Manpower & Education Development for the Electrical & Mechanical Services Industry

- BS O&M Education Study and Industry Case Study Sharing for EDB / VTC

Mr. Martin WAN
Area Director of Engineering / Hong Kong, Macau & Taiwan
InterContinental Hotels Group

30 Oct 2013

Presentation Outline

1) A Study on Building Operation & Maintenance Education Needs

2) Career Ladder in BS O&M Industry – Case Study

3) Job Description / Skills Required for BS O&M Industry

4) Ways Forward
The BS O&M Education Needs Study
- Background of the Study

- Supported by BSOMES
- Conducted by Dr. Joseph H.K. Lai (HK PolyU, BSOMES)
  - Reviewed existing education programmes
  - Questionnaire survey with 145 useful responses (Lai J.H.K., 2010)

<table>
<thead>
<tr>
<th>Category</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>36.6</td>
</tr>
<tr>
<td>Experience in building industry</td>
<td>12.4</td>
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<tr>
<td>Experience in building O&amp;M field</td>
<td>9.0</td>
</tr>
<tr>
<td>Position</td>
<td></td>
</tr>
<tr>
<td>Strategic (%)</td>
<td>11.0</td>
</tr>
<tr>
<td>Managerial (%)</td>
<td>48.3</td>
</tr>
<tr>
<td>Supervisory (%)</td>
<td>60.7</td>
</tr>
<tr>
<td>Qualification</td>
<td></td>
</tr>
<tr>
<td>Postgraduate (%)</td>
<td>28.3</td>
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<tr>
<td>Degree (%)</td>
<td>41.4</td>
</tr>
<tr>
<td>Sub-degree (%)</td>
<td>30.3</td>
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The BS O&M Education Needs Study
- Building Stock and Gross Value of Construction Work


![Graph showing the trend of building stock and gross value of construction work from 2000 to 2007 in HK$ million.](image-url)
The BS O&M Education Needs Study
- Manpower of Building-related Sectors

![Graph showing manpower trends](image)

Building O&M: education needs in Hong Kong

Figure 2. Manpower of building-related sectors

The BS O&M Education Needs Study
- Average Workloads (by Trades)

![Graph showing average workloads](image)

Overall  Strategic  Managerial  Supervisory
The BS O&M Education Needs Study
- Average Workloads (by Natures)

Organization Chart of Sample Hotel Engineering Department

Area Director of Engineering

Director of Engineering

Assistant Director of Engineering / Secretary

Chief Engineer

Assistant Chief Engineer

Building Maintenance Engineer / Project Engineer

Duty Engineer

Duty Engineer

Supervisor

Foreman

Technician

Engineer

Assistant Engineer

Engineering Assistant
**Samples of Job Description / Skills Required**

**BS O&M = Building Services Operation and Maintenance**  
(related to IVE Building Services Engineering, Electrical Engineering, Mechanical Engineering)

**DEPARTMENT:** Engineering  
**JOB TITLE:** Engineering Assistant  
**Assistant Engineer**  
**Engineer, Duty Engineer**

**QUALIFICATIONS**

<table>
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<tr>
<th>Physical:</th>
<th>Good health.</th>
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<tbody>
<tr>
<td>Education:</td>
<td>HD Engineering graduate.</td>
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<tr>
<td>Language:</td>
<td>Chinese / English / Mandarin</td>
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<tr>
<td>Experience:</td>
<td>0 - 5 years experience working in the hotel.</td>
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</table>
| Others:    | Ability to work independently.  
           | Good interpersonal skill.  
           | A creative, practical and pro-active approach to problem solving.  
           | Ability to build, lead and manage a team.  
           | An energetic and dynamic personality. |
Samples of Job Description / Skills Required

SCOPE

- Responsible for the daily operation.
- Executor of preventive maintenance and work orders.
- Assist in renovation projects.
- Supervision of subordinates.
- Perform other duties as requested by the seniors.

KEY ROLES & RESPONSIBILITIES

1) LEADERSHIP

a) Determine priorities, set goals, and follow up.
b) Set and maintain service standards by constantly comparing the performance with standards.
c) Motivate, coach, counsel and discipline employees as required.
d) Seek out employees’ concerns and offer assistance.
e) Provide positive feedback and reinforcement.
KEY ROLES & RESPONSIBILITIES

2) CONTROL OF ALL BUILDING & SERVICES MAINTENANCE

a) Assist to monitor the smooth operation of all building and services system and equipment, take appropriate action if necessary.
b) Update on latest information from log books and service reports.
c) Ensure fast reaction to emergencies, take immediately direct control of affected systems such as fire alarm, power interruption, water flooding, lift trapping, etc. and remedial action as required.

KEY ROLES & RESPONSIBILITIES

3) WORK ORDER CONTROL SYSTEM

a) Execute the Work Order Control System.
b) Distribute work orders to technicians.
c) Follow up and check reason(s) of outstanding work orders.
d) Check the work load and efficiency of various sections.
e) Quality check of completed work orders randomly.
f) Solicit feedbacks / suggestions from technicians and others for ongoing improvement of Work Order Control System.
KEY ROLES & RESPONSIBILITIES

4) PREVENTIVE MAINTENANCE PROGRAMME

a) Assist in carrying out the Preventive Maintenance Program.
b) Ensure the personnel on duty to carry out Preventive Maintenance works according to the program.
c) Monitor work schedule and quality of work.

5) ENERGY CONSERVATION PROGRAMME

a) Monitor utility consumption and record.
b) Assist in carrying out the Energy Conservation Programme.
c) Ensure normal utility consumption and take action if utility supplies are affected/interrupted.
KEY ROLES & RESPONSIBILITIES

6) SPECIAL PROJECTS
   a) Assist / take charge for certain assigned renovation / upgrading / improvement projects.
   b) Supervise the project installation work, testing & commissioning and carry out site progress records.
   c) Assist in project hand-take over, defect rectification and post-project review.

7) TRAINING
   a) Orientation & induction of new employees.
   b) Review training needs on an on-going basis using guest comments, observations, performance appraisals.
   c) Personally conduct technical job knowledge training sessions.
KEY ROLES & RESPONSIBILITIES

8) EMERGENCIES

a) Fire Alarms.
b) Ensure fire protection systems operate immediately.
c) Co-ordinate engineering support as required in hotel emergency procedures immediately.
d) Other emergencies: co-ordinate engineering per procedures.

9) RELATIONSHIP

a) Internal: All Department Heads.
b) External: Fire Services Department, Water Services Department, and other government departments, utilities companies, etc.
Ways Forward


1) A proper supply of competent practitioners (BS O&M) is essential for this growing sector.

2) Higher education programmes tailored for producing BS O&M professionals were unavailable, exposing a mismatch between the demand and the supply.

3) 88.7 per cent of the respondents considered that a dedicated O&M academic programme is needed.

Ways Forward


4) The natures of work that the practitioners were most desirous to learn about include energy and environment, testing and commissioning, legal issues and safety, and budgeting and cost control. A greater emphasis of O&M education should be placed on these aspects.

5) Further researches on BS O&M manpower and education are strategic importance for further development of our workforce, our industry and our economy.
Thank You!