Introduction of High Efficiency Once-through Boiler In Golf Ball Factory of PT. Sumi Rubber Indonesia

By. Akmal M Kartajaya
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1. Project Overview

1.1. Location of JCM Model Project

PT Sumi Rubber Indonesia
Indotaisei Industrial Estate, Sector 1A, Blok Q3
Cikampek, West Java

Golf Ball Plant

Tyre Plant

West Java

Indotaisei Industrial Estate
1.2. Structure and Role of JCM Model Project

International Consortium

Sumitomo Rubber Industries, Ltd.
Japanese Entity
Person in Charge: Masaya Suzukawa
Role: Project management and contact address

PT. Sumi Rubber Indonesia
Indonesian Entity
Person in Charge: Toshio Koyama (President Director)
Role: Implementation of facilities and O&M

Order  Co-Implementation  Installation

PT. GIKOKO KOGYO INDONESIA
Sales and Construction Company
Role: Construction Company and Maintenance

Order  Delivery

Kawasaki Thermal Engineering
Machine Maker
Role: Boiler Maker, Delivery
1.3. Background

1.3.1. Boiler is needed for production of golf ball

**Function of BOILER:**
Change water become **steam** for production process

In Golf Ball Factory, mainly steam is for:
- Curing the plug rubber become core ball in Press Machines

- **Steam for Heating**
  - Plug of rubber
  - Core ball press machines
  - Core Ball

- Humidity & Temperature Control of Finishing Room

- Finished Goods
  - Golf ball Construction (1pcs type)
1.3.2. Old Boiler (#1 factory boiler)

- Model: Fire Tube Boiler
- Fuel: Natural Gas
- Efficiency: 89%
- Capacity: 4000 L/hour

1.4. Install The Facility of JCM Model Project

- A high efficiency (95%) once through boiler will install at a Golf Ball factory.
- The boiler reduces fuel consumption by incorporating gas single fuel type. Furthermore, electricity consumption is also reduced by inverter function of feed water pump and forced draft fan.
## 2. Project Implementation

### 2.1. Schedule of Project

<table>
<thead>
<tr>
<th>ACTIVITIES</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Nov</td>
<td>Des</td>
</tr>
<tr>
<td>Document submit to JCM</td>
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<tr>
<td>Unofficial announcement</td>
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<tr>
<td>Approval of decision</td>
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<tr>
<td>Boiler installation</td>
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<tr>
<td>Approval of operation</td>
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<tr>
<td>Operation monitoring</td>
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</tbody>
</table>

- **PLAN**
- **ACTUAL**
2.2. Installed Facility of JCM Model Project

- A high efficiency (95%) once through boiler is installed at a Golf Ball factory

![Boiler Image]

<table>
<thead>
<tr>
<th>BOILER SPECIFICATION</th>
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<tbody>
<tr>
<td>Boiler Model</td>
</tr>
<tr>
<td>Equivalent evaporation</td>
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<tr>
<td>Actual evaporation</td>
</tr>
<tr>
<td>Normal Pressure</td>
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<tr>
<td>Used Fuel</td>
</tr>
<tr>
<td>Boiler Efficiency</td>
</tr>
<tr>
<td>Fuel consumption</td>
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<tr>
<td>Feed Water Temperature</td>
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</tbody>
</table>

2.3. Current Progress of Project

Since 18 June 2016, Boiler is already continuously running until now
2.4. Challenges of Project

This project have been done by cooperation between Indonesia company and Japanese company.

For getting faster effect, we did short time for installation and start up.
- We can install for 4 month after project decide
- Short time delivery of boiler by Japanese company
- Short time start up with Indonesia and Japanese company
- The Boiler is not same type with the previous boiler
- We must change many piping by Indonesia company
- Tuning the boiler control to fulfill our factory demand only 3 days by two company

Install area is small for old type boiler
- Select one through boiler
2.2. Benefits of Project

- Get special cost support (50%)
- High boiler Efficiency (until 95%, Cost Reduction = USD 13,532 / year)
- Low electricity consumption (down 30%, Cost Reduction = USD 3,935/year)
- More environmental friendly (CO₂ reduction)
- Contribution to sustainable development of Indonesia (by technology transfer, energy saving activity, level up employee)
- Easy Operation for start, run and stop Boiler
- Easy monitoring for Boiler Operation / Performance

• Fuel consumption
• Steam consumption
• Electricity consumption
• Water consumption
• others

Automated data collection with Comprehensive monitoring system(EVERY FIT)
3. GHG Emission Reduction

We have not achieved the target yet, because:
- The golf ball production is down compared with original plan
- Energy saving another activity, makes reduce steam consumption
- The JCM Boiler is running as main supply parallely with another boiler to maintain normal steam, it doesn’t make fully capacity.

This condition is now improving with the project company
To keep these effect we do
- Maintenance program weekly, monthly and yearly done correctly
- Daily inspection use data logging system to easy control
- Boiler water conductivity and blowdown rate keep in range standard

To keep good environment
- Measuring data in every year to make sure O2, CO, NOx emission in range standard

Progress of the JCM Project Cycle is not yet decided the Methodology and The JCM methodology is under development.
1. In our company, we will change old type boiler to one through boiler when renewal for #1 GB factory boiler and tire factory boiler.

2. In Indonesia, it is said that annually 1,000 units of boilers are newly installed/replaced in Indonesia in many sectors.

   (i) “water tube boiler” imported from China
   (ii) Euroasiatic (leading) and other brands: “fire tube boiler”

Higher efficiency “Once-through Boiler” will have over 50% of share in near future from 36% in 2015.

In Japan, once through boiler share is already 89% (2013).