



Shanghai Energy Efficiency

Introduction

Kelcroft was established in 1999, a consultancy firm headquartered in Hong Kong.

We have helped cutting energy costs for more than a decade for business in Shanghai, China.

Competencies include industrial process, steam, compressed air, process ventilation, air conditioning, and related energy systems.

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Why?

Financially its cheaper to improve your existing factory than build a new one, energy improvements:

- 1) high internal rate of return = best use of capital
- 2) fast
- 3) least cost
- 4) reduced environmental impact
- 5) low social impact
- 6) most benign
- 7) cost of finance is low (2014)

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Energy Audit Process

An energy audit is process, the same process whether a factory or office has four stages:

1. Data Collection
2. Inspection
3. Analysis
4. Recommendations

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Energy Audit Process

Stage 1 - Data Collection

Intent - understand overview of factory energy:

- 1) Fuels (gas, electric, oil, water, etc) utility bills
- 2) floor plan drawings;
- 3) plant factory layout drawing;
- 4) engineering systems drawings;
- 5) other documentation;

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Energy Audit Process

Stage 2 – Inspection

Intent – examine energy usage

- 1) Inspect the building envelope
- 2) Inspect factory processes
- 3) Inspect the engineering systems including:
 - Electricity
 - Gas
 - Steam
 - Compressed air
 - Others.....

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Empty gym, and all gym equipment and associated TV screens operating







Poor design condensate trapped
steam branch from bottom not *top* of steam main cause condensate to be trapped at low point in system, reducing efficiency.





Energy Audit Process

Stage 3 – Analysis

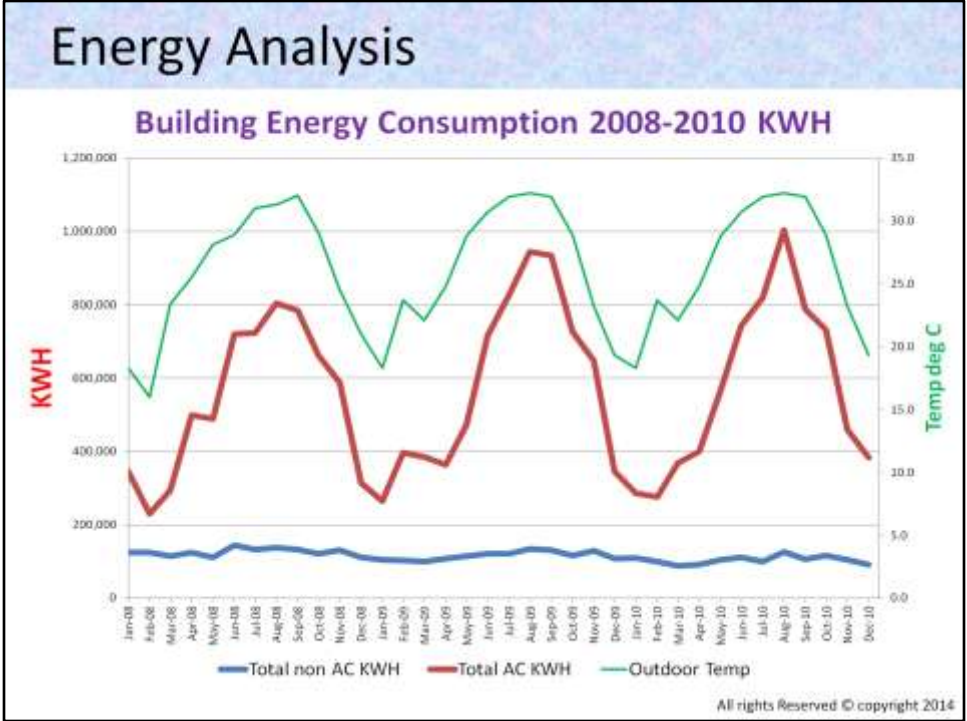
Intent – benchmark energy usage

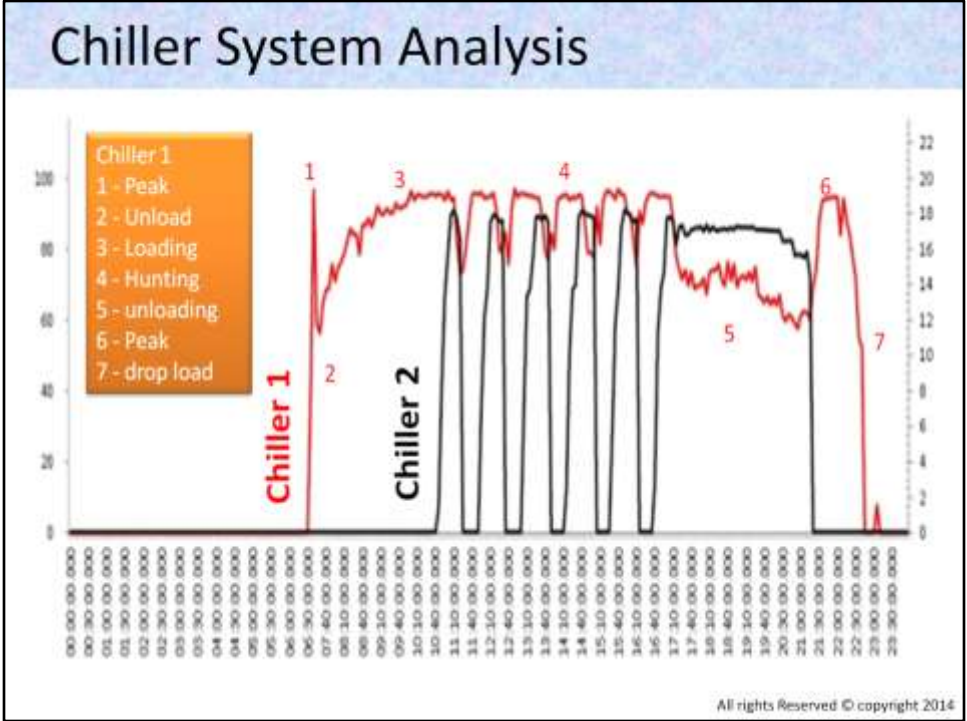
- 1) Model energy consumption
- 2) Identify energy usage per fuel
- 3) Identify energy usage per process tonne
- 4) Graphically represent consumption
- 5) Identify waste/losses
- 6) Calculate energy savings for different scenarios

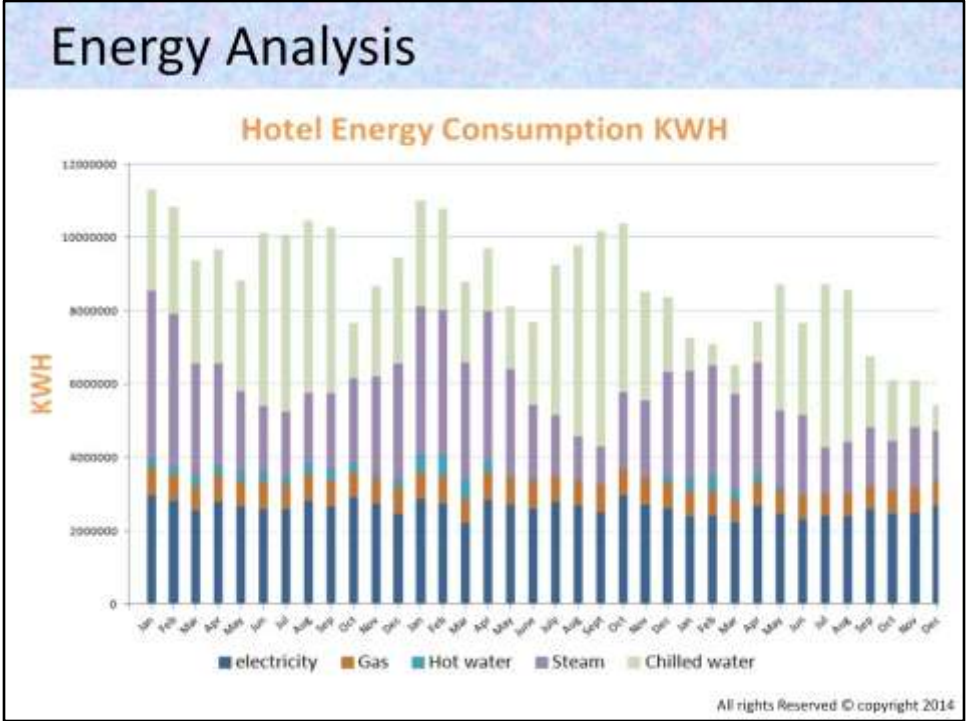
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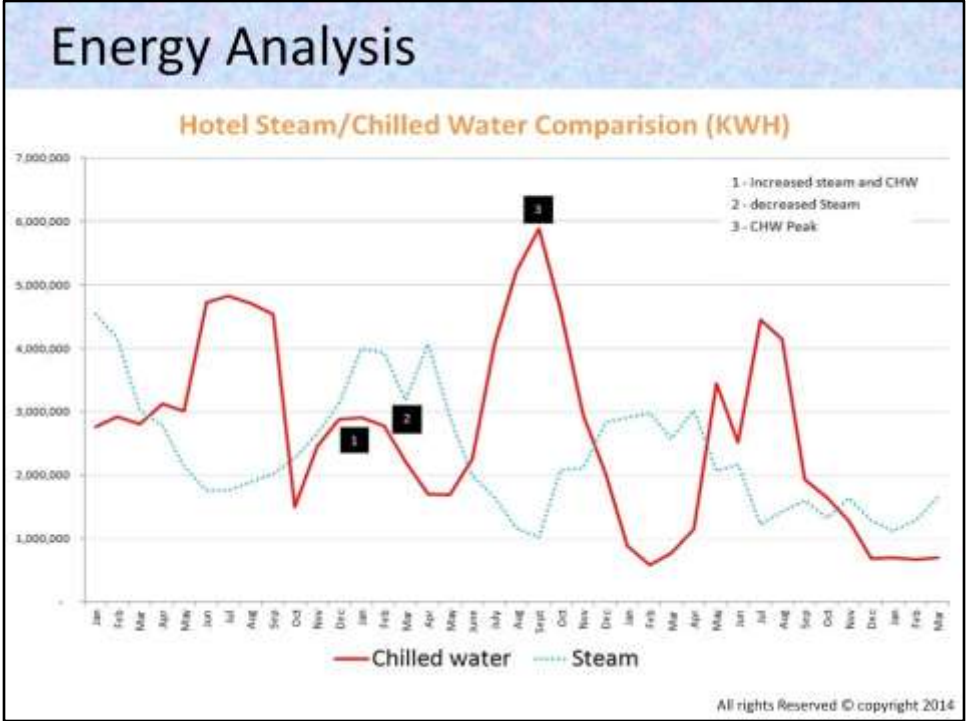
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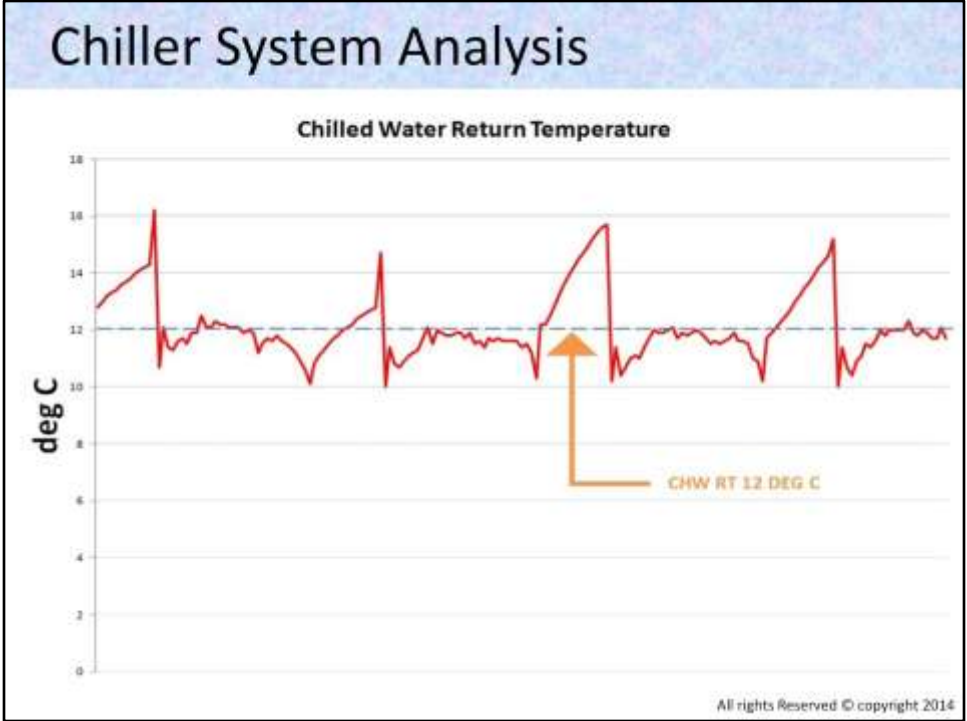
Intent – benchmark energy usage



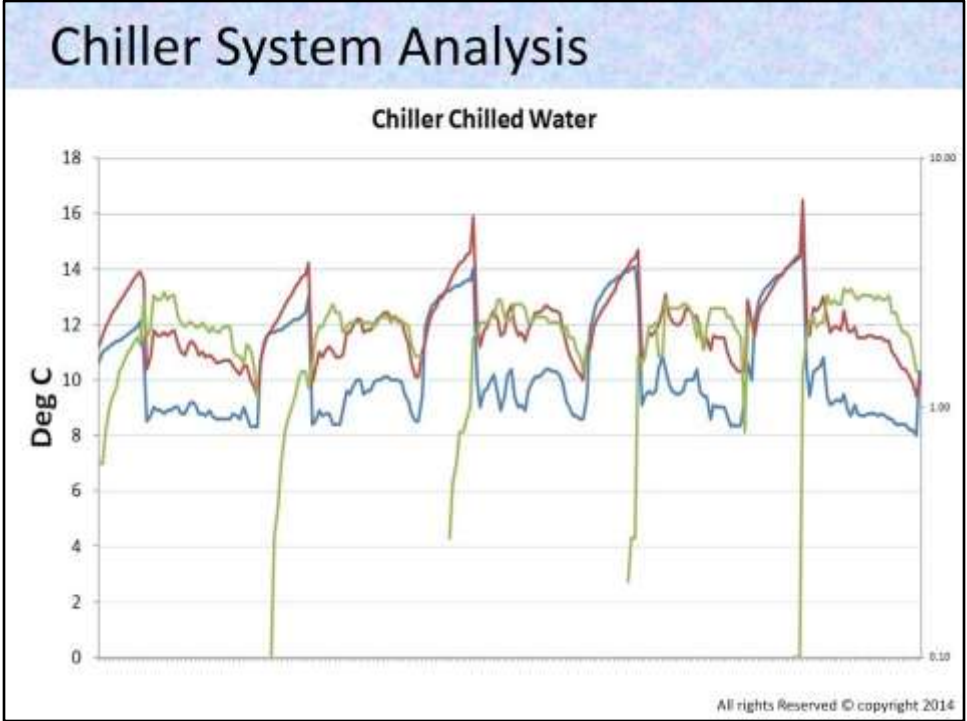








Identified problems with chiller system



Identified problems with chiller system

Recommendations

Stage 4 – Recommendations

Intent – report findings and recommendations
for example:

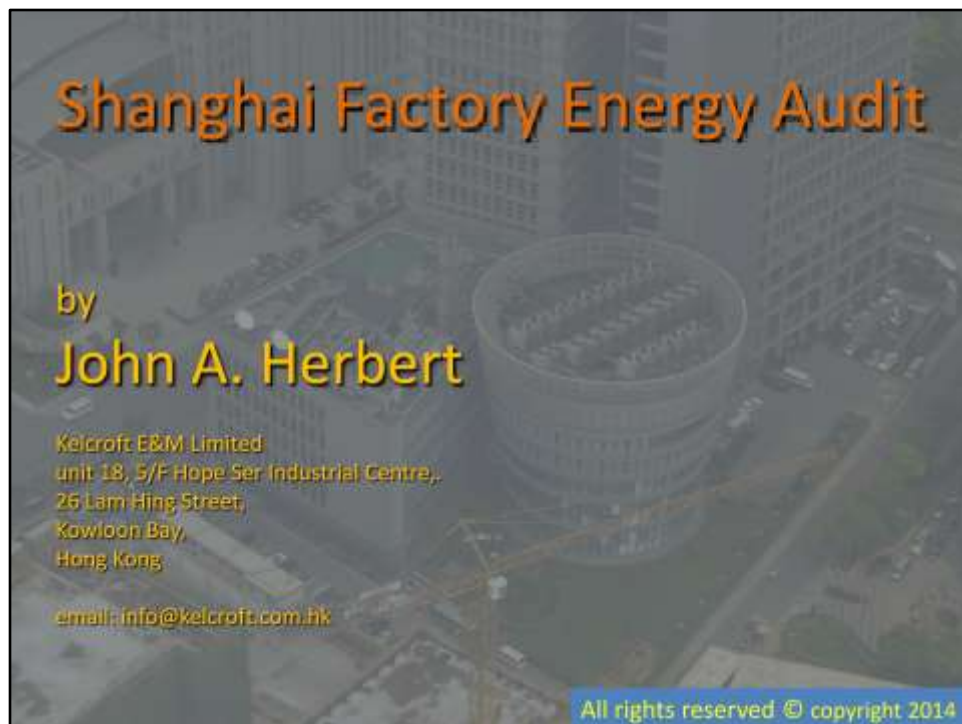
- 1) List opportunities to lower energy consumption and therefore energy costs
- 2) Identify energy waste
- 3) deferred maintenance discovered

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Stage 4 – Recommendations

Intent – report findings and recommendations for example:

- 1) List opportunities to lower energy consumption and therefore energy costs
- 2) Identify energy waste
- 3) deferred maintenance discovered



Shanghai Factory Energy Audit

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