



# INVESTMENT CASTING MARKET OVERVIEW NORTH AMERICA

INVESTMENT CASTING INSTITUTE  
SPRING MANAGEMENT MEETING

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## ■ **North American Investment Casting Industry**

- **Overall increase in activity**
- **Globalization**
- **Offshore Sourcing**
- **Consolidation continues**



## ▪ **Segment summary**

- **Aerospace – commercial – recovery, but with concerns  
military – increased spares demand**
- **Power Generation – Significant spare part stream  
Increase in New Builds forecasted**
- **Automotive - activity in complex applications  
& Turbocharger Systems**
- **General Industry – growing with overall economy**



- **Aerospace**
- **Industrial Gas Turbines**
- **Automotive**
- **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



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





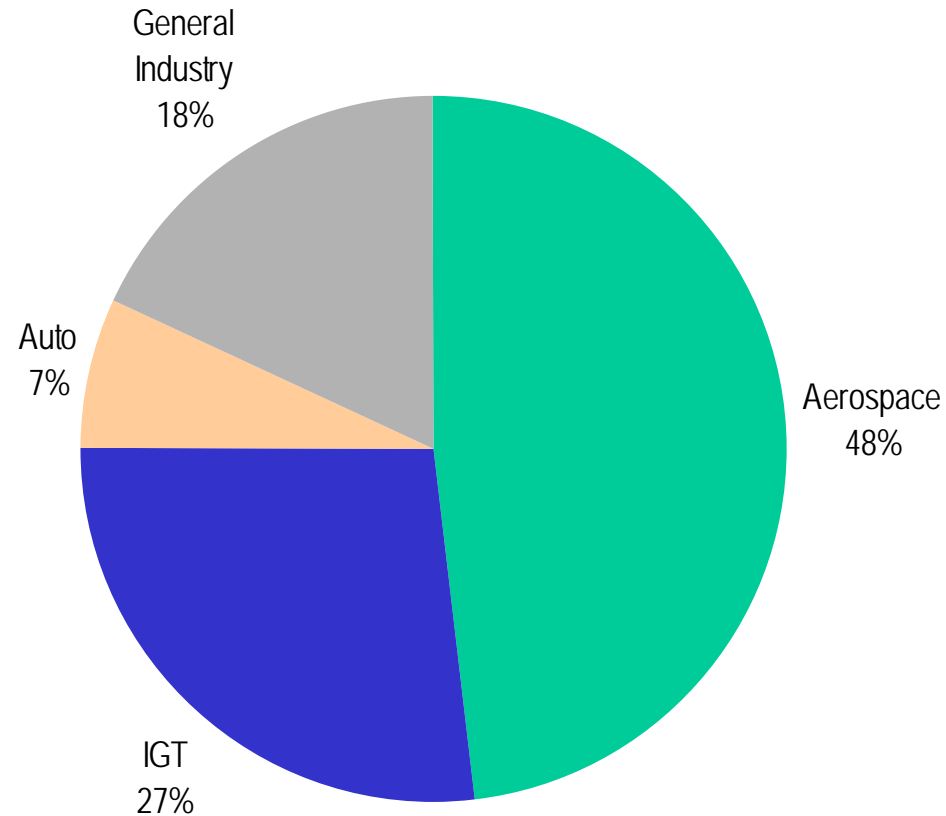
- **United States, Canada & Mexico**
- **Approx. 50% of worldwide investment casting production**
- **130 companies**
- **170 foundries (not including dental, art or jewelry)**
- **30,000+ direct workers**
- **All market segments**
- **All 'castable' alloys**
- **All size capability**

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



Aerospace	1,500
IGT	850
Automotive	225
General Industry	525

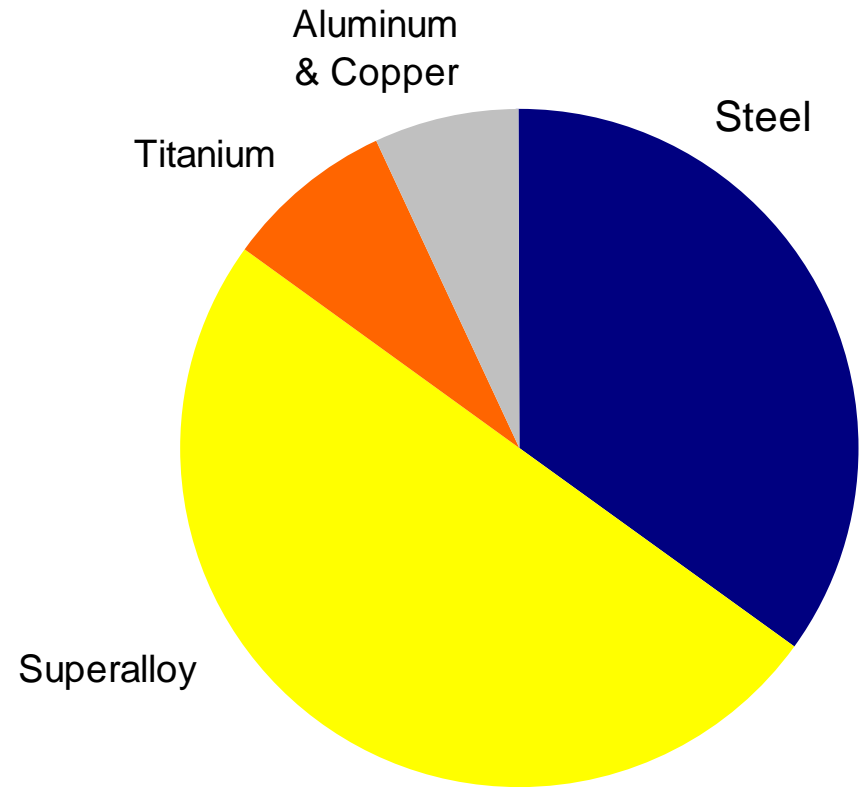
**TOTAL: \$3,100**



# North American Investment Casting Market by Alloy Type



Aluminum & Copper:	7%
Titanium:	8%
Steel:	35%
Superalloy:	50%



**2004 Casting Dollars  
\$3.100M**

# Worldwide Investment Casting

(\$ Million - USD)



**2004**

**North America**

**3,100**

**Europe**

**1,600**

**Asia**

**1,600**

**Other**

**100**

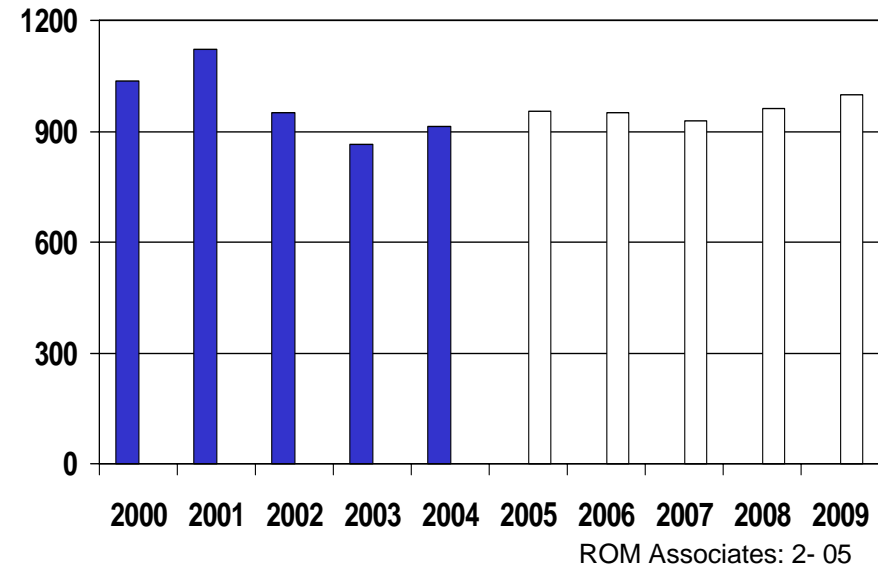
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**TOTAL: 6,400**



- **Increase in traffic**
- **Increase in load factors**
- **2005-2009 build forecast avg. 950 / year**
- **Large Asian Market**
- **New Programs**
  - **A380**
  - **A350**
  - **787(7E7)**
  - **China Regional**

**New Aircraft Builds  
> 50 Passenger**





## ***Concerns***

- **Airline losses continue**
- **Overcapacity**
- **Future of several large carriers in doubt**
- **Low Cost Airlines 're-shaping the jungle'**



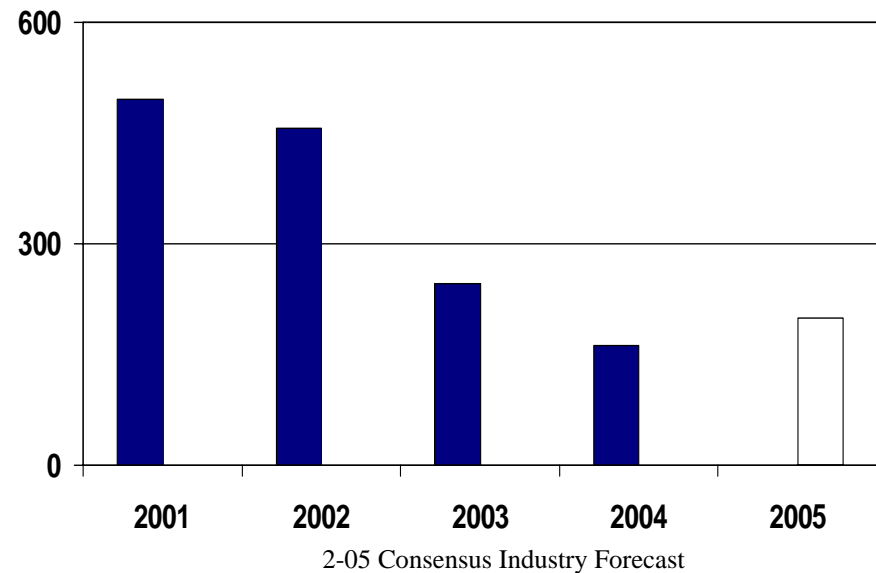
- **Overall Increase proposed for D.O.D Budget**
- **Near Term demand for engine spare parts for Fighter, Helicopter and Transport aircraft**
- **Major Procurement Cuts Expected**
- **Future Combat Systems**
  - **Advanced Munitions programs**
  - **Lightweight Armament**





- **2<sup>nd</sup> largest IC segment**
- **Significant spare parts business**
- **New build growth forecasted**
- **Overcapacity in N. America**
- **Long term growth in Asia**
- **Growing 'After Market'**

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







- **Growing market for new casting applications**
- **Driven by new emission standards and fuel efficiency**
- **Significant Turbocharger activity**
- **Increasing demand for Titanium**
- **Corporate commodity purchasing**



- **Widely dispersed among many casting suppliers**
- **Applications across all industries**
- **Many Niche opportunities**
- **High volume applications susceptible to offshore sourcing**
- **Overall, should continue to improve with growth in economy**

# North American Investment Casting 2005 Estimated Sales (\$ Million - USD)



		<u>% Change</u>
<b>Aerospace</b>	<b>1,600</b>	<b>7%</b>
<b>IGT</b>	<b>900</b>	<b>6%</b>
<b>Automotive</b>	<b>250</b>	<b>11%</b>
<b>General Industry</b>	<b>550</b>	<b>5%</b>
<b>TOTAL:</b>		<b>+6%</b>
	<b>3,300</b>	

# 2005 Forecast Comparison



	<u>% Change</u>
<b>ICI</b>	<b>+ 6</b>
<b>GDP</b>	<b>+ 3.5</b>
<b>Ind. Production</b>	<b>+ 3.4</b>
<b>DeWolf - Commercial</b>	<b>+ 3%</b>
<b>- Aero &amp; IGT</b>	<b>+ 8%</b>
<b>*Metal Casting</b>	<b>+ 3.7</b>

\* Stratecasts, Inc. forecast

# Summary



- **Overall North American IC growth should continue**
- **Globalization and Industry consolidation**
- **Off-Shore Sourcing effect on N. American foundries?**
- **Opportunities for new casting applications**
- **Need to focus on market Niches**



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