Improving the Energy Efficiency of Commercial Buildings by Utilization of High Efficiency Equipment

Yuko Vietnam Co., Ltd.

4th December 2020
Contents

1. Company Profile
2. Project Summary
3. Introduced Technologies & Effects
4. Introduction of Navigation BEMS
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## Company Profile(Yuko-Keiso Co., Ltd.)

<table>
<thead>
<tr>
<th><strong>Company Name</strong></th>
<th>Yuko-Keiso Co., Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Established</strong></td>
<td>December 1963</td>
</tr>
<tr>
<td><strong>Capital</strong></td>
<td>100,000,000 JPY (about 21,584,408,300 VND)</td>
</tr>
</tbody>
</table>
| **Lines of Business** | 1. Designing, installation and maintenance of instrumentation systems and automatic control systems  
2. Designing, installation and maintenance of equipment for telecommunications, security, emergency, electricity and air-conditioning  
3. Sales of instrumentation devices and automatic control devices  
4. Architectural designing and supervision of building construction and consultation for facilities management |
| **Sales**         | 3,520,000,000 JPY (the term ended May 2018)  
(about 759,771,172,160 VND) |
<p>| <strong>Number of employees</strong> | 179 |
| <strong>Office</strong>        | Tokyo [Head office], Tochigi, Saitama, Yokohama, Hanoi |</p>
<table>
<thead>
<tr>
<th><strong>Company Name</strong></th>
<th>Yuko Vietnam Co., Ltd.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Established</strong></td>
<td>July 2012</td>
</tr>
<tr>
<td><strong>Capital</strong></td>
<td>135,000 USD (about 3,121,807,500 VND)</td>
</tr>
</tbody>
</table>
| **Lines of Business** | 1. Consulting and engineering service for BMS (Building Management System)  
2. Consulting for energy saving projects (Join Crediting Mechanism and Bilateral Offset Credit Mechanism)  
3. Design, installation and maintenance of electrical systems, automatic control measurement and energy monitoring systems  
4. Energy monitoring and system diagnosis |
| **Number of employees** | 7 (2 Japanese & 5 Vietnamese) |
| **Address**      | Floor 1 and 2, No. 3, 62 Lane, Truc Khe street, Lang Ha ward, Dong Da district, Hanoi, Vietnam |
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JCM Feasibility Studies and Demonstration Projects FY 2013

NEDO

MOU

MONRE

COOPERATION DESIGNATION

Hibiya Engineering, Ltd.
(Implementation of the project)

Mitsubishi UFJ Morgan Stanley Securities Co., Ltd.
(Verification of energy saving effectiveness)

HCMC University for Natural and Environment
(Verify the introduced technology and conduct promotional activities in Vietnam)

ECC HCMC

Installation

Hotel
Selected five-star hotels in Ho Chi Minh City and Hanoi

<table>
<thead>
<tr>
<th>Hotel</th>
<th>Usage</th>
<th>Completion</th>
<th>Scale</th>
<th>Total floor area</th>
<th>Number of rooms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renaissance Riverside Hotel Saigon</td>
<td>Hotel</td>
<td>1998</td>
<td>21 stories</td>
<td>29,539 m²</td>
<td>349 rooms</td>
</tr>
<tr>
<td>HOTEL du PARC HANOI</td>
<td>Hotel</td>
<td>1998</td>
<td>15 stories</td>
<td>29,163 m²</td>
<td>257 rooms</td>
</tr>
</tbody>
</table>
Introduced Technology and CO₂ Emission Reduction

**Typical energy use at Hotels in Vietnam**

- **Air conditioning**: 60%
  - Manual operating management
  - Operating management by BEMS
- **Hot water supply**: 10%
  - Oil-fired boiler & heat pump
- **Lighting & outlet**: 15%
  - Halogen
  - LED
- Others: 5%
  - Elevator
  - Kitchen

**Verified CO₂ emission reduction**
(01/04/2016-31/05/2017)

261 tCO₂
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High-efficiency Boiler

Manufacturer
MIURA Co., Ltd.

Advantage
• High energy efficiency compared with conventional one
• Operate optimum number of boilers
Heat Pump

Manufacturer

MAYEKAWA MFG. CO., LTD

Advantage

• Make **Hot water** & **Cool air** at once
• High energy efficiency compared with using boiler
Oil consumption in each hotel

Renaissance Riverside Hotel Saigon (Boiler)

-27,000L (-13,500$)

HOTEL du PARC HANOI (Boiler + Heat pump)

-185,500L (-74,800$)

Effects by Introducing High-efficiency Boiler & Heat Pump
LED Lighting

Manufacturer

Panasonic Corporation

Advantage

• 2 times brighter than halogen lighting
• 30% less power consumption compared with halogen lighting

Effects

• 70% less power consumption
• Positive comments from guests

Electric consumption of lighting in HOTEL du PARC HANOI

<table>
<thead>
<tr>
<th></th>
<th>FY 2015</th>
<th>FY 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric consumption of lighting (kWh/year)</td>
<td>120,000</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>-77MWh</td>
<td>-7,700$</td>
</tr>
</tbody>
</table>
**BEMS**

**What’s BEMS?**

- **Building Energy Management System**
- Improve equipment operation by collecting, analyzing and assessing data

**Advantage**

- Reduce energy consumption by collecting accurate data

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**Energy consumption of 201 build. in Japan**

(Source: NEDO)
V-BEMS (BEMS for building in Vietnam)

**Advantage**

- Simple and less expensive hardware + Advanced software
- System focused on Air-conditioning which is the largest target

**Main function**

- System chart for current operation status
  - Find problems easily without visiting sites
- Analysis of energy consumption and operational index
  - Quantitative data management
- Export of alarm log and collected data
  - Advanced analysis
<table>
<thead>
<tr>
<th></th>
<th>Operation improvement by BEMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Optimum operation of cooling water pump</td>
</tr>
<tr>
<td>2</td>
<td>Optimum operation of chiller system</td>
</tr>
<tr>
<td>3</td>
<td>Optimum rotation of chiller system</td>
</tr>
<tr>
<td>4</td>
<td>Making manual for efficient operation</td>
</tr>
<tr>
<td>5</td>
<td>Review of daily operation</td>
</tr>
</tbody>
</table>
Reduction of Power Consumption by BEMS

Power consumption of air conditioning system in Renaissance Riverside Hotel Saigon

-18,000 kW

Guidance

Start to use BEMS

Improve operation
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Achieve **continuous operation improvement** based on energy analysis service.
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