



優質管理顧問有限公司
TQM CONSULTANTS CO LIMITED

Serving You with Professionalism and
Rich Consultancy Experiences
Your Most Trustworthy Business Coach



One Stop Solution for Energy Mgt

- Energy Efficiency & Improvement Solutions
- ISO 50001 Energy Management Consultancy



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ISO 50001 Energy Management Systems Consultancy Services

TQM, in addition to providing energy audits and energy saving solution consultancy services, also helps customers design and implement energy management systems to increase energy efficiency, reduce costs, reduce carbon emissions, and assists them in obtaining ISO 50001 energy management system certification.

ISO 50001 Energy management systems

ISO 50001 Energy Management System is applicable to all types of enterprises, covering manufacturing, service and financial industries. TQM help companies establish appropriate energy management goals, achieves continuous improvement in energy performance and creates a system with systematic management procedures by investigating the customer's energy use. Through practicing ISO 50001, enterprises could achieve **energy saving**, **cost reduction** and **corporate image improvement**.

HIGHEST Energy Consumption Organizations in HK



MTR, Water Supplies Department and Hong Kong International Airport are also TQM's Delighted Customers.

Case Sharing



香港水務署
Hong Kong Water Supplies Department

WSD provides quality water supply services to Hong Kong in the most cost-effective way. The department provide customers with reliable and adequate supply of high quality fresh and salt water. WSD always pays attention to the responsibility of environment protection by making good use of resources and technologies, while striving to achieve continuous service improvement. In order to protect the environment and conserve resources, WSD invited TQM to introduce energy management systems to its Mechanical and Electrical Branch and Operations Branch.

Scope of project

- Audited the existing energy management practices in 3 divisions (M&E/Maintenance, M&E/Projects and Operations Branch)
- Arranged ISO50001:2011 EnMS awareness briefing
- Established a baseline for the department using information in energy review
- Proposed a certification scope statement to the certification body for ISO50001:2011 certification
- Prepared an EnMS manual, new EnMS specification procedures and revised IQMS manual & procedures
- Assisted to develop EnMS promotional campaigns to the whole WSD to increase awareness on benefits of EnMS, implementation timetable and audit & certification arrangement

Achievement

- Assisted WSD in becoming a pioneer in energy consumption management
- 1st entire HKSAR Government Department to achieve ISO 50001:2011 energy management certification





“...helped further take forward the department's initiative of enhancing the **energy performance** of its waterworks.”

“...sets an example for other departments and organizations to follow, thereby promoting the **enhancement of energy efficiency levels to all sectors.**”

Press Releases

WSD awarded ISO 50001 certification for energy management systems

The Water Supplies Department (WSD) has been awarded the International Organization for Standardisation (ISO) 50001 certification for energy management systems. It is the first government department in Hong Kong to have received the certificate, demonstrating the achievement of a higher standard in energy management by the department.

Introduced in 2011, ISO 50001 is an international standard that provides a model of energy efficiency management for various types of organisations with a view to upgrading energy efficiency levels. Under the framework, the organisations are required to identify the aims and applicable areas for their energy management systems, set up and implement systems for energy management according to the relevant statutory requirements and regulations, and make continuous improvement.

To further enhance its energy management system, the WSD started to follow the ISO requirements early this year by establishing a clear energy policy and targets, compiling a detailed manual on the energy management system, formulating a comprehensive energy measurement plan, and setting up a mechanism for continual monitoring, review, improvement and protection. An audit of the system was completed at the end of last month and the ISO issued the certificate to the WSD recently.

“The ISO 50001 certification has not only helped further take forward the department's initiative of enhancing the energy performance of its waterworks, but also sets an example for other departments and organisations to follow, thereby promoting the enhancement of energy efficiency levels to all sectors,” a spokesman for the WSD said today (December 28).

The WSD operates over 140 waterworks and provides reliable potable and flushing water to over 7 million people in Hong Kong every day. To reduce energy consumption, the department established the Energy Management Committee in 1998 to lead and oversee the enhancement of the energy management system and put forward comprehensive measures for energy conservation and carbon dioxide reduction.

Ends/Sunday, December 28, 2014
Issued at HKT 10:00



水務署
Water Supplies Department
沙田辦事處
Sha Tin Office

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Reference

13 March 2015

Ir. Dr. Aaron TONG
TQM CONSULTANTS CO. LIMITED
11/F Lockhart Centre
301 Lockhart Road
Wanchai, Hong Kong

Dear Ir. Dr. TONG,

Certification of ISO 50001:2011 Energy Management System Water Supplies Department

We would like to confirm that your services under the captioned assignment have been completed to our satisfaction. TQM CONSULTANTS CO. LIMITED and its consultants have offered professional support in helping us strengthen our energy management system and obtain the certification to ISO 50001:2011 Energy Management System within 12 months after the award of the assignment.

We are looking forward to working with you again.

Yours sincerely,

(WONG Man Ching)
Chief Electrical & Mechanical
Engineer/ Maintenance
Water Supplies Department

“...complete to our satisfaction. TQM and its consultants have offered **professional support** in helping us strengthen our EMS”

Case Sharing



香港機場管理局
Airport Authority Hong Kong



As a statutory body wholly owned by the HKSAR Government, The Airport Authority Hong Kong (AA) is responsible for the operation and development of Hong Kong International Airport (HKIA). To strengthen HKIA as the leading international aviation hub and a key engine for the economic growth of Hong Kong, AA has been operating efficiently with care for the environment. For the goal of continuous improvement, AA invited TQM to design, develop and implement ISO 50001 Energy Management System (EnMS) for Terminal 1 of HKIA. Upon the success, TQM was invited to extend the scope to cover all buildings of HKIA and upgrade to ISO 50001:2018 in 2019.

Scope of projects

- Conduct gap analysis to develop and prioritize requirements
- Bridge the gap for achieving ISO 50001 EnMS
- Introduce ISO 50001 concepts & requirements to staff and provide trainings to key staff
- Set measurable and concrete objectives to improve and optimize energy performance
- Develop ISO 50001 Energy Management System for Terminal 1 of HKIA
- Further extend the scope of the ISO 50001 EnMS from the whole Terminal 1 to cover all buildings of HKIA, including the whole Terminal 1, The Midfield Concourse (MFC), North Satellite Concourse (NSC), SkyPier, The Future T2& 3RS concourse
- Upgrade its EnMS to ISO 50001: 2018

Achievement

- Designed and implemented a management system to comply with ISO 50001 requirements
- Identified various energy management opportunities for continuous improvement
- Optimized energy efficiency in operational processes
- Lowered costs and power transmission losses
- Achieved ISO 50001:2018 Certification for all terminal buildings of HKIA with zero non-conformity



“one of the most remarkable achievements in this project is accomplishing an impeccable

zero non-conformity”

“TQM is fully competent to provide consultancy service professionally”



Our Ref: TS/TSE/02.27

13 January 2020

TQM Consultants Co. Limited
11/F Lockhart Centre
301 Lockhart Road
Wanchai, Hong Kong

By Post

Attn: Ir. Dr. Aaron Tong – Managing Director

Dear Ir. Dr. Tong,

**Appreciation to TQM Consultants Co. Limited (TQM)
On ISO 50001 Energy Management System**

This is to express our sincere gratitude for TQM's assistance in the transition audit of our ISO 50001 Energy Management System (EnMS) to the 2018 version, and the extension of our Certificate from Terminal 1 and Midfield Concourse to a full coverage of all terminal buildings.

Hong Kong International Airport is one of the biggest energy consumers in Hong Kong, we strive enhancing our energy efficiency and energy management. We are truly grateful to TQM's consultants who have conducted energy review and identified various energy management opportunities for our continuous improvement on Air-conditioning, Lighting, Lifts, Escalator, and so on. TQM has demonstrated professional knowledge, responsiveness and creativity throughout the Certificate Upgrade and Extension Audit.

We appreciate the intensive support from TQM team, the efficiency and high-quality of work enable us to complete the Audit within less than 4 months and achieved zero non-conformity. We look forward to engage TQM in other improvement endeavours again soon.

Your faithfully,

Amen Tong
General Manager, Technical Services

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Our Ref: TS/TSE/017-16/031950

30 March 2017

Ir Dr. Aaron Tong
Managing Director
TQM Consultants Co. Limited,
11/F Lockhart Centre,
301 Lockhart Road, Wanchai, Hong Kong.

Attn: Ir. Dr. Aaron Tong
(TQM Consultants Co. Limited)

Dear Sir,

Letter of Appreciation to TQM Consultants Co. Limited (TQM)

This is to express our sincere gratitude for TQM's assistance in the design, development and implementation of the ISO 50001:2011 Energy Management System (EnMS) for Terminal 1 of the Hong Kong International Airport.

One of the most remarkable achievements in this project is accomplishing an impeccable zero non-conformity during the certification audit by the British Standards Institution (BSI). Also, with tight control and monitoring, the work is completed efficiently within 6 months. We are grateful to TQM, for they have enabled us to formalize the Energy Management System in accordance with the international standard. They are fully competent to provide consultancy service professionally.

Yours faithfully,

Amen Tong
General Manager, Technical Services

AIRPORT AUTHORITY HONG KONG 香港機場管理局
HKIA TOWER, 1 SKY PLAZA ROAD, HONG KONG INTERNATIONAL AIRPORT, LANTAU, HONG KONG
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“...TQM has demonstrated **professional knowledge, responsiveness and creativity** throughout the Certificate Upgrade and Extension Audit”

“...the **efficiency and high-quality of work** enable us to complete the audit less than 4 months and achieved **zero non-conformity**”

Case Sharing



新中物業管理有限公司
Sun Chung Property Management Co Ltd

Sun Chung Property Management Company Limited was established in 1982. As of today, Sun Chung has developed for more than 30 years. It provides property management service to its clients including all units under Bank Of China. To deliver service beyond expectations from both its clients and the society, Sun Chung developed Energy Management System (EnMS) for buildings it manages including BOC Tower, BOC Centre and BOC Wan Chai Commercial Centre. For continuous improvement and enhancement, Sun Chung therefore invited TQM to provide consultancy service for its EnMS maintenance.

Project Scope

- Key Buildings: BOC Tower, BOC Centre and BOC Wan Chai Commercial Centre
- Conduct energy audit, identify major energy source and analyze energy consumption
- Make analysis against energy performance and indicators
- Set clear goals and develop Opportunity Assessment on Energy Performance Improvement
- Develop/ optimize documents of management plan, training plan, measurement and monitoring plan, etc.
- Identify improvement opportunity for energy management

Achievement

- Sun Chung successfully passed SGS ISO 50001 follow-up audit
- Greatly improved the energy efficiency of BOC Tower, BOC Centre and BOC Wan Chai Commercial Centre and saved cost
- Some expected improvements:
 - Air-conditioning: reduce annual electricity consumption by 8%
 - Lighting: reduce annual electricity consumption by 40,000 kwh
 - Lift motor system: reduce annual electricity consumption by 30%
- Guaranteed the effective implementation and continuous improvement of EnMS
- Achieved energy management goals and meet commitment to continuously improve energy performance

Case Sharing



華潤物業有限公司
China Resources Property Limited

Founded in 1982, China Resources Property Limited, a wholly owned subsidiary of China Resources Enterprise, is mainly responsible for the operation management of China Resources Building and other real estates project. Its business involves a number of areas, including property leasing, property management, project construction, real estate development and other related businesses.

Scope of Project

- Assisted in resources design, developed and established energy management system
- Set up procedures and guidelines for energy management
- Established energy baselines and targets, energy performance indicators, management plans, measurement & monitoring plans, and training programs
- Provided energy management training to China Resources staff

Achievement

- Assisted China Resources to become the first state-owned enterprise in Hong Kong to implement and obtain certification of ISO 50001:2011 Energy Management Systems
- Assisted China Resources to regulate energy consumption effectively, reduce negative impact on the environment, thus fulfill their commitment to the environment with a systematic approach
- Improved energy consumption management in buildings and estates and reduced energy waste
- Enhanced staff knowledge and awareness on energy management

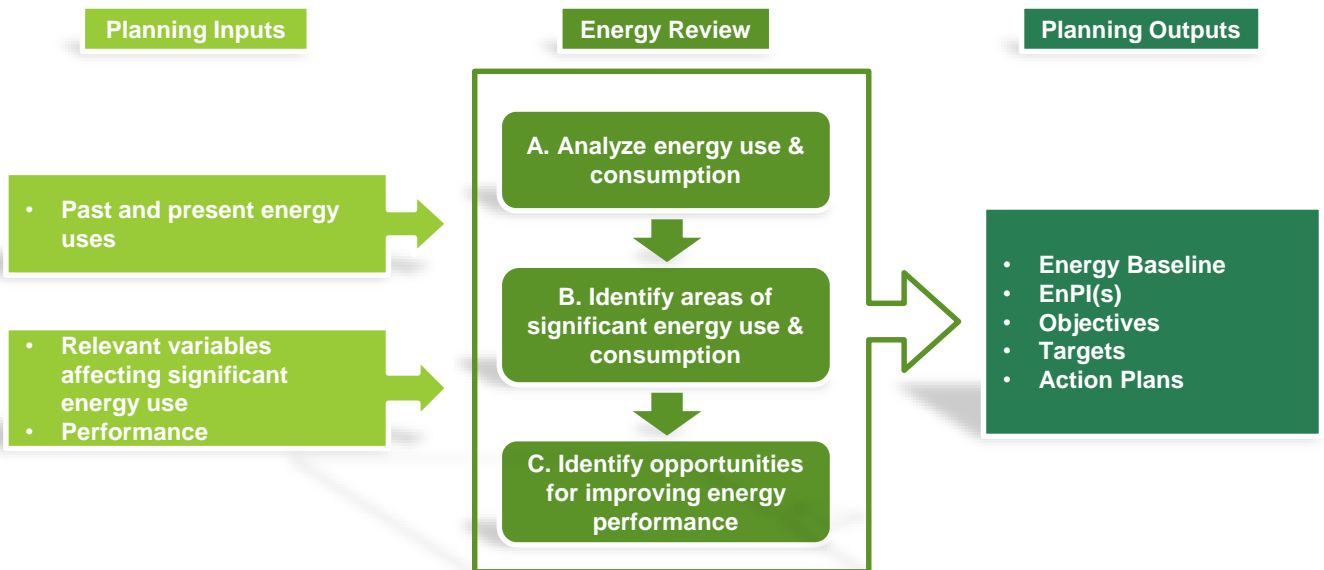
Original section recorded :

...We (China Resources) appreciate TQM's rich experience and excellent planning skills. We are presenting our recommendations of TQM's excellent enterprise management consultancy services...



CR letter of appreciation to TQM

ISO 50001 Energy Planning Process



Benefits of ISO 50001

- ✓ Reduce energy costs
- ✓ Manage energy use more effectively
- ✓ Enhance energy management transparency and communication
- ✓ Continuous improvement in energy usage and product output
- ✓ Improve the company's reputation



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Energy Audits and Energy Efficiency Consultancy Services

Why should enterprises adopt energy management and energy conservation?

Fulfilling corporate social responsibility and achieving environmental sustainability.

CSR

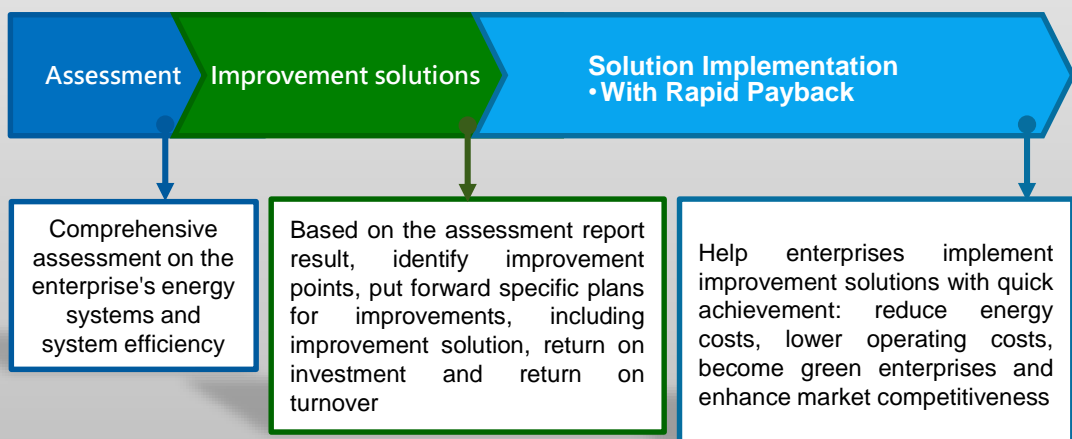
Gaining & sustaining competitive advantages in your marketplace. Being '**GREENER**' supply chains to meet your customers' req't.

Competitiveness

Better managing your resources and reducing energy waste; thus reducing the operational expenses

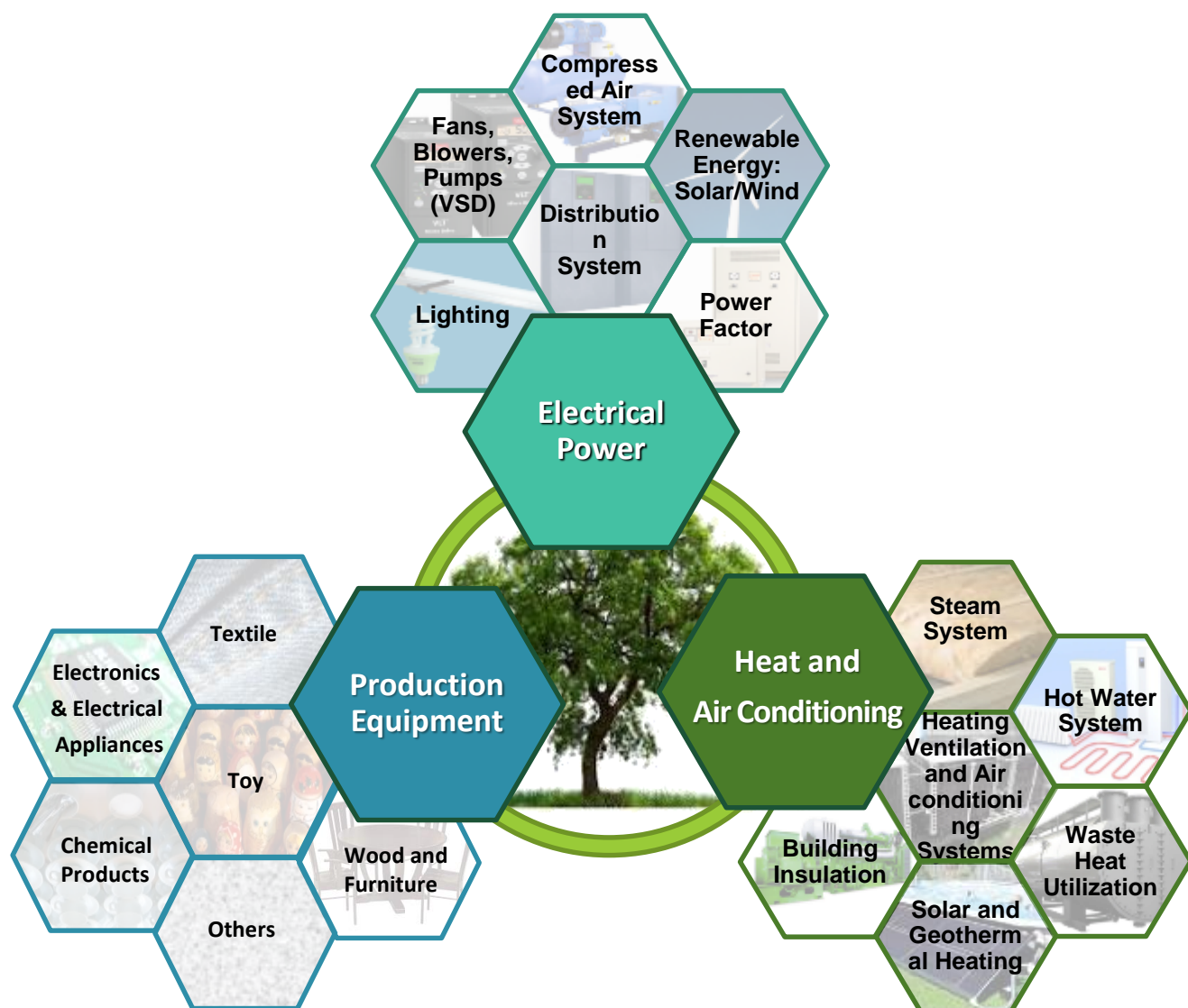
Operational Expenses

In view of this, TQM provides energy audits and energy efficiency consultancy services:



Our Coverage

We cover three major areas of energy consuming systems and equipment:



| Energy Systems | Improvement Magnitude | Payback period |
|------------------------------|-----------------------|----------------|
| Electrical Power | 20 - 40% | 1 - 1.5 Years |
| Heating and Air Conditioning | 15 - 35% | 1.5 - 2.5Years |
| Production Equipment | 10 - 40% | 1 - 2.5 Years |

Case Sharing

香港美商制衣有限公司
Michel of Hong Kong Ltd.

Michel of Hong Kong Ltd. is a subsidiary of Dongguan Michel Matheson, whose business includes sweater design, production, sales and exports to Europe, America and other countries.

Issues and Challenges

- Located in Dongguan, a region with hot climate weather. High temperature in summer is a heavy load to bear for the thermostats.
- Own more than 160 sets of 24-hour operating machines that require efficient thermostats.
- Huge machines and thermostats cost more than RMB 1,000,000 for electricity per year
- Require to meet national standards for wastewater discharge

Tasks

- Provided effective implementation solutions based on the manufacturers' conditions, including:
 - Improved insulation of building systems
 - Use of environmentally friendly energy-saving electrical installations
 - Optimized sewage treatment system
- Conducted inspections and tests



Achievement

- Remarkable improvements achieved by professional verification
- Annual savings of more than **¥ 200,000 in total**
- One-time investment with only **9-month** payback period

| Improvement solution | Achievement |
|----------------------|---|
| Energy Saving System | ✓ Energy consumption ↓ 31.6% |
| | ✓ Cooling effect ↑ 9.6% |
| Sewage treatment | Each test completely complies with national standards |

Marks & Spencer(M&S) has over 700 stores in 30 countries. It is well-known for its retail chains of clothing and food items. To alleviate climate change, Marks and Spencer has implemented a variety of environmental projects to reduce carbon emissions and energy consumption. In recent years, Marks and Spencer has been mobilizing its suppliers to fulfill its commitment of converting 50% of its suppliers into green plants (eco-factory) by 2015. Therefore, in order to remain competitive, a number of suppliers invited TQM to provide energy audit services, and provide them with targeted improvement program to reduce carbon emissions and cost savings, as environmentally friendly factory.

Scope of Audit

- Factories with primary energy usage and distribution
- Main energy consuming facilities and key production equipment in production lines
- Operating conditions for main production auxiliary equipment (e.g. air conditioning and ventilation systems, air compressor systems, lighting equipment etc.)
- Provided implementation plans to reduce energy consumption

Some of the M&S Suppliers

- | | |
|--|---------------------------------------|
| • M&V International Manufacturing (HK) Ltd | • PT. KUTA BEACHWEAR |
| • Cambodia Phnom Penh Factory (MV3) | • Hangzhou Xinyi Garments Co Ltd |
| • Cambodia Kampong Chhnang Factory(MV4) | • Zhongshan Baofeng Knitting Co., Ltd |

MARKS & SPENCER

Some of the audit cases

M&V International Manufacturing (HK) Ltd- Cambodia Phnom Penh Factory (MV3)

Improvement Solution

- Improved the plant's energy management systems, which include an online energy consumption monitoring system
- Improved grid quality, reduced line loss and electricity wastage
- Used split air conditioning and replacement refrigerants to improve operational efficiency of air conditioning
- Installed an energy feedback system in the elevator system to reclaim the energy generated by the elevator motor during braking
- Improved the efficiency of hot water systems for dormitories
- Created distributed energy stations



★ **¥330,000 Annually**
Payback period: 7 months
★ Whole Factory : 8.8% of power

★ **¥680,000 Annually**
Payback period: 6 months
★ Whole Factory : 6.4% of power

M&V International Manufacturing (HK) Ltd- Cambodia Kampong Chhnang Factory(MV4)

Improvement Solution

- Improved the plant's energy management systems and establish online monitoring team for energy consumption
- Adopted Distributed Power Factor Correction for main production equipment to improve the power factor and reduce line loss
- Adopted central air conditioning with temperature control cabinet to improve the operational efficiency of air-conditioning
- Adopted variable frequency drives for constant air pressure operations to reduce energy in the on/off process of the air compressor and maintain constant air pressure
- Improved the efficiency of hot water supply systems for dormitories



M&V highly praised TQM professional service, and implemented the improvement solutions from this program in other plants with excellent results



馬莎百貨
Marks and Spencer

PT. KUTA BEACHWEAR

Improvement Solution

- Fixed plant power systems and air conditioning systems
- Introduced heat radiation architectural design to reduce solar heat impact on the thermostatic system
- Introduced compressed gas checker to prevent gas leakage and to maintained the high efficiency of the use of compression systems
- Used energy-saving lamp devices and improved the lighting system
- Reviewed and made obsolete old production equipment with high electric power consumption

★ **¥54,000 Annually**
Payback period: 2 years
★ Whole Factory :
34% of power

Hangzhou Xinyi Garments Co. Ltd

Improvement Solution

- Established energy management systems for continuous and effective management of energy and hence saving energy
- Used split air-conditioning systems and air conditioning systems without motor cooling
- Used energy-saving lamp devices and improved the lighting system

★ **¥76,000 Annually**
Payback period: 2-4
years
★ Whole Factory :
6.4% of power





↓
¥160,000 Annually
Payback period: <2
years
↓
Whole Factory :
16% of power

Zhongshan Baofeng Knitting Co., Ltd.

Improvement Solution

- Reduced the damage regarding the current harmonics on the power system, stabilized receiving end and improved power grid quality to meet national standards
- Improved the air conditioning's cooling systems to reduce energy loss, improved operational efficiency and air-conditioning equipment efficiency
- Introduced variable frequency drive to improve boiler efficiency and save energy
- Installed energy feedback system for elevators to utilize the energy dissipated in the braking resister to reduce the temperature of the machine room
- Installed energy saving device in the key production equipment to save energy and reduce cost



Case Sharing

信源企業股份有限公司 Reliable Source Industrial (Cambodia) Co., Ltd.

Located in Phnom Penh Cambodia, Reliable Source's garment factory is a large-scale overseas production plant with more than 1,000 workers. With a total area of 35,000 m², the company mainly engages in the production and export of swimwear.

Scope of Audit

- Factories with primary energy usage and distribution
- Main energy consuming facilities and key production equipment in production lines
- Factory Energy Management System (management institutions, management status, management systems, measurement management, statistics and quota management)
- Operating conditions for production auxiliary equipment (e.g. air conditioning and ventilation systems, air compressor systems, lighting equipment, steam system etc.)
- Provided implementation plans to reduce energy consumption

Improvement solution

- Optimized the electricity distribution to improve the power system
- Established “high-power device usage regulations” to improve staff’s awareness on energy consumption of power equipment and energy-saving habits
- Optimized plant energy management systems with energy monitoring system
- Optimized the power supply system to improve the power factor
- Designed renewable energy supply system to reduce electricity costs
- Optimized lighting system
- Adopted hydrocarbon refrigerant for air-conditioning system to minimize the damage to the ozone layer
- Improved layout design to increase heat resistance
- Build rainwater collection and reuse systems



Achievement

- Whole plant energy cost reduced by 33.94%
- Improved total projects annual savings of more than ¥ 1,100,000
- Only one-time investment on the project, and the overall return on investment in just 9 months



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