Trends in Russian Foundry Industry
Revision 2014

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General data:

1. Territory – 17,100,000 km²
2. Population – 143.7 mln.
4. Total number of foundries – about 1,200
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GDP in Trillions of Dollars

2003  2005  2007  2009  2011  2013
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Structure of GDP in 2013

- Natural resources: 11%
- Processing Industries: 15%
- Electrical Energy: 3%
- Construction: 7%
- Transport & communication: 8%
- Hotels & Restaurants: 1%
- Trade: 18%
- Finance: 5%
- Education and medicine: 7%
- State management: 7%
- Other services: 4%
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IMPORT in Billions of Dollars

Year:
- 2003
- 2005
- 2007
- 2009
- 2011
- 2013

IMPORT in Billions of Dollars:
- 2003: $80
- 2005: $100
- 2007: $150
- 2009: $120
- 2011: $250
- 2013: $300
In 2013 total 1200 foundries produced 4,1 mln. tonn of castings, Export only about 2%
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Import of foundry equipment

Mln. USD

<table>
<thead>
<tr>
<th>Year</th>
<th>2003</th>
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<td>431</td>
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</tbody>
</table>
Production of castings by sectors in 2013:

- Cars, trucks and tractors: 65%
- Electrotechnical industry: 12%
- Heavy and Energy machine-building: 10%
- Chemical and oil industry: 7%
- Construction industry: 3%
- Machine-Tool building: 2%
- Others: 1%
Areas with high quality casting demand:

1. Railway – steel and cast iron parts
2. Oil & gas transport – steel valves
3. Mining – wear parts, Mn steel
4. Aviation – AL and Mg castings

Main need is in steel castings, but trend in increasing of Al and Mg castings.
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Distribution of castings by alloys in 2013

- Cast iron: 70%
- Steel: 16%
- Non-ferrous: 14%
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Distribution of castings by alloys in 2013

Cast iron - 70%
- Ductile iron: 35%
- Grey iron: 55%
- Special: 10%

Steel – 16%
- Alloyed steel: 40%
- Carbon steel: 60%

Non-ferrous - 14%
- AL: 80%
- Mg: 7%
- Cu: 12%
- Others: 0%
- Zn: 1%
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Non-ferrous castings production

Non-ferrous -14% from total

Aluminium - 80% from total non-ferrous
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Distribution of foundries by capacity, 1000 t/year

- <1 t/year: 40%
- 1 - 5 t/year: 36%
- 5 - 10 t/year: 15%
- 10 - 50 t/year: 7%
- 50 - 100 t/year: 2%
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Level of foundries automatization by q-ty of castings produced on:

- 33% Single machines
- 31% Manually
- 22% Semi-automatic lines
- 14% Automatic lines
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Melting of cast iron (by q-ty of castings)

- Cupola: 54%
- Arc furnaces: 2%
- Induction furnaces: 44%
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Trends in melting for cast iron (by quantity of castings)

- Cupolas
- Induction furnaces
- Arc furnaces

2005 vs 2013
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Composition of the melting charge

Deficit of high quality scrap

- Pig iron
- Iron scrap
- Steel scrap

% 70
60
50
40
30
20
10
0

2004
2013
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No-bake and green sand moulding

- **Green sand**
  - 2005: 70%
  - 2013: 50%

- **No-bake**
  - 2005: 10%
  - 2013: 30%
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Structure of workers in foundry industry

- 90.0% Workers
- 9.9% Engineers
- 0.1% R&D

Need in new technologies and equipment from abroad!
Most perspective directions of development:

- Modern moulding equipment
- Production of cold-box cores
- Melting in medium frequency induction furnaces and DC arc furnaces
- Growth in production of high-quality parts from special irons and Al - Mg alloys
- Building of new foundries and reconstruction of existing, more big corporations

Need in new technologies and equipment from abroad!
Influence of latest geopolitical changes

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Turn from WEST to EAST
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Geopolitical changes influencing foundry:

- Reinforcement of co-operation inside BRICS – new bank with 100 billion USD capital

- Reinforcement of co-operation inside Shanghai Cooperation Organization – more members, more trade partners
Geopolitical changes influencing foundry:

- Currency Policy: Russia and China start to trade in RUB and CNY

- Not only equipment, but also financing comes now from EAST, not from WEST

- Equipment from EU and US will not be paid until delivered in Russia
Main conclusions / trends:

- Internal market has big enough value and tendency to grow, Russia continues to import both equipment and castings; Low level of export – will not change soon

- We regret due to the deterioration of relations with EU and hope it will not last long time

- Financing from EAST – preferences to Asian suppliers from major Russian banks

- Preferences to EU companies having production facilities in Russia or in Asia
OUR DOORS ARE OPEN FOR COOPERATION!

THANK YOU!