



AEMAS

ASEAN Energy Management Scheme



Energy Management Gold Standard for Successful Energy Management Program

Presented by

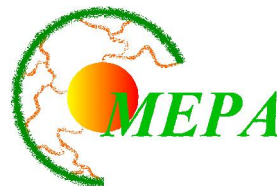
Ir Al-Khairi Mohd Daud

P.Eng, MIEM, PEM, REEM, MIAM, MMSQH

Country Expert AEMAS EMGS

20th May 2015

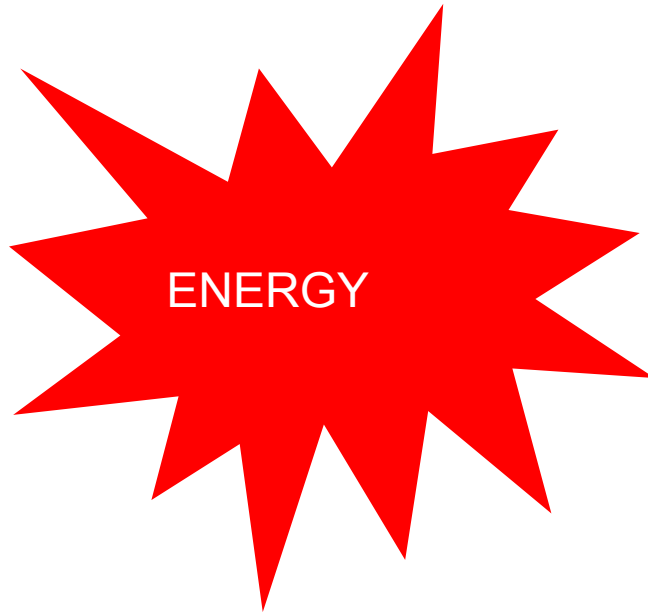
Shah Alam Convention Centre, SACC



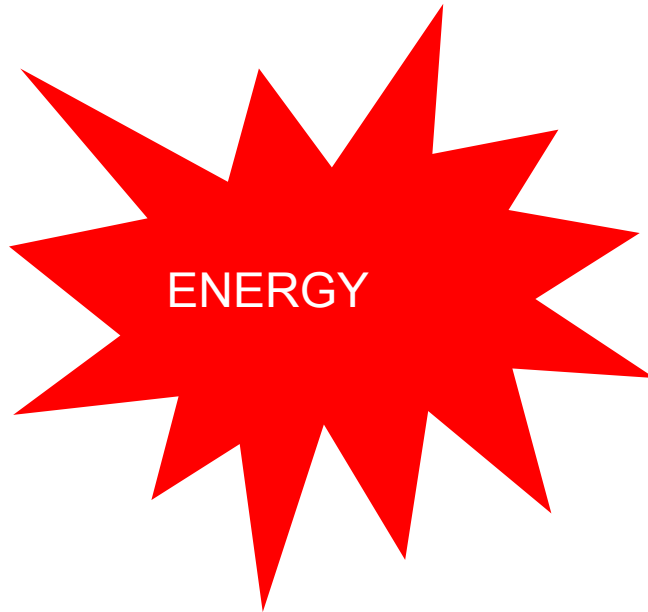
Energy



What is Energy



What is Energy



What is Energy



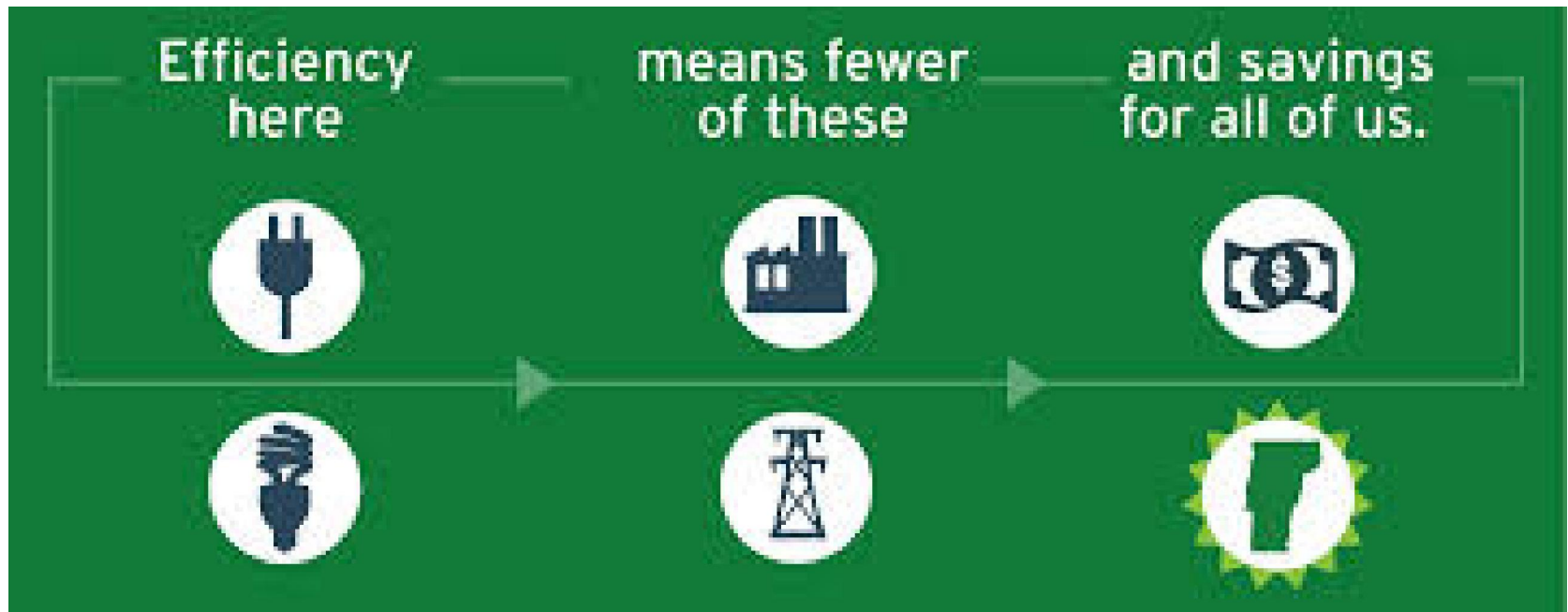
WORK

What is Energy

WORK

WORK

Efficiency



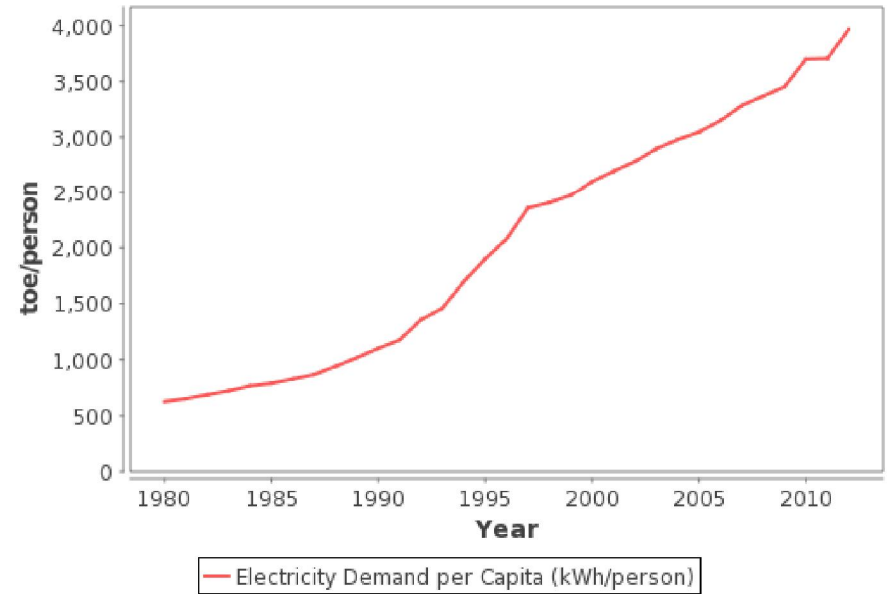
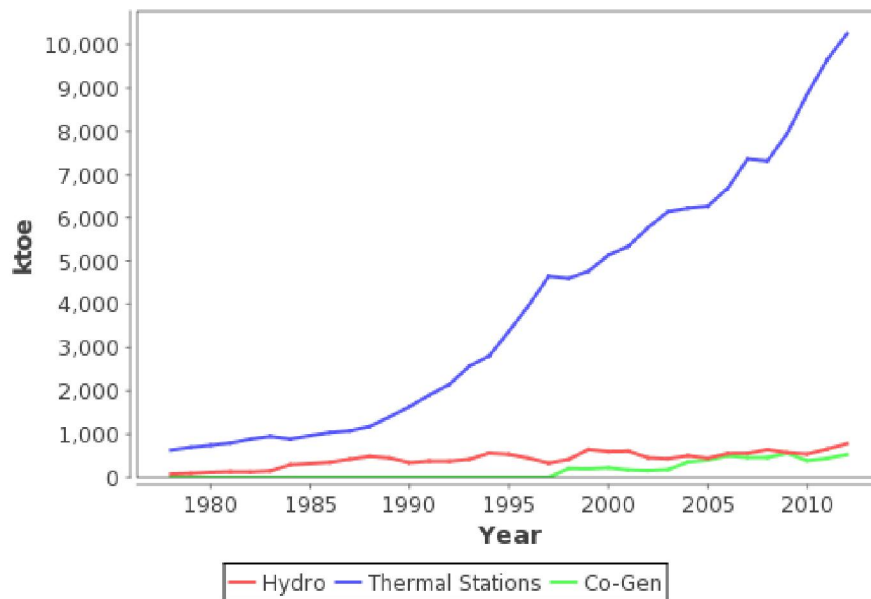
Effectiveness

Effectiveness is...
"Doing the right thing"

Efficiency is
"Doing the thing right"

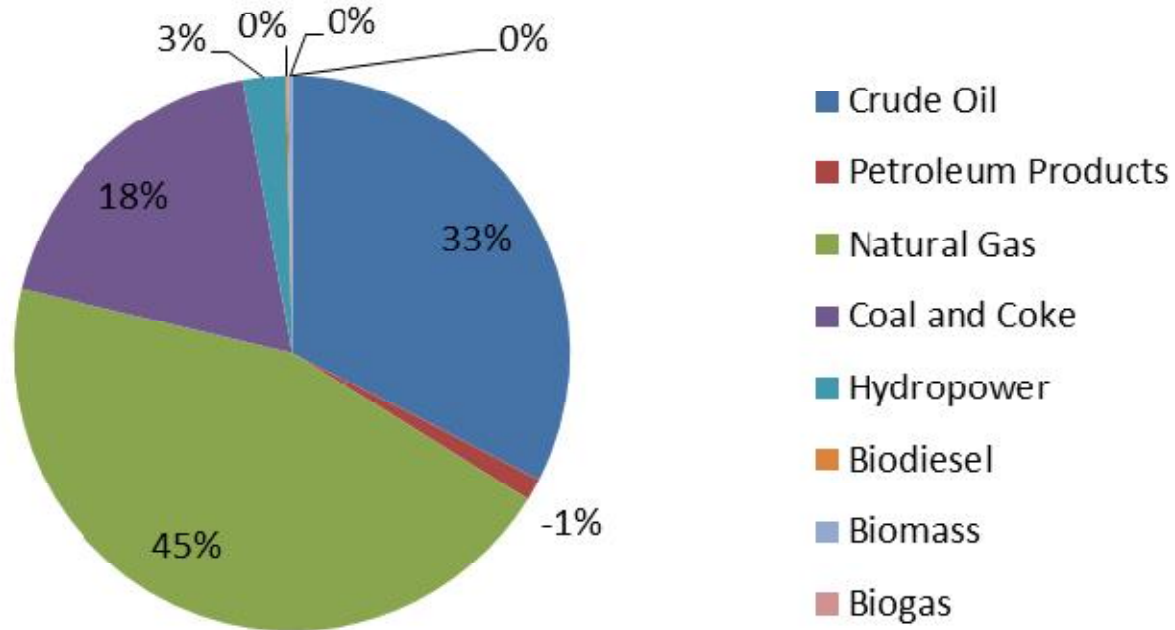


Malaysia Electricity Demand



Energy Supply Mix

Primary Energy Supply 2012



Govt: Be ready for higher electricity bills

PRESS DIGEST

BY KONG SEE HOH

newsdesk@thesundaily.com

ENERGY, Green Technology and Water Ministry secretary-general Loo Took Gee says liquefied petroleum gas (LPG) prices and electricity tariff will be allowed to float freely by 2015, and urged the public to be prepared for higher electricity bills.

She said the government is currently distributing LPG to power-generating sector at RM10.70 per MMBtu (million British thermal unit), which is more than 70% lower than the market price.

"Crude oil is currently traded at USD75-80 (RM232.50-RM248) a barrel in the world market. We don't know the trends of the world oil market in the future, it could soar again. We feel that the people would surely find it unacceptable if the price (of LPG) is adjusted one-off (instead of gradually)."

In an interview with *Nanyang Siang Pau*, Loo, 54, the first Chinese woman to be appointed a secretary-general in Malaysia, reminded the public to be prepared for the days of high power tariff. She said the price of LPG will be adjusted gradually so that the people and businesses are prepared.

In line with the government's gradual subsidy rationalisation programme, electricity tariff will be reviewed every six months beginning next year, she said.

"I expect the government to adopt the recommendations of the National Key Economic Areas (NKEA) laboratories, and start to make adjustments from next year, i.e. we will make 10 adjustments in the next 10 years."

Loo said the government will use the money saved from subsidy rationalisation in other areas, including raising the people incomes, and subsequently their purchasing power.

She said the government will also continue to take care of the lower-income group through its social safety net instruments, such as distributing discount coupons.

She said between 1997 and 2009, the government provided RM97.45 billion in energy subsidy – of which 75.31% went to electricity supply.

26th October 2010

Malay Mail Online

Government 'no option' but to raise power rates, PM says

• By Syed Jaymal Zahiid

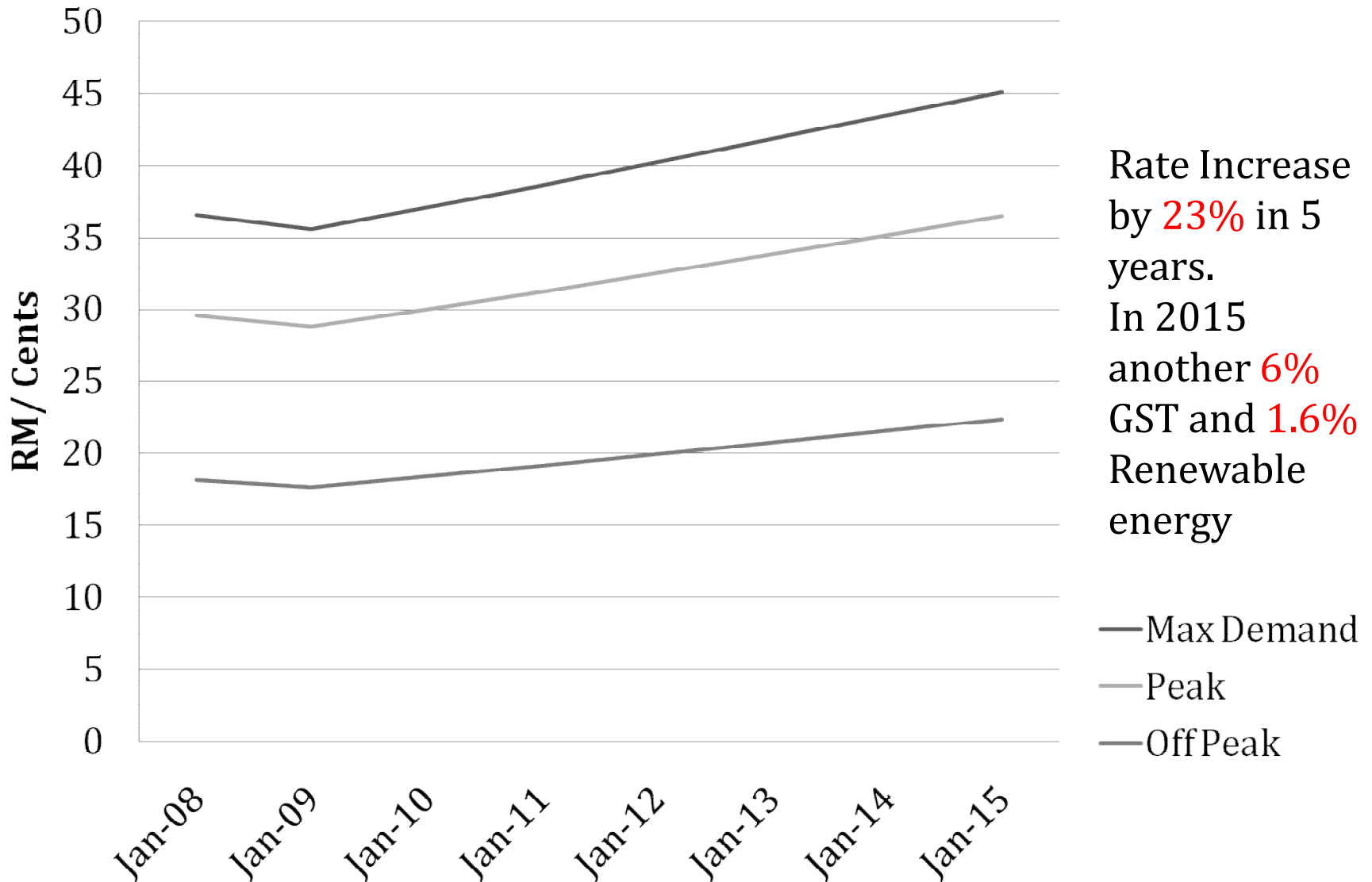
May 16, 2014

- Prime Minister Datuk Seri Najib Razak today said Putrajaya had no choice but to raise electricity tariffs as subsidising Tenaga Nasional Berhad (TNB) using public funds would hamper development spending. He is seen here giving a speech at the opening of the Taiping Umno building, May 8, 2014. — Bernama picKUALA LUMPUR, May 16 — Driven by the high cost of fossil fuel, Putrajaya had no choice but to raise electricity tariffs despite knowing the move will shoot up the prices of basic goods and services, Prime Minister Datuk Seri Najib Razak said today.
- Najib said refusal to increase tariffs would result in the government having to subsidise the country's sole power company Tenaga Nasional Berhad (TNB) using public funds and this would hamper development spending.
- "It's not that we want to raise (the) tariff. The cost of fossil fuel is rising so we have to raise it.
- "What options do we have? If not, we would have to use public fund(s) to subsidise TNB. The reality is, we have no options," he told TNB staff at the government linked company's anniversary here.
- Najib, who is also finance minister, said it would be the duty for TNB staff to explain to consumers the rationale behind the move to raise power tariff.
- Power tariffs rose by an average of 15 per cent effective January 1, after Putrajaya announced on December 2 last year that it had approved the increase by utility firm Tenaga Nasional Berhad (TNB).
- Despite the increase, Energy, Green technology and Water Minister Datuk Seri Dr Maximus Ongkili said the government would still have to spend RM14 billion on subsidies and rebates.

Kadar Tarif Elektrik

Tarif C2 – Voltan Median Tarif Komersil Biasa	Unit	1 Julai 2008 – 28 Februari 2009	1 Mac 2009 – 31 May 2011	1 Jun 2011 – 31 Dec 2013	1 Jan 2014 - kini
Untuk setiap kW Maximum Demand setiap bulan	RM/k W	36.60	35.60	38.60	45.1
Untuk setiap kWh semasa peak period	Sen/k Wh	29.60	28.80	31.20	36.5
Untuk setiap kWh semasa off-peak period	Sen/k Wh	18.20	17.70	19.20	22.4
Cas minima bulanan ialah	RM	600	600	600	600

Energy Tariff C2 2008-2015





2. WHY ENERGY EFFICIENCY?

GOVERNMENT DRIVES

- Legal requirement
 - Efficient Management of Electrical Energy Regulations 2008
 - MEPS
- Sustainable Development Policy and Government drives
- Business driver
 - Going Green
 - Reduction of cost



3. HOW TO DEVELOP ENERGY MANAGEMENT PROGRAM?

Key Steps

- Convince your Top Executives of the benefits of SEMP
 - Saving
 - Recognition - Certification
- Remind them of the regulatory requirements
- Appoint competent Energy Manager to champion the initiative
- Follow the EMGS requirements
- Set up Performance Indicators
- Monitor and continuously improve



ASEAN ENERGY MANAGEMENT SCHEME

4. ENERGY MANAGEMENT GOLD STANDARD

RECOGNITION



LAUNCHED BY YB MINISTER
OF ENERGY, GREEN
TECHNOLOGY AND WATER -
19TH JULY 2011



- GreenTech Malaysia has been appointed by Asean Centre for Energy (ACE) as Certification Body for Malaysia
- GreenTech Malaysia has been recognized
 - by Energy Commission (ST) to support Continuous Development Program (CPD) for Registered Electrical Energy Manager (REEM)
 - Institution of Engineer Malaysia under their Continuing Professional Development (CPD) for engineers

Energy Management Gold Standard

“System of certification based on excellence in energy management”



Training and certification of Energy Managers

- Training curriculum focused EXCLUSIVELY on managerial aspects: how to establish and manage and EnMgt system
- Two levels of certification: Certified EnMgr and Professional EnMgr

Certification of companies

- Based on ISO 50001 with additional requirements
- Three levels of certification to progressively drive towards EnMgt best practices

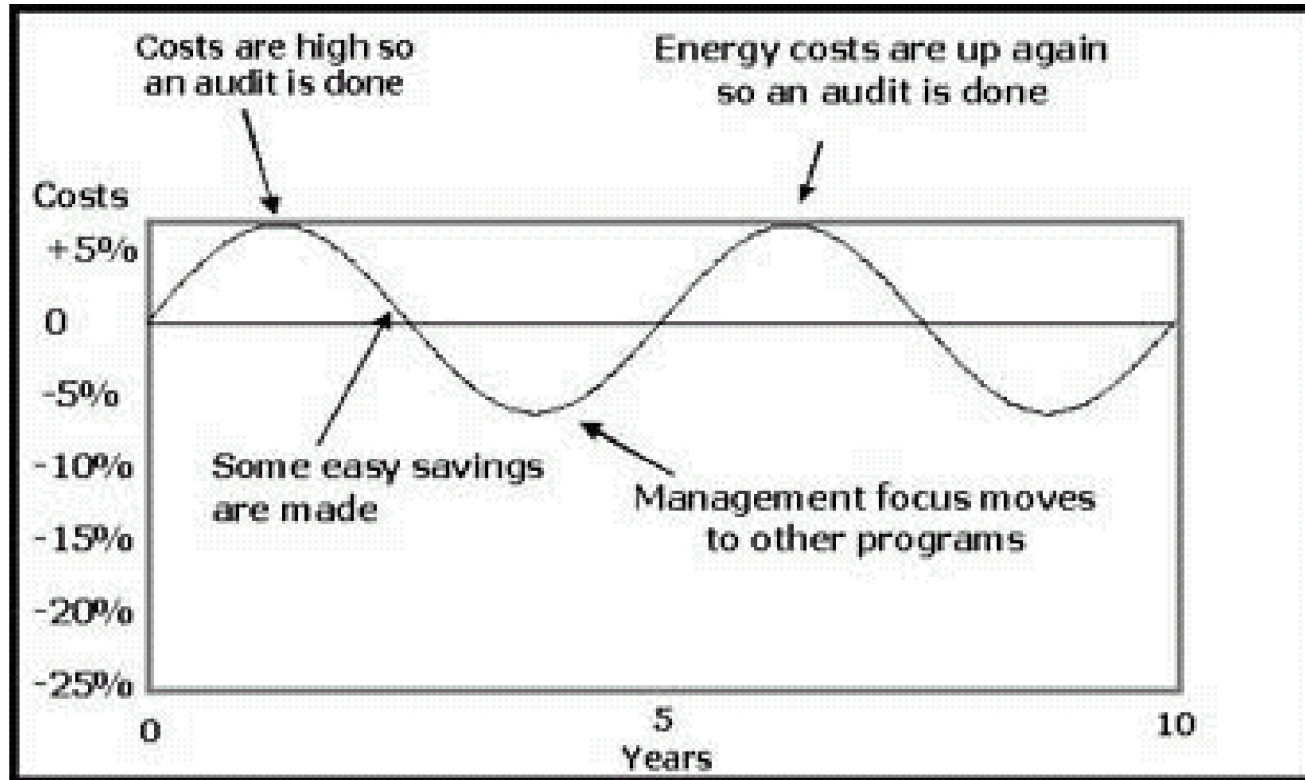
What is Sustainable Energy Management

- Process of managing the energy consumption in the organization to assure that energy has been efficiently used.
- Covers all aspects of energy consumption, technical and non-technical

Principle for Energy Management Gold Standard

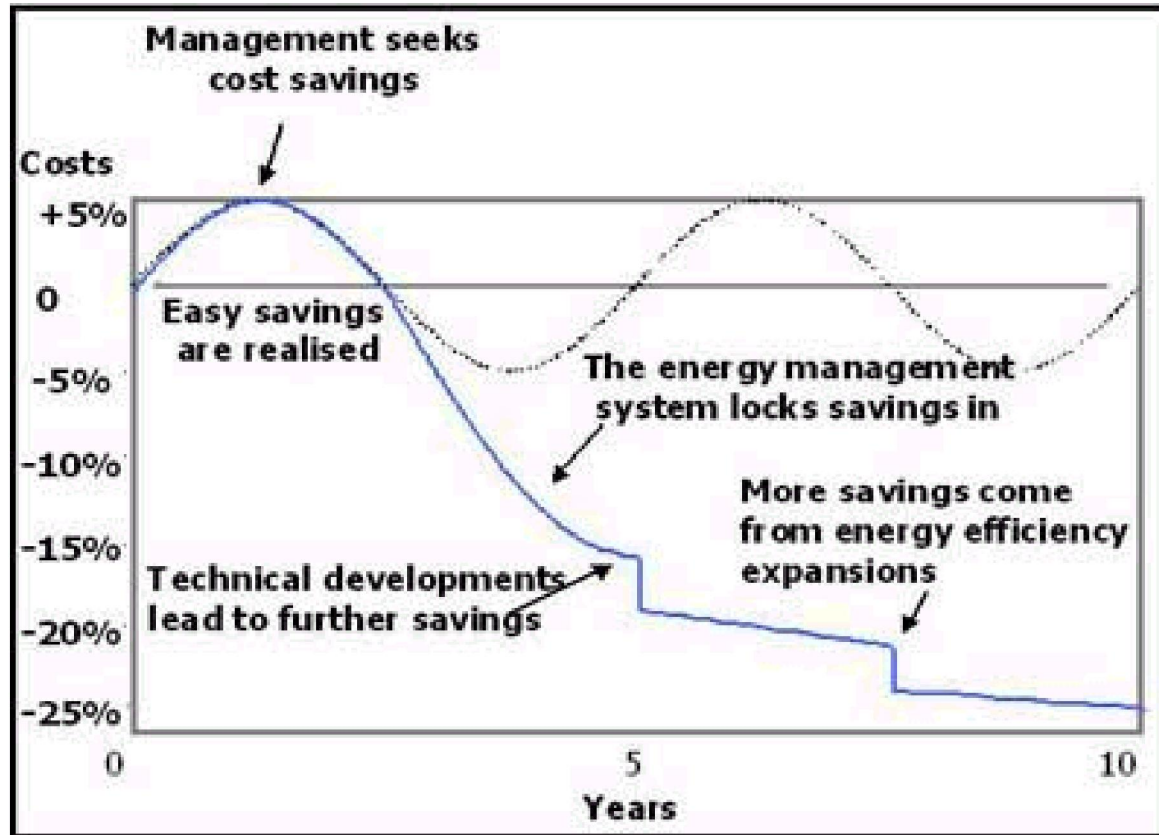
- Comply with organizational objective/goal
- Involve all staff in the organization
- Develop organization and staff knowledge
- Create the continuous improvement process
- Integrate with standard working procedures

Non Sustainable Energy Management



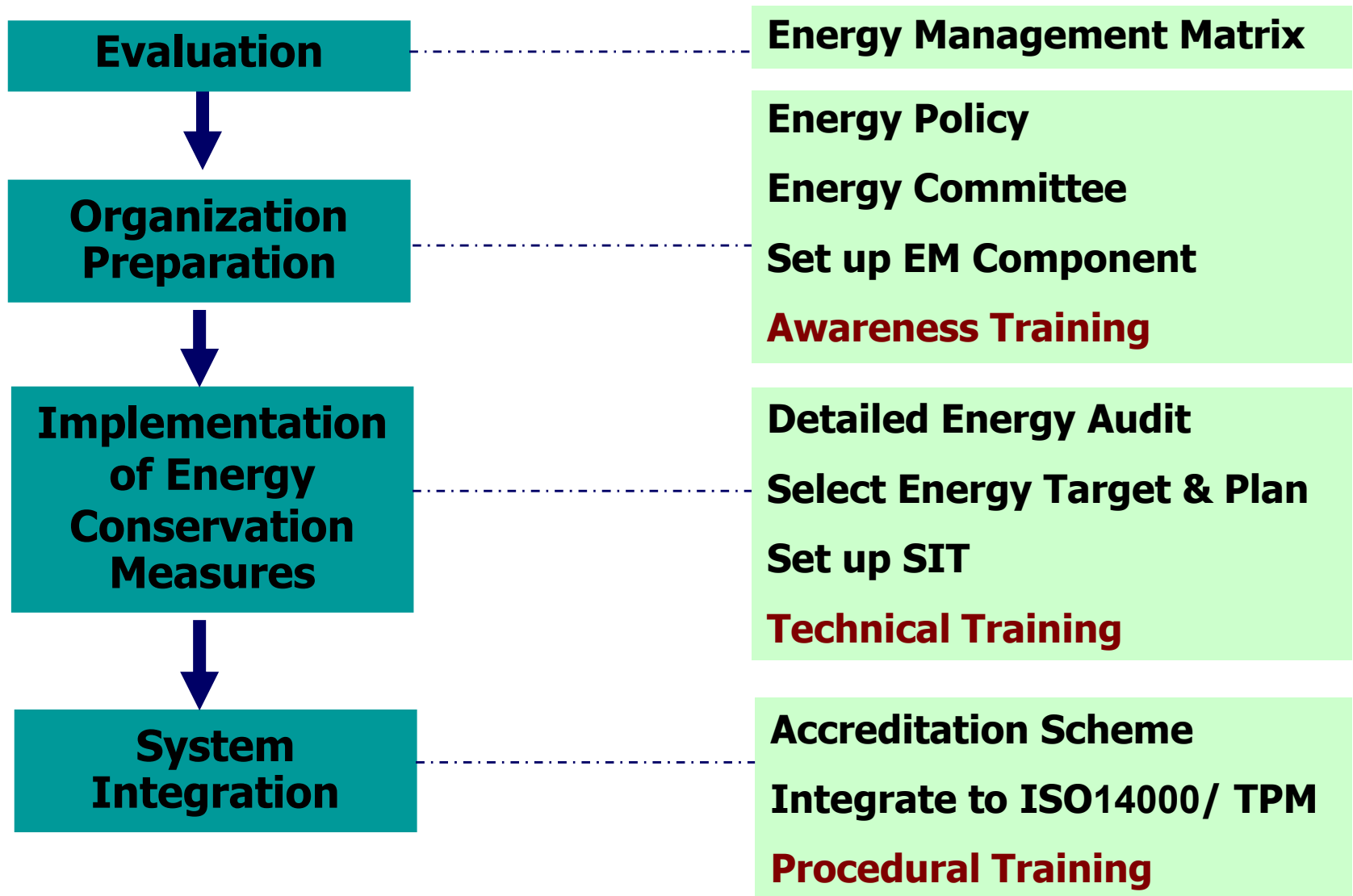
Energy cost cycle of the energy conservation programme **without** sustainable energy management system

Sustainable Energy Management



Energy cost cycle of the energy conservation programme **with** sustainable energy management system

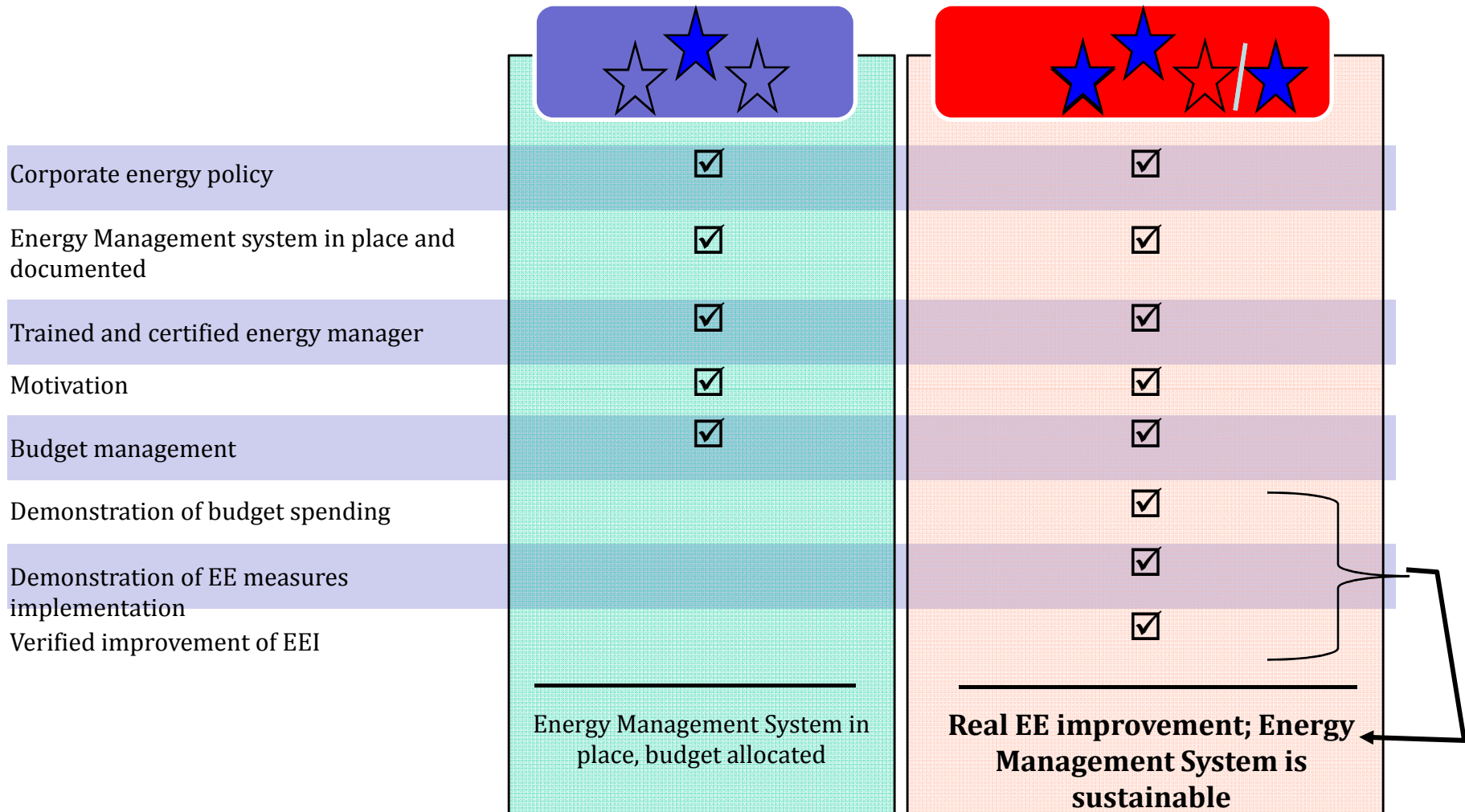
Energy Management Gold Standard Roadmap



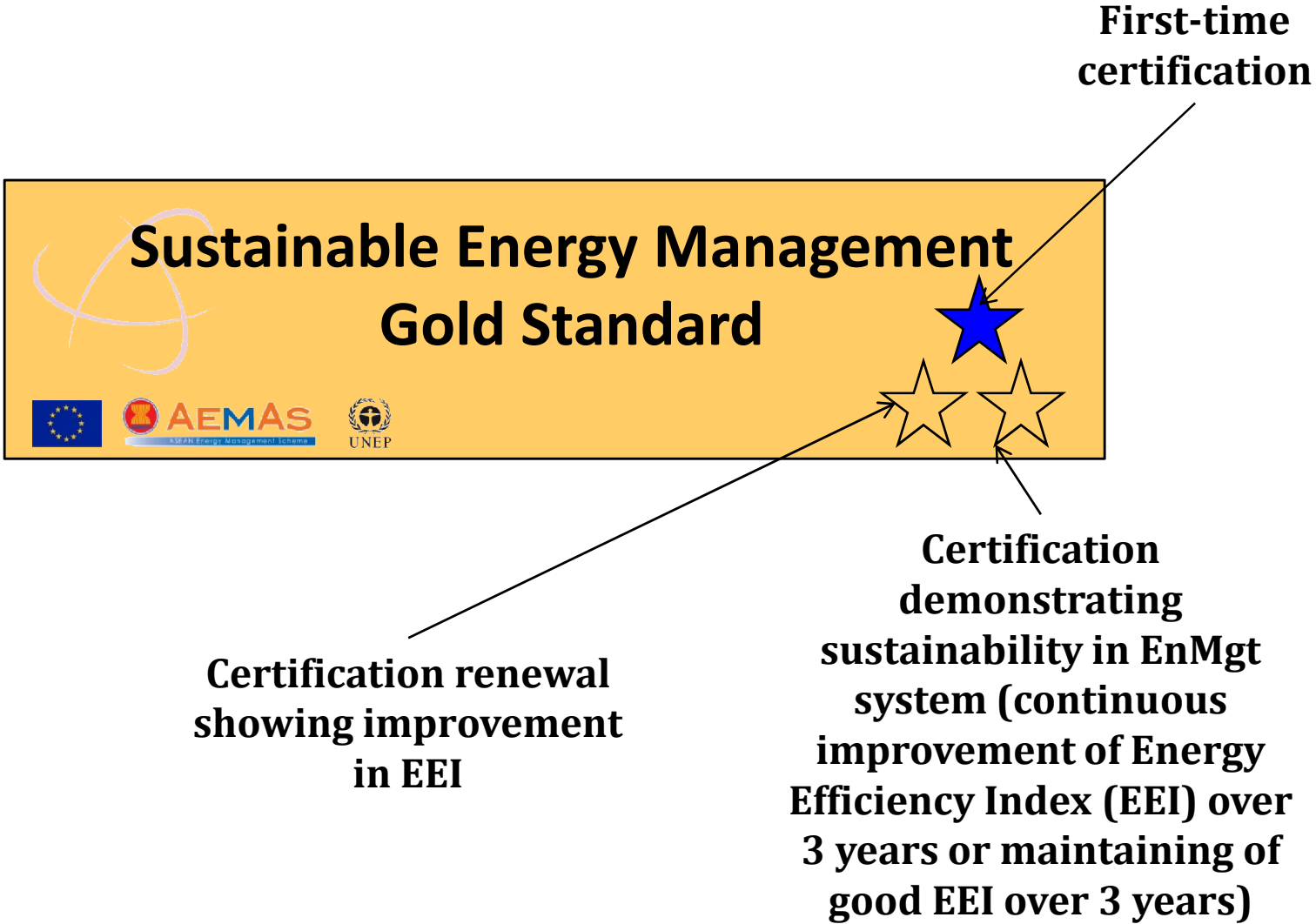


5. CERTIFICATION

End-User Certification process



Energy Management Gold Standard Logo





Partly Funded by

AEMAS Structure



Accreditation Body

Accredit certification bodies to certify companies & energy professionals

National Support Network (NSN)



Indonesia



Vietnam



Philippine



Thailand



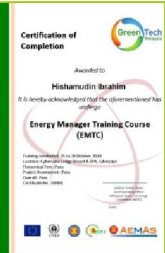
Malaysia

Certification Bodies

Certify Companies and Certify Energy Managers



Certified Company



Training cert



CEM cert



PEM cert

Role of GreenTech Malaysia

- Certification Body for AEMAS in Malaysia
- Promote the adoption of Sustainable Energy Management through AEMAS
- Train and qualify AEMAS Auditor and Energy Manager
- Certify Energy Manager & Profesional Energy Manager
- Certify Energy End-User who adopt AEMAS system

Sample of Certificate

Certificate of Registration



Awarded to

Malaysian Green Technology

ENPAP certifies that the Energy Management System of Salamat Manufacturing Co, Ltd., Philippines, has been audited and found in accordance with the requirements of the management system detailed below:

Energy Management Gold Standard



Audit conducted: 23-25 March 2011
Validity of this certificate: 01 April 2011 – 31 March 2013
Auditor: Mr. Abc Defg, accreditation No.: 20134
Certificate No.: 34006
Gold Standard level: 1-star

The validity of this certificate can be verified from the following web site:
www.energymanagement.org

The Energy Management Gold Standard requires companies to establish their energy management system according to ISO 50001 and to demonstrate that their Energy Efficiency Index improves against an established energy baseline.

- ★ Energy Mgt system established according to ISO 50001 + AEMAS Certified Energy Manager + internal motivation system + 11-12 energy budget management system
- ★★ Additional requirements: the 11 measures recommended have been implemented + the allocated budget met or is just + the EEl has improved by 30 per cent
- ★★★ Continuous improvement of EEl at a level equal to or higher than industry benchmark over at least 3 years

ENPAP is accredited by the ASEAN Energy Management Scheme on Energy Management Gold Standard



AEMAS
ASEAN Energy Management Scheme

Certification of Energy Managers

- Empowers industries with in-house capabilities to establish and manage the EnMgt system
- Enhances the professional standing of Energy Managers
- Training curriculum based on 220-page Energy Management Workbook:

- Role of the energy manager
- How to define the energy policy
- How to appraise the energy management performance
- How to set up and manage: energy baseline, EEI, Energy Accounting Centers, Energy Management Committee, Energy Management Working Procedures, Investment Appraisal for Energy Efficiency Projects, Human Resource Development in Energy Management System, Documentation in Energy Management System
- How to establish Energy Target & Plan, including organizing Energy Audit & Analysis, Measurement & Verification
- How to integrate the Energy Management System into Business Practice (working , monitoring and reporting procedures, other management standards, ...)
- Project management and investment
- Energy Management performance review

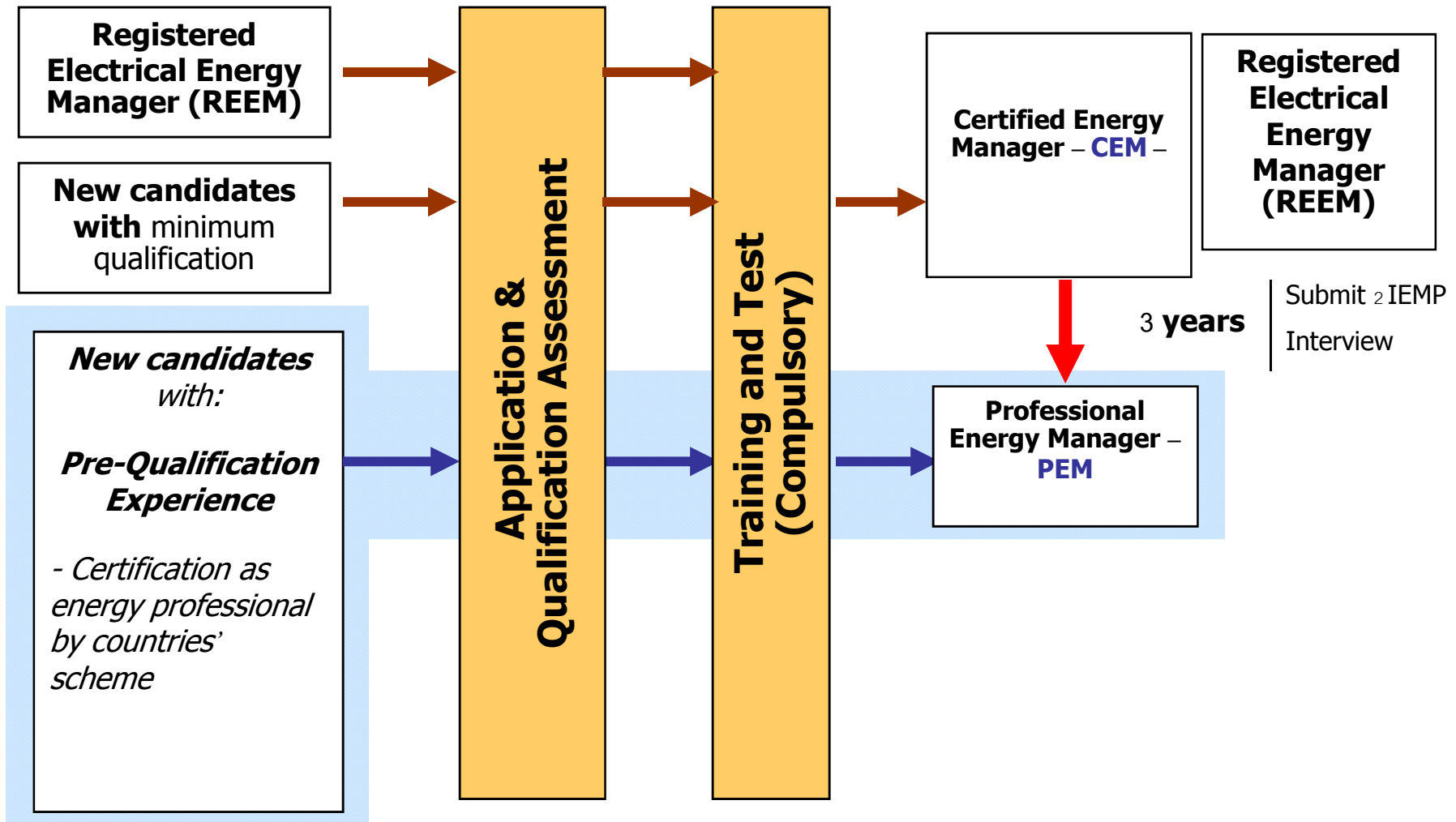
Category of Energy Professional

There are two categories of energy managers;

- **Certified Energy Manager (CEM)**
- **Professional Energy Manager (PEM)**

The purpose of having two categories of energy managers is to assist and encourage professionals in the energy management career development.

Roadmap for Energy Professional



AEMAS ACHIEVEMENT IN MALAYSIA

Certification	Quantity
1. Energy Management Gold Standard – 3 Star	Universiti Teknologi Malaysia
2. Energy Management Gold Standard – 1Star	Puncak Niaga SSP2 Attorney Chamber BHEUU Politeknik Merlimau Telekom R& D Sdn Bhd
3.Certified Energy Managers	789 – Trained 666 - Certified
4. Professional Energy Managers	2
5. REEM	198/550



6. SUCCESS STORIES

Energy Management Stories

- Story 1: UTM
- Story 2: Puncak Niaga



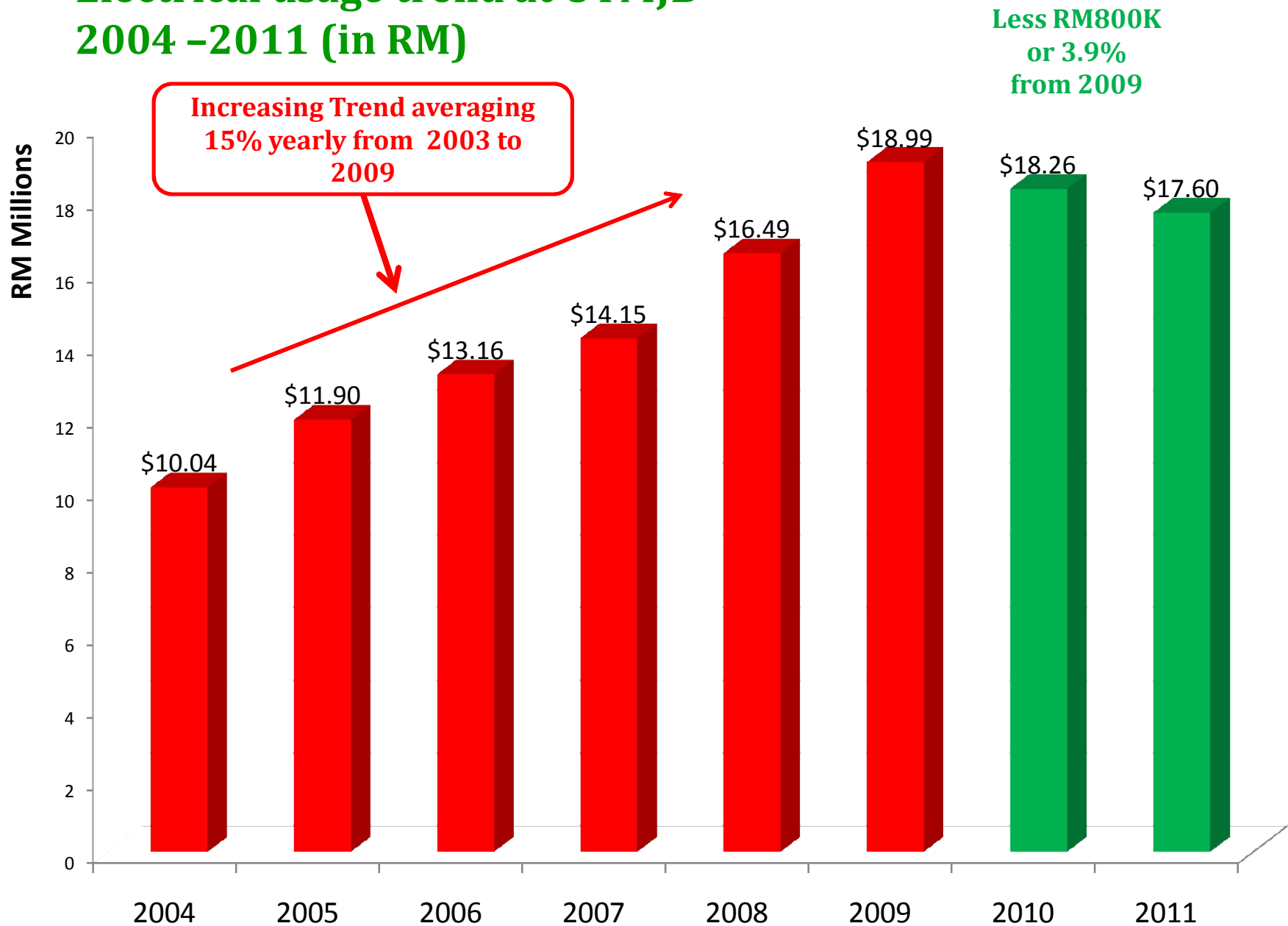
Story 1:



UTM
UNIVERSITI TEKNOLOGI MALAYSIA



Electrical usage trend at UTMJB 2004 -2011 (in RM)



The Winning Move



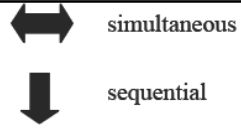
SUCCESS
FACTORS

**Start by
Building People!**

**Jan 2011:
Training for 30 Energy
Managers**

SEMP METHODOLOGY

A. Building Housekeeping & Best Practices
(ie Electrical Tariff Review, TNB OPTR Scheme, Retime of centralised a/c system operation, EAC Electrical Bill statement system, Operation & Maintenance Policy)



B. SETTING UP SUSTAINABLE ENERGY MANAGEMENT SYSTEM

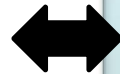
- Development of energy policy
- Development of an energy management committee
- Establishment of energy accounting center (EAC) & appointment of Head of EAC
- Establishment of Energy Efficiency Index for overall organization and each EAC
- Establishment of overall & EAC working procedure
- Establishment of reporting and monitoring system

C. ENERGY AUDIT & RECOMMENDATION FOR IMPROVEMENT

- Overall energy survey
- Establish building energy balances and existing equipment details
- Evaluating systems performance
- Setting the practical utility benchmark targets and building benchmarking
- Recommendations for improvement via UTM Transformation Projects
- Economic analysis

D. OTHERS

- Energy saving and policy posters
- Working manuals booklet
- 'Energy Manager' in-house workshop
- Providing Energy Awareness seminar
- Installation of electrical meters



ENERGY MANAGEMENT MATRIX

before SEMP

implementation

current status as of Dec 2013 (after 3 years)

	Energy Policy	Organization	Motivation	Information System	Marketing	Investment
4	Energy policy, action plan and regular review, have commitment of top management as part of an environmental strategy	Energy management has been fully integrated into management structure. Clear delegation of responsibility for energy consumption	Formal and informal channels of communication regularly exploited by energy manager and energy staff at all levels	Comprehensive system sets targets, monitors consumption, identifies faults, quantifies savings and provides budget tracking	Marketing the value of energy efficiency and the performance of energy management both within and outside the organization	Positive discrimination in favor of 'green' schemes with detailed investment appraisal of all new build and refurbishment opportunities
3	Formal energy policy, but no active commitment from top management	Energy manager accountable to energy committee representing all users, chaired by a member of the managing board	Energy committee used as main channel together with direct contact with major users	M & T reports for individual premises based on sub-metering, but savings not reported effectively to users	Programme of staff awareness and regular publicity campaigns	Some payback criteria employed as for all other investment
2	Un adopted energy policy set by energy manager or senior department manager	Energy manager in post reporting to ad-hoc committee but line management and authority are unclear	Contact with major users through ad-hoc committee chaired by senior department manager	Monitoring and targeting reports based on supply meter data. Energy unit has ad-hoc involvement in budget setting	Some ad-hoc staff awareness training	Investment using short term payback criteria only
1	An unwritten set of guidelines	Energy management is the part-time responsibility of someone with only limited authority or influence	Informal contacts between engineer and a few users	Cost reporting based on invoice data. Engineer complies reports for internal use within technical department	Informal contacts used to promote energy efficiency	Only low cost measures taken
0	No explicit policy	No energy management or any formal delegation of responsibility for energy consumption	No contact with users	No information system. No accounting for energy consumption	No promotion of energy efficiency	No investment in increasing energy efficiency in premises

UTM SEMP key activities

- Change operation hours of centralised air-conditioned from 7:00am-5:00pm to 7:30am to 4:30pm
- Increase PTJ awareness on their electricity energy usage when receiving monthly electric bill statement and after Energy Saving Campaign organized in faculties, colleges, offices, UTM security guards and UTM Cleaners
- Controlling the usage of the centralized air-conditions (AC) system during weekends. All SPACE program and weekend classes are only conducted in rooms with split unit AC
- Retrofit energy saving lamps T5 of 60,000 units.
 - 50% reduction of 60,000 lamps x 20 Watt =1200 kW/h @ RM10K/month
 - Maximum Demand reduced from 15.5 MW to 13.5 MW or 2.5 MW saving
 - Maximum Demand charges reduced 2.5 MW of RM30.3/kW @ RM75K/month
- Switched to a tariff with an *Off-peak Tariff Rider (OPTR)*, starting 19 July, 2011 a special tariff allowing UTM to enjoy a 20% discount of energy usage from 10:00 pm – 8:00 am
- Technical and System Energy Audits done by in-house team
- Training of 30 Certified Energy Managers in January 2011 and another training for 12 more Certified Energy Manager in December 2013 (the only organization that have this much certified energy manager by AEMAS/Greentech
- More organized and structured SEMP at faculties, colleges & offices

UTM highlighted as the exemplary Energy Management Institution - In Green Purchasing Asia Magazine

COVER

OPPORTUNITIES

RETROFITS

Practising what it preaches

UTM's electricity bill hit new low in July 2011

UTM Saves > RM 7 Million in Energy Bills (2011-2014)

the first time since 2008, the university's electricity bill dipped below the RM1 million (US\$318,000) mark energy efficient drive. Considering that the university's monthly power consumption over the past three years was as high as RM1.7 million, the July figure of RM962,345 was a sterling achievement.

To Prof Dr Zainuddin Abdul Manan, a key member of a group who

(Single Star) (see explanation). The other was a subsidiary of Malaysia's telecommunications company, TM Research and Development (TMRD).

The university will go for the Golden Star (Two Star) award to gain the improvement in its electricity consumption. "We will also be the first Malaysian university to participate in the upcoming Single Star Energy Award in 2012. At the moment, not even one university in ASEAN has taken up the challenge," he says.

Working within budget

Energy-saving initiatives began in UTM as far back as 2003, when the facilities maintenance team improved power usage at the library with the help of an energy services company (ESCO) which provided the investments, and subsequently shared the savings. Early



AWARDS RECEIVED 2011-2014



ENERGY SAVING RM6.6 MILLION FOR 2010-2013



ENERGY SAVING 21,070,758 kWh FOR 2010-2013



The only organization to get 3 STAR ASEAN Energy Management Gold Standard

Award for the achievement of energy saving





Story 2: SSP2

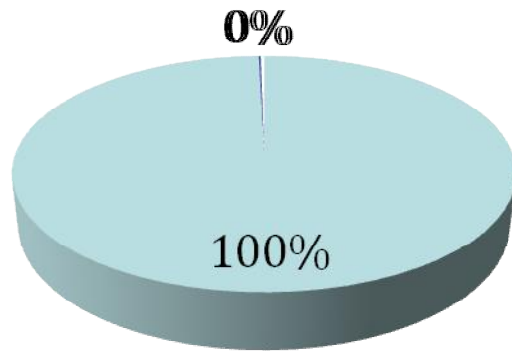


PUNCAK NIAGA (M) SDN BHD
"Pakar Air Malaysia"



Intake Plant

- Intake Raw Water Pump
- Intake Air Con
- Intake DB Load

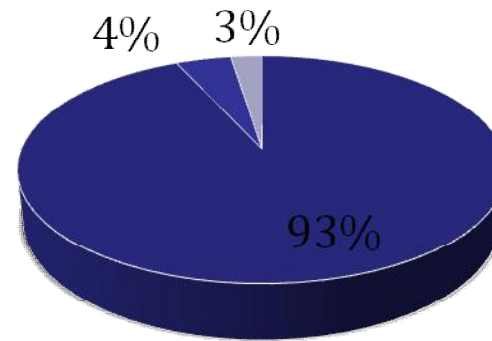


112,677,246 kWh

67%

Treatment Plant

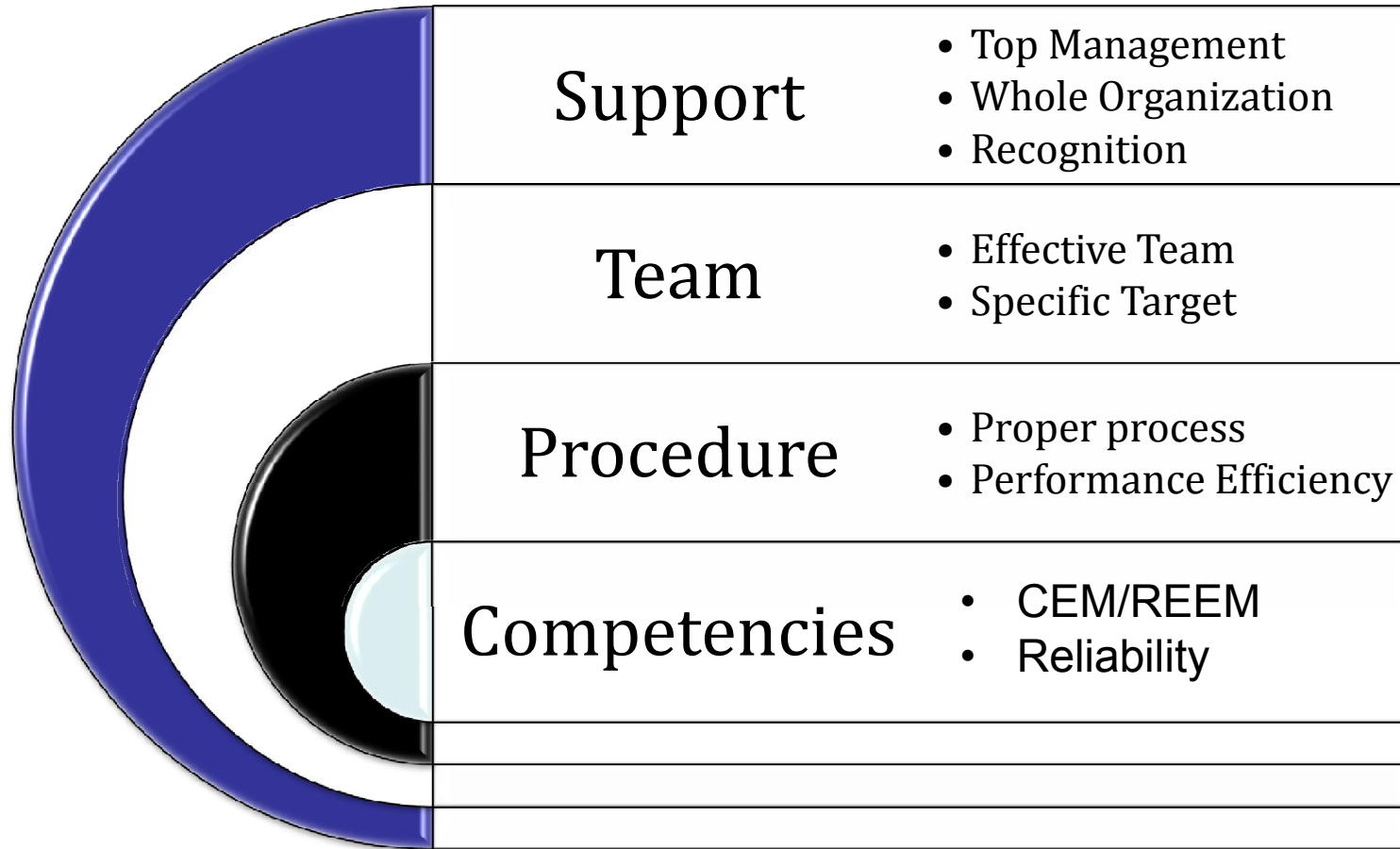
- Treated water pump
- Actiflo pumps
- Others



56,364,438 kWh

33%

SSP2 Load Apportioning Based on Energy Audit 2011



Energy Management Strategy

Energy Efficiency

Refurbishment of low efficient pumps

Replacement of conventional bulb with energy saving types

Installation of power meters

Energy Utilization

Utilization of peak & off peak period

Utilization of refurbished high performance pumps

On-Line Condition Base Monitoring for pumpsets

Energy Awareness

Awarenes program

Share info & knowledge extract from website on new developement on energy technology

Continuous study on the performance of existing mechine/equipment

Sustainable Improvement Teams



Energy Efficiency Team Project implemented



1.9.14 (ISNIN)

Bil PAM	MASA	Jumlah MULA	Jumlah B. HENTI	Jumlah JAM	Amps	T/T
NO-1						
NO-2	09.00	95040	95064	24	75	✓
NO-3						
NO-4	09.00	56439	56463	24	70	✓
NO-5	09.00	78349	78373	24	65	✓
NO-6						

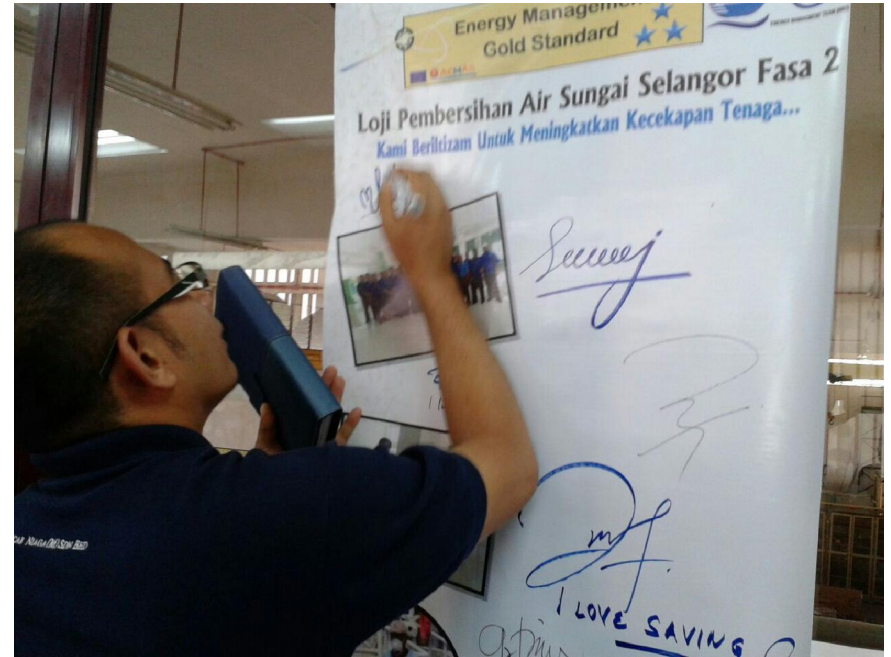
2.9.14 (SEBASA)

Bil PAM	MASA	Jumlah MULA	Jumlah B. HENTI	Jumlah JAM	Amps	T/T
NO-1						
NO-2	09.00	95064	95088	24	75	✓
NO-3						
NO-4	09.00	56463	56487	24	70	✓
NO-5	09.00	78373	78397	24	65	✓
NO-6						

Energy Utilization Team Control Parameters



Awareness Team Energy Corner



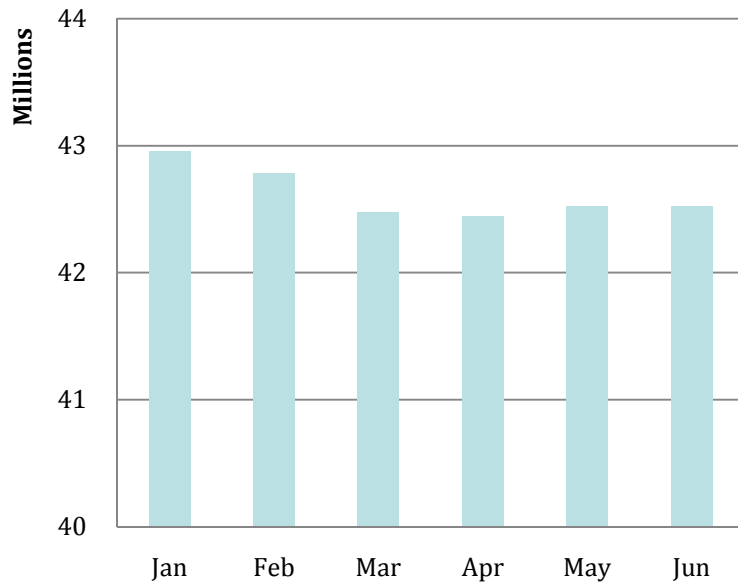
Staff and Contractors Commitment to SEMP



Rewarding the team: Visit To Greentech Malaysia

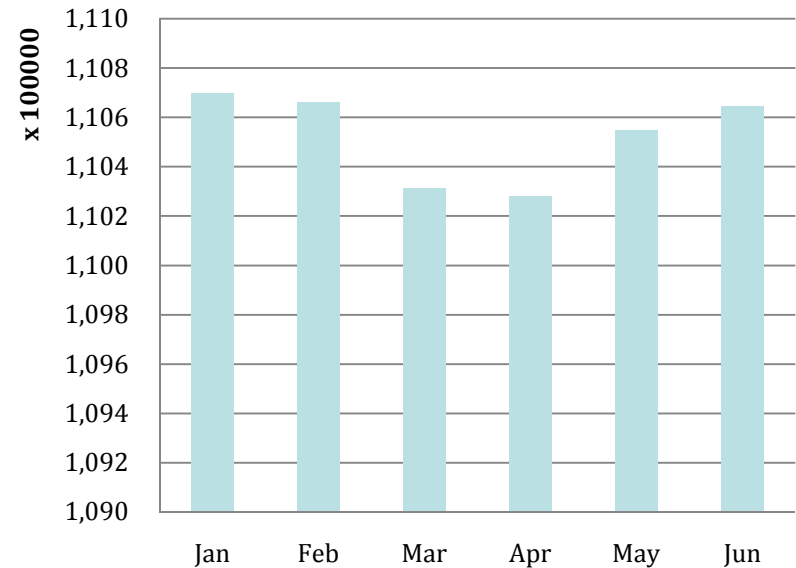
Intake Plant

Intake Plant Annualize Energy Consumption



Treatment Plant

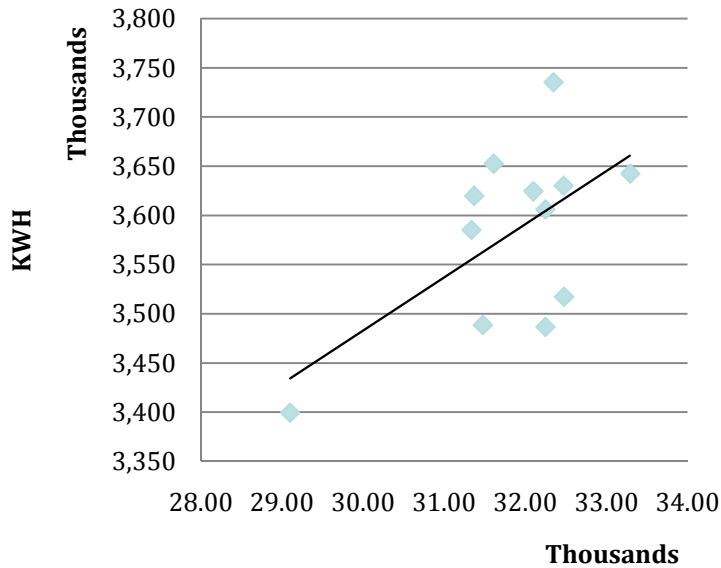
Treatment Plant Annualize Energy Consumption



SSP2 Annualize Consumption

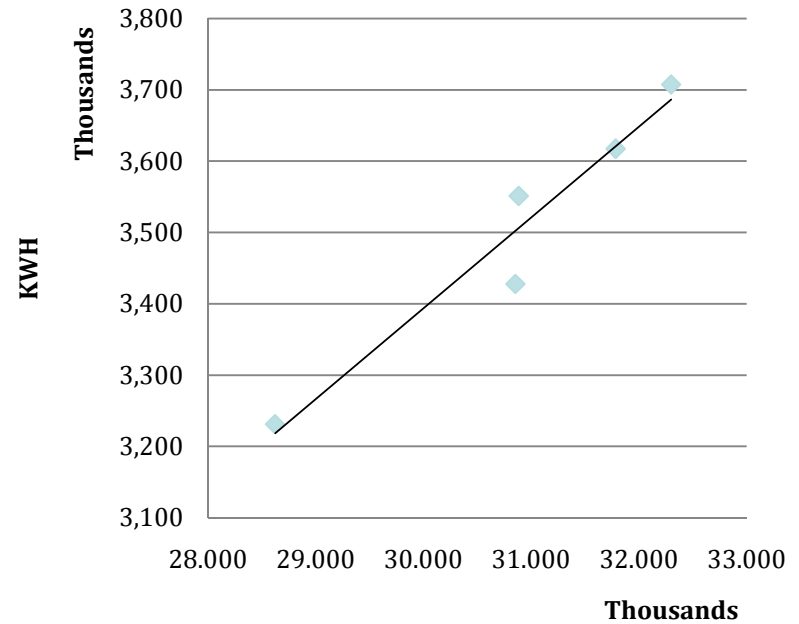
Baseline

Intake Plant Baseline Equation 2013



2014 Performance

Intake Plant Equation



$y = 54.08x + 2E+06$
 $R^2 = 0.367$ **MLD**

$y = 127.2x - 42430$
 $R^2 = 0.939$ **MLD**

Period	Intake Plant (KWH)	Treatment Plant (KWH)
Jan - June 2013	21,623,283	55,047,771
Jan - June 2014	21,155,935	54,984,654
Saving	467,348	64,117

SSP2 Intake Plant

Senior Management support is the key to the programme success

Develop the ownership of the programme

Developing Team Work requires clear roles and responsibilities

Staff support and competencies development is the key.

The challenges



ENERGY MANAGEMENT TEAM (NRO)



TOWARDS CERTIFICATION FOR 1 STAR RATING



LOJI PEMBERSIHAN AIR
SUNGAI SELANGOR FASA 2 (SSP2)

*"Kami Beriltizam Untuk Meningkatkan
Kecekapan Penggunaan Tenaga"*



CONCLUSION

- Organization can't afford not to be efficient to remain competitive
- EMGS provides the system, trainings and certification for Energy Professionals
- EMGS has proved that savings are achievable and significant
- EMGS ensures sustainability in efficiency culture

More information

How to register?

<http://mepa.my/events/>

MEPA Events & Training

Kindly click on the training title for details & booking:

DATE / TIME	EVENT
23/09/2013 - 27/09/2013	Energy Manager Training Course 19
8:30 am - 5:30 pm	GreenTech Malaysia Office, Bandar Baru Bangi Selangor
28/10/2013 - 01/11/2013	Energy Manager Training Course 20
8:30 am - 5:30 pm	GreenTech Malaysia Office, Bandar Baru Bangi Selangor
16/12/2013 - 20/12/2013	Energy Manager Training Course 21
8:30 am - 5:30 pm	GreenTech Malaysia Office, Bandar Baru Bangi Selangor

Events & Training Calendar

Jun 2013						
M	T	W	T	F	S	S
22	23	24	25	26	27	28
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

REMINDER

Official website

<http://www.aemas.org/>

AEMAS ASEAN Energy Management Scheme

Search this site: [Search]

GreenTech Malaysia to hold the 5th ASEAN Energy Management Scheme (AEMAS) Project Partners Meeting

The 5th ASEAN Energy Management Scheme (AEMAS) Project Partners Meeting under the framework of the European Commission's Switch-Asia Programme was held in the office of Malaysian Green Technology Corporation, Selangor, Darul Ehsan, Malaysia on 30-31 January 2013.

5th ASEAN Energy Management Scheme (AEMAS) Project Partners Meeting

The ASEAN Centre for Energy (ACE) is pleased to present the ASEAN Energy Management Scheme (AEMAS) the world's first regional certification system for energy managers and energy end-users. Funded by the European Union under the Switch-Asia Programme, it is currently being implemented by the ASEAN Centre for Energy in eight (8) ASEAN Member States, namely Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand and Vietnam. The grant from the European Union for the establishment of AEMAS started last February 2010 and will run until January 2014. The Scheme will be a significant contributor to the ASEAN Plan of Action for Energy Cooperation's (APACEC 2010-2015) cumulative target of reducing the region's energy intensity by 8% (based on 2005 level) by the year 2015.

AEMAS is the culmination of previous projects under the European Commission-ASEAN Energy Facility (EAFED).

THANK YOU



Faqeh Management
Suite 1208, Amcorp Tower,
18, Persiaran Barat, 46050, Petaling Jaya
019 2174647

www.faqeh.com, khairi@faqeh.com, faqeh05@yahoo.com

