

THE GLOBAL CASTINGS INDUSTRY (OVERVIEW)

ГЛОБАЛЬНОЕ СОСТОЯНИЕ ЛИТЕЙНОЙ ПРОМЫШЛЕННОСТИ (ОБЗОР)

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A brief analysis of the state of the foundry industry around the world reflecting on political and economic factors that are currently affecting the demand and supply of castings is given. The figures of the global output and break this down into the top producing countries with specific information on the figures and efficiency from these countries are provided.

Finally a short discussion on the state of global factors affecting the industry, covering demand drivers and changes in the political and social environment and how these will affect foundry industry in the short and medium future is provided.

Дается краткий анализ состояния литейной промышленности во всем мире, описываются политические и экономические факторы, которые в настоящее время затрагивают спрос и предложение в литейной продукции. Приводится информация по мировому производству литья и по деятельности основных стран-производителей с конкретной числовой информацией по этим странам.

В заключение дается краткое обсуждение состояния глобальных факторов, затрагивающих литейную промышленность, включая спрос и изменения в в политическом обстановке и социальной среде. Даются некоторые мысли о том, как эти факторы затронут нашу промышленность в ближайшем и среднесрочном времени.



THE GLOBAL CASTINGS INDUSTRY

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TO BE ADDRESSED IN PRESENTATION:

- ▶ Overview of the World Foundry Organization
- ▶ Global Uncertainties
- ▶ General Thoughts on the Global castings Industry
- ▶ Specific Statistics on the leading nations
- ▶ Thoughts for the future





THE WORLD FOUNDRY ORGANIZATION

- ▶ Global Technical Association
- ▶ Supporting 30 Member Countries
- ▶ Annual Technical Event
- ▶ Working Groups



MEMBERS

- | | |
|--------------------------|----------------|
| Austria | Switzerland |
| Australia | China |
| Belarus | Croatia |
| Bosnia Herzegovina | Czech Republic |
| Germany | Denmark |
| Spain | Egypt |
| France | Finland |
| Great Britain | Hungary |
| India | Japan |
| Italy | Korea |
| Mexico | Norway |
| Poland | Romania |
| Sweden | Slovenia |
| South Africa | Turkey |
| United States of America | |

TECHNICAL FORUM

- ▶ Held every 2 years 2017, 2019, 2021
- ▶ 2017 Held Earlier this year In South Africa
- ▶ 2019 In Conjunction Slovenian Foundry Event
- ▶ 2021 In India



WORLD FOUNDRY CONGRESS

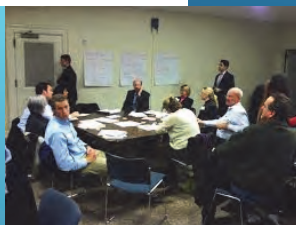


- ▶ 2016 Held in Nagoya Japan attracting over 1000 delegates
- ▶ 2018 will be in Krakow, Poland
- ▶ 2020 will be in Korea
- ▶ 2022 will be Italy



WORKING GROUPS

- ▶ Training and Professional Development
- ▶ Energy Saving and the Environment
- ▶ Cast Composites
- ▶ Non Ferrous Metals
- ▶ Ferrous Metals
- ▶ Moulding Materials



*The Moulding Materials Working Group will hold a conference in Seoul Korea, in November this year. The Diecasting Group is to hold an event in January 2018 in Germany.



GLOBAL UNCERTAINTIES

- ▶ Markets affected by > 50 global conflicts, ie:
 - * Russia
 - * Ukraine
 - * Syria
 - * Iran
 - * Iraq
 - * Pakistan
 - * Turkey
- ▶ Unease in Global Financial Markets still exist
- ▶ Industry still shows uncertainty and pessimism
- ▶ Capital Investment still generally on hold
- ▶ Exchange rate fluctuations



GLOBAL INDUSTRY

We should remember that our industry:

- ▶ Is the oldest production process
- ▶ Fascinates those people who involved in it
- ▶ Exhibits a level of passion from those who are working in it
- ▶ Is unique in its ability to recycle



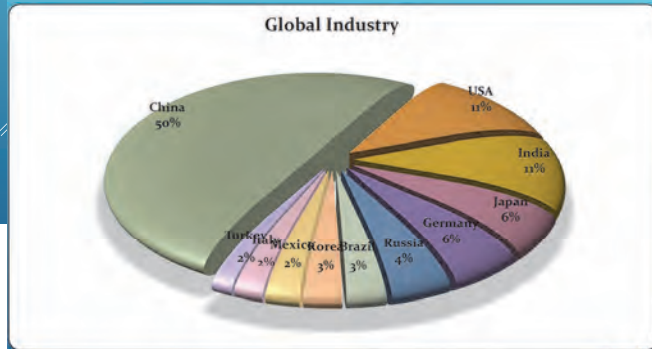
GLOBAL INDUSTRY

We should remember that:

- ▶ Virtually every nation in the world has a casting industry
- ▶ Worldwide output of castings now exceeds 103M tons
- ▶ Metalcasting is key to the improvement in the standard of living
- ▶ Metalcasting is vital to the drive in both aerospace and automotive for fuel efficiency
- ▶ Metalcasting is the oldest production process



GLOBAL INDUSTRY



Figures from Modern castings Dec 2016.



GLOBAL INDUSTRY (Million Tonnes)

1	China 45.6 12 th for Efficiency	6	Russia 4.2 4 th for Efficiency	11	Turkey 1.9 10 th for Efficiency
2	India 10.0 8 th for Efficiency	7	Korea 2.6 5 th for Efficiency		
3	USA 10.4 2 nd for Efficiency	8	Mexico 2.6 6 th for Efficiency		
4	Japan 5.4 7 th for Efficiency	9	Brazil 2.3 9 th for Efficiency		
5	Germany 5.3 1 st for Efficiency	10	Italia 2.0 11 th for Efficiency		

Figures from Modern castings Dec 2015.
Efficiency is tonnage / No of plants



GLOBAL INDUSTRY

Effects on regional production

- Affected by Build near demand
- Mercedes Cars in China
- Bombardier Aircraft in China
- Hyundai Cars in India



GLOBAL INDUSTRY

Influences on Export Markets

- ▶ Currency effects – Strong Euro
- ▶ Energy costs in Europe double that of USA
- ▶ Devaluation in BRICS Countries
- ▶ Growth of New Developing Countries
- ▶ Brexit Effects – Devaluation of the £
- ▶ European Uncertainties



GLOBAL INDUSTRY

Europe

- ▶ Low GDP Growth
- ▶ High Unemployment (Italy 13% & 43% of Youth)
- ▶ High Energy Costs
- ▶ EU Commission Influences
- ▶ Recognizes need for:
 - Industrial Renaissance
 - Solid Manufacturing base to provide growth and employment
 - The centrality of manufacturing & competitive integration



GLOBAL INDUSTRY

Automotive Industry Impact

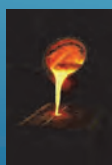
- ▶ More than half of castings produced autos
- ▶ Increasing customer demand for comfort, technology and performance
- ▶ Cars need bigger engines, bigger fuel tanks and stiffer chassis all adding weight
- ▶ Casting Industry meets weight reduction challenge with:
 - * material substitution
 - * thinner walls
 - * converting fabrications to castings



COUNTRY SPECIFICS

China

- ▶ 22% growth in 2002 -2003
- ▶ 8% growth since 2010
- ▶ 3.5% growth last year to 47.2M T
- ▶ Only 27% goes to Automotive
- ▶ Production by metal:
 - * 43% Grey Iron
 - * 28% Ductile Iron (up 5%)
 - * 11% Steel
 - * 15% Aluminum (up 13%)



COUNTRY SPECIFICS

China



- ▶ New Government initiatives for development and growth in the sector
- ▶ Industry will have access to support for the achievement of improvements in 9 key areas
- ▶ Foundries closed or merged due to program to push for high productivity & productivity as well as greater focus on quality.

COUNTRY SPECIFICS

Europe



- ▶ 15.2 M T production similar to 2013
- ▶ 5000 Foundries value of €41.3 B
- ▶ Ferrous output fallen (China +274%)
- ▶ Auto Sector driver for non ferrous increasing
- ▶ Number of foundries falling as is employment. (Aluminum sector trend in upward trajectory - unit numbers stable and manpower growing.)



COUNTRY SPECIFICS

Europe



- ▶ 85% of castings made in Europe used in Europe
- ▶ 15% direct export
- ▶ High growth for castings 2014 – 2018 from Automotive, General Engineering and Construction
- ▶ Optimism is reduced in Europe for 2017
- ▶ Future growth driven by:
 - * development of substitution
 - * smart engineering
 - * additive manufacturing

COUNTRY SPECIFICS

USA



- ▶ 10.5 M T produced by 1978 foundries €32 B
- ▶ Additional 2.3 M T Mexico and .71 M T Canada
- ▶ 2008 – 2010 falling output due to off shoring and high energy costs
- ▶ Currently optimistic with high growth forecasts due to:
 - * low energy costs
 - * high productivity
 - * reduced shipping costs
 - * trend toward re-shoring
- ▶ Imports: 1998 7%
2008 24%
currently 21%



COUNTRY SPECIFICS

India

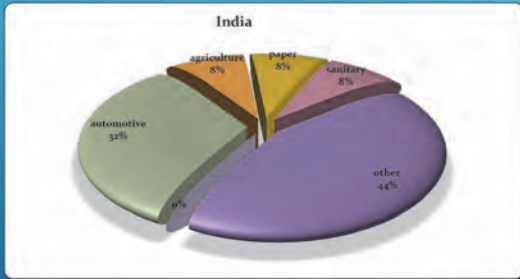


- ▶ 10.7 M T from 4600 foundries
- ▶ 32% automotive, 8% each in agriculture, paper and sanitary castings
- ▶ Output: 69% grey iron, 12% Al
- ▶ 2012 – 13 economic stagnation in India but 10 – 12% growth in foundry sector
- ▶ Industry has many new foundries and some major expansions taking place currently
- ▶ New government strongly supporting industry



COUNTRY SPECIFICS

India



COUNTRY SPECIFICS

Japan



- ▶ 5.4 M T by 2085 foundries
- ▶ Significant problems in Japan:
 - * Economy moving from deflation to inflation
 - * Yen moving from strong position to weak
 - * Country as a whole is in New Territory
 - * Energy costs have risen by 73% (Tokyo area by 92%) since great earthquake in 2011
- ▶ Still 70% of castings for Automotive industry
- ▶ Current new industry vision with 6 points including Management, People, Environmental and Energy



COUNTRY SPECIFICS

Brazil



- ▶ 2.3 M T 1170 foundries
- ▶ Major difficulties in Brazil (lowest output for 10 years):
 - * Presidential Elections causing uncertainty
 - * Little or no Economic or structural policy in place
 - * Output in 2015 reduced from 2014 which was worse than 2013 and been on decline since 2008
 - * 73% of all castings used in Automotive sector
 - * Energy costs concerns even though 75% comes from Hydro and renewables
 - * High taxation and interest rates affected by exchange rates
- ▶ Expectation of doubling vehicle output by 2020 needing an additional 0.5 M T of castings annually now looks unlikely

THOUGHT FOR THE FUTURE

- ▶ German car industry in 2001 50% of cars made in Germany 50% in rest of the world
- ▶ In 2016 that was 30% Germany 70% ROW
- ▶ In Europe Casting production flat between 2004 and 2012 in China 100% growth
- ▶ Casting is still the most important process for manufacturing net shape products
- ▶ We still don't really understand the physics / chemistry of the casting process. Great opportunities still available
- ▶ Huge potential for improvement in all aspects of foundry production
- ▶ Still areas for research available into Die and Tool life, simulation of mechanical properties



THOUGHT FOR THE FUTURE

- ▶ The industry needs Track, watch, and respond to industry trends. Success in the past is no guarantee
- ▶ China has governmental control over foundry development
- ▶ India developing regional clusters for services, which is highly efficient Training, Testing, Simulation, recycling
- ▶ Global output predicted to be 180 M T in 2016
- ▶ Foundry Industry in general more efficient than national economy



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THE GLOBAL CASTINGS
INDUSTRY

Thanks for your
attention

Any Questions

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