



# EMIRATES TECHNO CASTING

## TRENDS OF STEEL CASTING INDUSTRY IN VALVES AND PUMP PRODUCT APPLICATIONS

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# RADHAKRISHNA KESANI

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- From Hyderabad, India
- Bachelor of Mechanical Engineering, Osmania University, Hyderabad, India
- MBA – TAPMI, Manipal, India
- **25+ years experience mainly in Industrial sales, business development and operations**
- **Career path**
  - Ingersoll Rand
  - Volvo Construction Machinery
  - Pentair ETC – Currently responsible for Sales & Operations of Emirates Techno Casting business unit of Pentair

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## PENTAIR - EMIRATES TECHNO CASTING

# TODAY'S DISCUSSION

- What's driving developments in castings?
- A closer look at the market factors that have influenced steel casting trends
- Understanding customer and application challenges
- Foundry industry in the next five years

# DEVELOPMENTS IN STEEL FOUNDRY

A closer look at the major industry changes

# FOUNDRY MARKET TRENDS

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## UNDERSTANDING THE DRIVERS FOR CHANGE IN THE CASTINGS MARKET

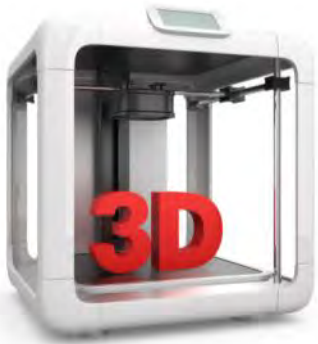
- Aggressive EPC schedules are leading to shorter lead times
- Requirements for thicker walls and impacts on increased NDT
- Move to superior grade material specifications for critical applications
- Valve manufacturers seeking value added services, such as pre-machined castings
- Technology base tapering off, particularly amongst low cost foundry market
- Price sensitive marketplace

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**Identifying opportunities to add value**

# CREATING COMPETITIVE ADVANTAGE

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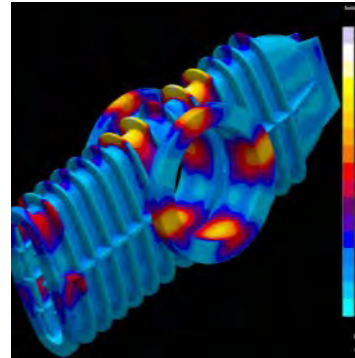
## 3D PRINTING

- Rapid production without pattern and molding process
- Suitable for core supplies
- Rapid prototyping
- Unlimited design freedom
- Complex internal geometry
- No dimension limit



## NDT

- Moving to 'one stop' NDT services
- Advances in testing equipment – X-ray Linear Accelerator



## MODELLING AND DYNAMIC ENGINEERING

- Sophisticated CAD capability
- Magma modelling and solidification software to enhance casting quality



## SAND RECLAMATION

- Move towards “Zero Landfill” regulation – Need for reclamation

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**Maximizing quality**

# WHERE ARE WE NOW AS AN INDUSTRY?

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## STRENGTHS

- Steel continues to be a key element in all the industrial applications
- Industry demand for castings continues; No established substitutes are found as yet
- Sophisticated Technology available in all regions/worldwide

## WEAKNESSES

- Extensive testing requirements and material upgrades to meet technical requirements vs. other alternatives
- NDT Testing capacity constraints
- Capital-intensive industry to maintain productivity and compliance
- Talent attraction is a challenge

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## OPPORTUNITIES

- Extensive scope for innovation
- 3D Printing apt for API Pump After-market opportunities for low volume and short lead time production
- OEMs involvement during their product development at the foundry
- Different market segments available for risk mitigation

## THREATS

- Cyclical demand in end markets
- Forex stability
- Stringent environment regulations
- Closed die-forging

# MARKET FACTORS

Understanding dynamic market trends and their impact on steel foundries



# O&G INDUSTRY DYNAMICS

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- Major accidents drive superior specifications and increased testing
- Industry dynamics creating a shift towards bigger size / higher pressure designs
- Quality issues have seen a preference for high quality, certified castings
- Material integrity is under high scrutiny with increased testing and inspection
- Increased end-user involvement in casting sourcing



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**Keeping pace with dynamic market changes**

# UNDERSTANDING CUSTOMER DRIVERS

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## MANUFACTURERS WANT PRODUCTS FULLY MACHINED AT THE FOUNDRY

- Particularly in the valve and pump market
- Requires investment for machining value addition

## COMPETITIVE MARKETS

- Greater pressure on price
- Foundries to focus on high productivity and automation to meet competitive pricing

**Dynamic** markets create **opportunities** for **collaboration with customers** for **value additions** leading to **further growth** avenues

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**Building collaboration for success**

# MARKET OPPORTUNITIES

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**EMERGING AND DEVELOPING MARKETS OFFER AN EXCITING FUTURE**



# MEETING CUSTOMER AND APPLICATION CHALLENGES

Exploring the driving forces behind future industry change in the foundry market

# UNDERSTANDING CHANGING NEEDS

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- Increasingly stringent quality standards drive changes in component design, engineering, manufacture and testing
- Higher grade material preferences for severe service applications and higher pressures and temperatures
- Move towards higher value exotic material grades
- Drive for more sustainable environmental, health and safety practices
- Industry context reflects slow demand across industrial sectors
- Customers keen on ERP systems providing latest production status through online portals
- Foundries are outsourcing certain processes in order to reduce costs

2009	2010	2011	2012
9mt	10.2mt	10.3mt	11.3mt

## Global production totals for steel (million tons)

SOURCE: World Casting Production Census, Modern Casting

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## Keeping pace with dynamic market changes

# A LOOK AHEAD...

The foundry market in the next five years

# WHERE ARE WE TODAY?

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## IDENTIFYING THE FACTORS THAT WILL IMPACT ON FUTURE CHANGE

- Highly competitive and fragmented marketplace
- Exposure to market fluctuations
- Industry accreditations becoming more prevalent
- Sourcing through Global supply frameworks
- Meeting high quality standards to guarantee reliable performance
- Superior materials to resist corrosion and perform in critical applications

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**Dynamic and demanding market**

# TRANSFORMATION BEYOND 2015

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## THE FUTURE OF THE STEEL FOUNDRY INDUSTRY

- Leveraging LEAN manufacturing capabilities
- Widespread customers, diverse industries and product mix
- Focus on value added services
- Continued stringent quality standards and emerging NDT testing technologies
- Rapid developments in prototype castings and material grade refinements
- Expand beyond one industry for steady growth
- Offer lucrative career paths to attract talent
- Industry-institute partnership to address some of the foundry industry challenges
- CSR – Foundry's contribution to society



Expect **steady growth** as foundries **expand** their product mix and **invest** in new innovations to **add value** to customers' operations

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**Grow in a competitive, dynamic industry**



# THANK YOU

Any questions?