<u>% Change</u>
<b>Aerospace</b>	<b>1,500</b>	<b>3</b>
<b>IGT</b>	<b>900</b>	<b>6</b>
<b>Automotive</b>	<b>220</b>	<b>10</b>
<b>Sporting / Recreational</b>	<b>70</b>	<b>-</b>
<b>General Industry</b>	<b>480</b>	<b>4</b>
<b>TOTAL:</b>		<b>+4.6%</b>

# 2004 Forecast Comparison



	<u>% Change</u>
<b>ICI</b>	<b>+ 4.6</b>
<b>GDP</b>	<b>+ 4.2</b>
<b>Ind. Production</b>	<b>+ 4.7</b>
<b>*Metal Casting</b>	<b>+ 5.1</b>

\* Stratecasts, Inc. forecast



- **Overall North American market will show modest growth**
- **Specific market segment growth opportunities**
- **Globalization and Industry consolidation continues**
- **Off-Shore Sourcing effect on N. American foundries?**
- **Opportunities for new casting applications**





**The Investment Casting Institute wishes to acknowledge the following Member Companies for their contribution to this report.**

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- Wyman Gordon**