The present and future status of Japanese foundry industry

Kanetake NAKATANI
Foundry Society, Inc., Room 501, Kikai Shinko Kaikan 3-5-8, Shiba-Koen, Minato-ku Tokyo 105-0011, Japan

Abstract: An introduction is given in detail about the current situation of Japanese foundry industry in 2006 from aspects such as the delivery structure of castings, scale and numbers of foundries, current profit of foundry industry as well as the background of lower profitability, etc. The development trend of Japanese foundry industry was also predicted, such as the transition of foundries from family business to modern company business, the improvement of rejection ratio and yield, application of IT to production and management, human resources and the challenge for zero emission and so on.

Key words: Japanese foundry industry; zero emission; IT; human resources


1 The present status of Japanese foundry industry

1.1 Japanese ferrous castings production (year 2006)

1.2 Delivery structure in 2006

1.3 Transition of foundry's number

1.4 Numbers of foundries (year 2006)

*Kanetake NAKATANI
Male, born in 1944. Chairman of Japan Foundry Society, Inc.
Received: 2008-06-01; Accepted: 2008-07-01
1.5 Current profitability of foundry industry

<table>
<thead>
<tr>
<th>Year</th>
<th>Foundry</th>
<th>Steel</th>
<th>Automobile</th>
<th>Automotive parts</th>
<th>Machine</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>1.6</td>
<td>3.7</td>
<td>5.9</td>
<td>5.3</td>
<td>12.7</td>
</tr>
<tr>
<td>2004</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>10.7</td>
</tr>
</tbody>
</table>

Profit ratio vs sales (year 2006)

Source: Business Corporation Report (related company)
Value Management Index

The profitability of foundry industry is pretty lower than other industries

1.8 Volume of castings from abroad to Japan

Year: 1997-2006

- Import total
- Import from China

73% of imported castings to Japan were from China in 2006

1.6 The background of lower profitability

1. Problems on business customs
   - Pricing based on weight → Lower price as saving weight
   - No shifting price as raising raw material cost
   - No paying storage charge of pattern

2. Worse performance of foundry industry

1.9 Area where Japanese foundries produce castings in the world

1.7 Transition of materials used in auto

(2 liter Sedan, 1,360 Kg)

1.10 Foundation

Three major associations joined together on 1st of July, 2005

Old parties

- JOIFA (Japan Cast Iron Foundry Association)
- JICA (JICA Japan Cast Iron Grade Cast Iron Association)

Members:

- JOIFA (Japan Cast Iron Foundry Association)
- JICA (Japan Cast Iron Grade Cast Iron Association)

Member structure

- No. of member: 1,000
- Foundry: 860
- Relative: 140

A leading association to represent the casting industry of Japan
2 The future status of Japanese foundry industry

2.1 Introducing management technique

- TQM (Total Quality Management)
  - Company vision
  - 7 QC tools
  - PDCA cycle
- TPM (Total Prevent Maintenance)
  - Daily maintenance
  - Zero down time
- S S
  - Seiri • Seton
  - Seiketsu • Shitsou
  - Shainke
- JIT (Just in Time)
  - Less inventory

2.2 Clarify the rejection factors

- Improve rejection ratio, yield ratio and other problems

Collaboration
(2) Foundry industry, academia and government collaborating to solve for difficult factors

Each foundry
(1) Clarify easy reject factors by management technique and standardization

2.3 Application of advance evaluation

- Active application with know-how + IT tools
- Example on rejection reduction

2.4 Active application of IT for management

- Management items
  (1) Advance evaluation
  (2) Material management
  (3) Order management
  (4) Cost management
  (5) Schedule management
  (6) Quality control
  (7) Record management
  (8) Inventory control
  (9) Delivery management

(1) Quick and exact decision making
(2) Unification of management information
(3) Conduct by full participation
2.5 Improvement and enforcement of business custom

Foundry industry
1) Strong petition and through negotiation for users
2) Hot-blooded meeting with user's associations
3) Support on R&D for small & medium scale foundry

Government
(1) Recommending to user's associations to improve business custom
(2) Establish inspection organization

User's activity
Making the guide line for business custom by oneself and declaring it's observance

2.7 Human resources by industry-academia-government cooperation

(1) Establishment of "Casting College"
2007: - Nagoya
- Osaka
- Hokkaido
2008: - Kanto
- Hiroshima
(2) Established graduated school of casting
- Kucuo Univ.
- Kinki Univ.
(3) Local supplement, primary school for management, technique, IT and others in local foundry associations

2.6 Enforcement on exchange with user & government

- Be a best partner with customers -

METI
Ministry of Education
... Foundry
industry
Japanese Foundry Society, Inc.
JFSE Inc.
University/Institute,
other field academic party

Customer

Automotive

Various machine

Machine tool

Automotive part

Construction

OEM, ODM, OBM

Examples of recycled goods
Concrete blocks
Water depurator
Deodorant
Boil modified agent

2.8 Challenge for zero-emission (harmony with environment)

Industrial waste formed in domestic foundries and its treatment status:

Disposal
Recycling
of own plants
Disposal
2003
602 kg/1000 tons castings
2007
341 kg/1000 tons castings

Reference: "Inspection report for reuse and changing system" issued by JFS, Inc., Feb. 2004