The European Foundry Industry
Structure, Key Figures, Forecasts
and a brief Insight into Trends

IFF 2014 - Venice

CAEF - The European Foundry Association
European Foundry Industry Key Figures 2013

Production:
15.2 m tons
   Fe: 11.6 m tons; NF: 3.6 m tons

Value:
approx. 41.3 bn €
   Fe: 22.2 bn €; NF: 19.1 bn €

Employees:
284,700 employees
   Fe: 166,200; NF: 118,500

Foundries:
4,958 foundries
   Fe: 2,100; NF: 2,858

Source: CAEF
Casting Production Main Regions

Source: CAEF, moderncasting, national associations, Data 2012
European Foundry Industry Fe-Castings – Second Worldwide

Impact of 2008/2009 followed by slight recovery

Comparison 2012:2000

Source: CAEF (2000 incl. Turkey), moderncasting, national associations
European Foundry Industry NF-Castings – Second Worldwide

Impact of 2008/2009 followed by stable recovery

Comparison 2012:2000

- China: +450%
- CAEF: +12%
- USA: +33%
- Japan: +16%
- India: +324%
- Russia: +17%

Source: CAEF (2000 incl. Turkey), moderncasting, national associations
European Foundry Industry: Materials

- Grey Cast Iron: 40.1%
- Ductile Cast Iron: 30.1%
- Aluminium: 20.6%
- Steel Castings: 6.0%
- Copper Castings: 1.6%
- Zinc: 1.3%
- Magnesium: 0.2%

Source: CAEF, Data 2013
Europe: Ferrous Castings 2010/2013 (sorted by 2010)

Production volume 2013
12.231 million tons

Compared with
the first year after the crisis
2013:2010 = + 4.5%

Source: CAEF
Europe: Non-Ferrous Castings 2010/2013 (sorted by 2010)

Production volume 2013
3.545 million tons

Compared with the first year after the crisis
2013:2010 = + 10.5 %

Source: CAEF
CAEF Number of Ferrous Foundries and Employment

Foundries 2013:2010 = - 4.7 %

Employees 2013:2010 = - 1.8 %

Driven by automotive platform strategies and similar components:
bigger units to manage high volume series.
Plus delayed recovery of investment in equipment

Source: CAEF
CAEF Number of Non-Ferrous Foundries and Employment

Foundries 2013:2010 = + 0.2 %

Employees 2013:2010 = + 9.1 %

These figures are underlining the positive development of the non-ferrous sector as a whole driven by the recovery at the automotive market.

Source: CAEF
Productivity in the European Foundry Industry 2013

- **Ferrous castings average performance:**
  70 tons (2010=55 tons) per employee with a range up to 120 tons

- **Non-ferrous castings average performance:**
  30 tons (2010=22 tons) per employee with a range up to 58 tons

- **Average Company (as an example):**
  - *Gross Production Value (GPO)*
    = 198,300 Euro per employee
  - Amount of material (43.4 % of GPO*) used
    = 86,000 Euro per employee
  - *Gross profit*
    = 75,600 Euro per employee

Source: estimation by CAEF and BDG 2012, * in percent of GPO (raw materials and supplies, without energy)
Export quota European Foundry Industry 2013

- Export quota total (including deliveries inside Euro area) 36 %
- Export quota Euro area 22 %
- Export quota outside Euro area 14 %
- = castings are produced where castings are needed: >85 % delivered directly within the Euro area!

The end use of European castings is all over the world!

Source: estimation by CAEF
Economy: Current Status and Forecasts

Picture: Fotolia
Euro area Purchasing Manager Index (PMI) Sept 2014

- A closer look at the sectors in Sept
- Positive level yes (>50 points), but dropping significantly!

Source: Markit
Euro area GDP vs Purchasing Manager Index (PMI) Sept 2014

- Close relation GDP and PMI
- PMI is the earliest available information on the current status
- PMI is no forecasting tool!

Source: Markit
EURO Area Gross Domestic Product Quarter over Quarter

Change in % qoq

Source: Eurostat, forecast 3Q 14 – 4Q 15 Dekabank
Forecast of Foundry Production until 2018
by IKB Bank
Forecast until 2018: Background

• **Growing need for castings** on a global level

• Based on the development of the **vehicle industry**, passenger cars as well as truck industry!
  Driving forces are
  - the growing wealth in the emerging markets (passenger cars)
  - and the tight regulations for the truck industry
to improve emmission standards and energy efficency

• Impulses for **general engineering** will come from
  - chemical industry
  - food industry and
  - energy sector

• **Building industry** will be shaped by
  - booming infrastructure investments in the emerging markets
  - and a slight recovery in Europe as well as
  - positive development in the USA

Source: IKB
Forecast until 2018: Iron and Steel Castings

- Global Iron and Steel Casting Production in Mill. Tons (rounded data)

- Western Europe can hold the level with slight increases
- NAFTA will profit from the reindustrialisation trend in the USA, positive development is expected especially for Mexico
- The market share of China will grow and India has a chance to catch up

Source: moderncastings, CAEF, Forecast IKB
**Forecast until 2018: Aluminium Castings**

- Global Aluminium Casting Production in Mill. Tons (rounded data)

- Western Europe will expand the production while the increase in Eastern Europe will be more dynamic
- The positive growth rates expected for the NAFTA region are mainly based on investments of European OEMs
- China will set the pace in Asia

Source: moderncastings, CAEF, Forecast IKB
A Brief Insight into Trends in the European Foundry Industry beside the Competition of Materials and Casting Processes

- Substitution
- Additive Manufacturing
- Smart Production = Smart Castings

Source: BDG/Soschinski
Current Trend: Substitution
e.g. complexe structural parts, door frame passenger cars

• Before
  Material: sheet steel

• After
  Material: Aluminium DG
  Weight: 4.2kg

• Advantage
  Weight reduction of >14kg!

Source: GF Automotive
Current/Future Trend: Additive Manufacturing

- Not only pattern and mould manufacturing
- In future: finished products on metal base
- Rethinking of construction restrictions to use the potential of additive manufacturing
- No „Killerapplication“ or final „Game Changer“ but an additional business for foundries!

Source: Heinz Nixdorf Institute, Fotolia
Current/Future Trend: Additive Manufacturing in Metal

- Development of new applications using new design rules
- E.g. internal structures
Future Trend: Smart Foundry
Smart Production needs Smart Castings

• Black Magic vs Smart Foundry
• Equipment interactive connected
• Data mining
• Improvement and stabilisation of all processes
• Leads to maximized efficiency
  Energy and Material
  Flexibility, Speed
  etc.
• That’s all?
Future Trend: Smart Foundry
Smart Production needs Smart Castings

- Smart Production is based on communication between produced components and production equipment

- The question: How can a casting be integrated in the communication network of Smart Production?

- One answer: Full (!) Integration of RFID Transponder during (!) the casting process! (pressure die casting)

- Positive: The casting can be identified, perfect for tracking and tracing and the casting is secured to be copied (product piracy)!

Picture: EAA, IFAM, Casttronics
If you have any queries please contact!

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