

# SUSTAINABILITY

It's worth our energy...

Company Capability Profile

"Innovative solutions come from you & us"

Thank you "Clean Energy"



Prepared for General use

**NIPCO Electrical Engineering & Trading Sdn. Bhd.**

**5<sup>th</sup> September 2019**

File name: 20190905\_NIPCO-EnTeam-SF\_SBD Scheme\_General\_1.0



# Nipco Electrical Engineering & Trading Sdn Bhd

## *The Company*

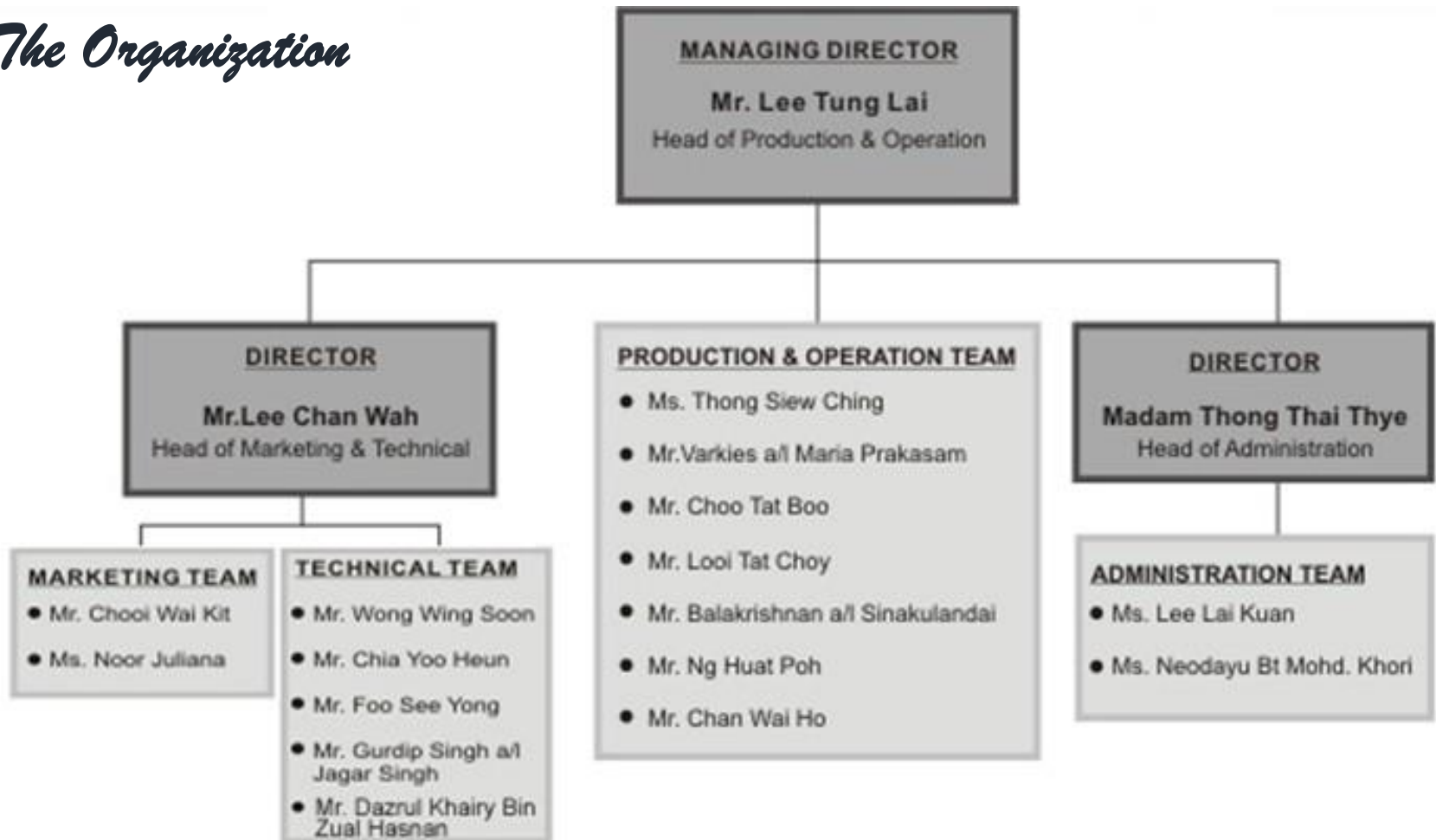


A RECOGNISED LEADER AND MAIN PROVIDER OF ELECTRICAL SWITCHBOARDS SINCE ITS INCEPTION IN 1987

Nipco Electrical Engineering & Trading Sdn. Bhd. has amassed solid knowledge and understanding of the dire wants of the global industry over the years, through dynamic networking based on audacity, strength and integrity. Having sustained itself as the prime expert in attending to all technical issues by providing concrete solutions within Perak, the Company is at present vociferously flocking its wings towards other territories in Malaysia.



## *The Organization*





# Corporate Information

**Company name:** NIPCO ELECTRICAL ENGINEERING & TRADING SDN. BHD.

**Company Registration No:** 577491-U

**Year of Incorporation:** 1987

**Business Address :**

No. 189, Hala Perusahaan Meglembu  
13, Kawasan Perindustrian Menglembu,  
31450, Menglembu, Perak, Malaysia



**Email:** [info@nipco.com.my](mailto:info@nipco.com.my)

**URL:** <http://www.nipco.com.my>

**Telephone / Fax No:**  
+605-282 9289, 2189  
+605-282 2929







# Consolidated Capability for Solution

## NIPCO & Energy Team

Energy Management	Business Management	Electrical Panel Building	Energy Electrical & Instrumentation	EnMoS Hardware Software	Solution Technology
ISO MS 50001 class	Operation Performance Improvement	Switch Board	Integrated Electrical Engineering	Energy Data Hardware /Software Solutions	Planning Engineering Procurement
Energy Treasure Hunt (Energy Audits)	Financial Solution	Metering Panel	Electrical Full-support Business	Energy Efficiency Analysis	Wiring Installation Commissioning
REEM Consulting	HR Development	Energy Management Panel	Renewable Energy solution	EnPI	Energy Management Solutions
Green Initiative Implementation	Skill Resourcing	Control Panel	Solution Maintenance	Evaluation Measurement Verification	<ul style="list-style-type: none"> <li>• Switchboards</li> <li>• Metering Panels</li> <li>• Energy Mgmt Panels</li> <li>• Control Panels</li> <li>• Capacitor Bank</li> <li>• Thin Film (CIS) PV system for kWh yield optimization</li> </ul>
Documented Information	Energy Management Consulting & Training	Capacitor Bank	Quality/Safety Solution	Data Management Analysis	
Integrated Management System Experts	Project Management Supervising	Motor Control Centre		Energy Performance Improvement Procedure	
ISO 9001		Panel building tailored to client			
ISO 14001					
ISO 27001					
OHSAS 18000					
ISO 50001					



EnMoS : Energy Monitoring System

EnPI : Energy Performance Indicator



# NIPCO is one stop solution provider firm

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**Ensures you improve efficient use of energy**

**□ Feature:**

**Ensures you improve efficient use of energy**

**□ Function:**

1. Design, build, install and wiring of various **Electrical Distribution Boards** for business owners ensuring proper energy management at their sites
2. Design install and wiring of **Energy Monitoring hardware/software** best fit to business owner's scale of economics
3. **Provide solution with CIS Thin Film Technology PV modules made in Japan**
4. Provide energy management **consulting services** for improvement requiring low-no investment
5. Provide various **training** sessions related to energy management tailored to trainees aiming to gain improvement from trainees as result of the session

**□ Feature:**

**improve net income by reducing energy bill**





# Joint EnMoS Task Teamwork Overview

**Energy Team S.p.A.**



**International Business Director**  
*Fabio Telli*

**Nipco Electrical Engineering & Trading  
Sdn. Bhd.  
(NIPCO)**

**Managing Director**

*Lee Tung Lai*



**EnMoS : Energy Monitoring System**

**EnMoS Business  
Development**  
*Nobby Yamanouchi*



**EnMoS Consultant/Trainer**

**EnMoS Business  
Director**  
*Andrew Lee*



**REEM & Technical Specialist**

**Conducted under the Malaysia's leading EnMoS Teams  
Under the partnership of NIPCO and Energy Team**

PENDAFTARAN  
SYARIKAT PERKHIDMATAN TENAGA  
(ESCO)





# Solar Frontier Teamwork in Malaysia



**Int'l Business Mgr.**  
*Hidemi Sakaguchi*



Japan

Malaysia

**CIS Thin Film Business  
Development**  
*Nobby Yamanouchi*



**Malaysia-Japan Relations**



**PV System Business  
Director**  
*Andrew Lee*



**REEM & Technical Specialist**





BE: ESCO 177(2018)/94/2018

  
Suruhanjaya Tenaga  
Energy Commission

**PENDAFTARAN  
SYARIKAT PERKHIDMATAN TENAGA  
(ESCO)**

SURUHANJAYA TENAGA dengan ini meluluskan permohonan syarikat

**NIPCO ELECTRICAL ENGINEERING & TRADING SDN BHD**  
**189, Hala Perusahaan Menglembu 13**  
**Kawasan Perindustrian Menglembu**  
**31450 Menglembu**  
**Perak**

untuk menjalankan kerja-kerja sebagai syarikat perkhidmatan tenaga  
berkuatkuasa dari tarikh :-

**Tarikh Kelulusan : 17 Ogos 2018**

**Tarikh Tamat Kelulusan : 16 Ogos 2019**

Syarikat perlu mematuhi segala keperluan dan syarat-syarat sebagai  
ESCO sebagaimana yang ditetapkan seperti di muka belakang.

  
**Ir. AZHAR BIN OMAR**  
Ketua Pegawai Eksekutif  
Suruhanjaya Tenaga

**Tarikh: 17 Ogos 2018**

01133



No. Perakuan  
PTE-0077-2018

BERKAS C

AKTA BEKALAN ELEKTRIK 1990

PERATURAN-PERATURAN PENGURUSAN TENAGA ELEKTRIK DENGAN CEKAP  
2008

**PERAKUAN PENDAFTARAN SEBAGAI PENGURUS  
TENAGA ELEKTRIK**  
(pda-pda 14/2)

Menurut subperaturan 14(2) Peraturan-Peraturan Pengurusan Tenaga Elektrik dengan  
Cekap 2008, perakuan pendaftaran ini dikeluarkan kepada

**LEE CHAN WAH**

No. Kad Pengiraan: 820908-08-5395 Tarikh Lahir: 05/09/1982

dan memberi kuasa kepada pemegangnya untuk menjalankan fungsi dan kewajipan  
seorang pengurus tenaga elektrik berdaftar selama tempoh "1 tahun" dari tarikh  
perakuan ini dikeluarkan sebagaimana yang dinyatakan di bawah. Perakuan ini  
dikeluarkan kepada orang yang tersebut di atas dan tidak boleh digunakan oleh mana-  
mana orang lain.

BERKAS PRASA:

STATUS STATUS (jika tidak di muka surat belakang):

Tarikh diterbitkan: 11/06/2018

Tarikh tamat tempoh: 10/06/2019

Bi. RM: 100



  
Suruhanjaya Tenaga

No Siri: 989510U



### SIJIL PENDAFTARAN PENYEDIA LATIHAN

AKTA PEMBANGUNAN SUMBER MANUSIA BERHAD, 2001

Federation of Malaysian Manufacturers

adalah dengan ini didaftarkan sebagai penyedia latihan di bawah  
Kumpulan Wang Pembangunan Sumber Manusia

Tarikh Diluluskan	Tarikh Tamat
17/05/2016	16/05/2019

13/05/2016  
Tarikh Dikeluarkan

Pembangunan Sumber Manusia Berhad



# An Official Energy Efficiency Consulting & Training provider ESCO Operator

## Other Certificates





# CIS Thin Film Solar Module Solution Provider



Kansai International Airport  
11.6 MW



Solar Frontier's solar panels installed on the roof of a Shell Service Station in Thailand



AEON Shopping Mall, Yamato, Kanagawa  
30.6 KW



We represents CIS Thin film solar panel from Japan







# We promote Solar Frontier CIS Thin Film Modules

*My***HIJAU** • MARK



**Listing No. MyHP0013/19-E002**

CIS Thin Film Solar Module

SFK180-S  
SKK185-S



Nipco Electrical Engineering & Trading Sdn Bhd





## 9<sup>th</sup> – 11<sup>th</sup> October



# What we do and good at ?

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***We are solution provider and implementer...***

- ❑ We manage energy from incoming to user end
- ❑ We are good listener => "Solution Provider"
- ❑ Proposal to reality

*With EPC/O&M, IT, Energy and management system expertise*

- ❑ People-centric and driving organization
- ❑ Make maintenance a "HERO" ⇒ APM
- ❑ Skill and Competence of workforce
- ❑ SUSTAINABILITY Communication skill

**Consulting Engineering/Operation & Maintenance Service Company  
ensuring your business target is achieved**

1. Energy: People & Organization
2. Seeing is “believing” & “action”
3. Energy Performance Indicator “EnPI”
4. See what you are and how to improve
5. Skill/Competence, Awareness & Motivation
6. Continual performance improvement
7. Lifecycle lean energy procurement
8. Documented information
9. Performance over conformance management system
10. Asset Performance Management
11. Thin Film (CIS) solar module promotion
12. Green Technology Incentive consulting & escort services

**ISO MS 50001 class  
Quality**

Best practice operation

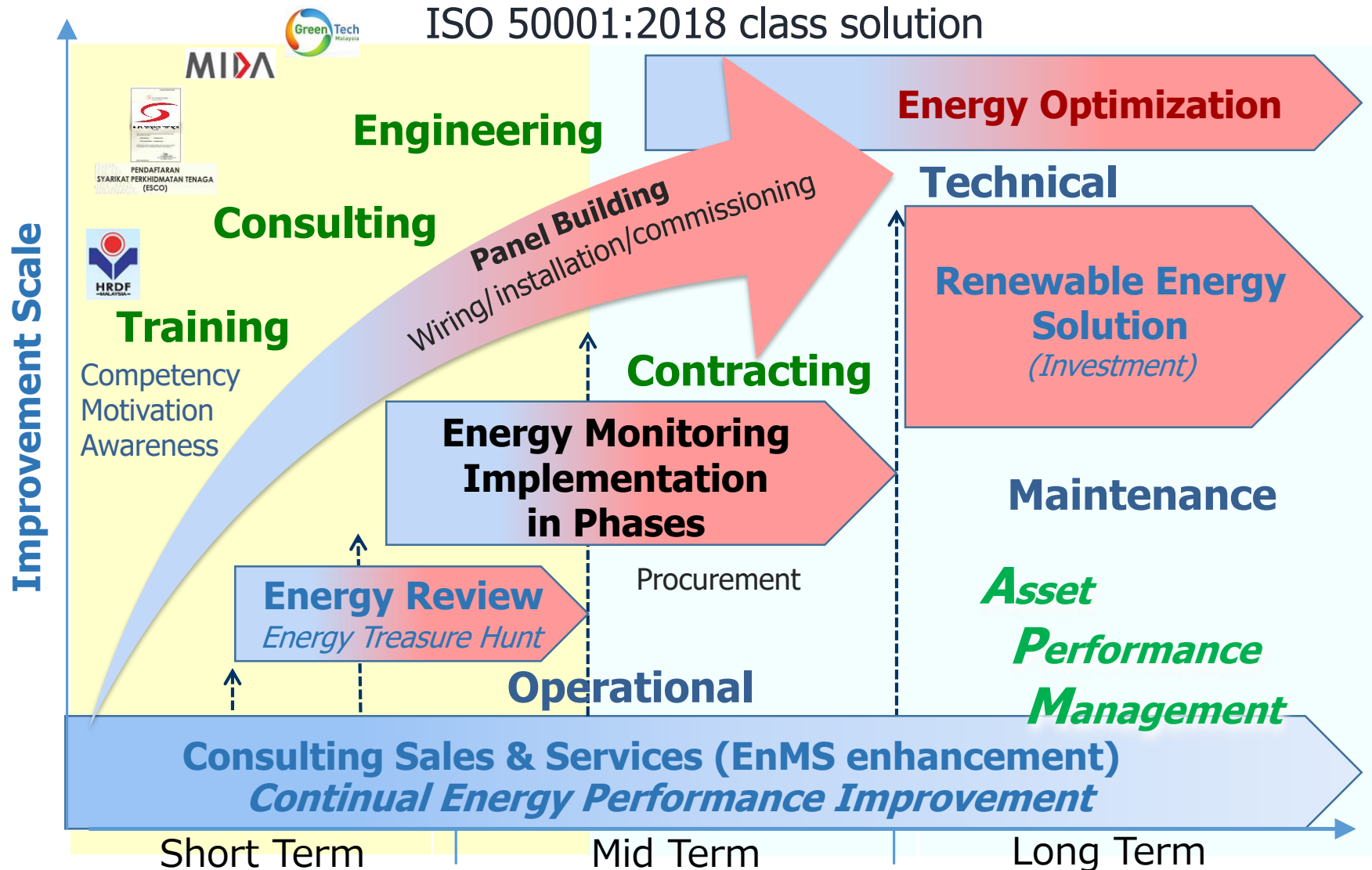






# Sustainable Business Development Partner

ISO 50001:2018 class solution





# 1. Energy: People & Organization

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What is Energy:

**Electricity**

**Water**

***HVAC***

***Compressed Air***

***Motors and Pumps***

***Lighting***

**Production Machines**

**People/organization**

“HVAC” is an abbreviation of “Heating Ventilation and Air Conditioning”

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# 1. Energy: People & Organization

	Active	Passive & reactive
Energy	<b>People / Organization</b>	<b>Electricity</b> <b>Water</b> <b>HVAC</b> <i>Compressed Air</i> <i>Motors and Pumps</i> <i>Lightings &amp; OA</i> <b>Production machines</b>
Strength	<ul style="list-style-type: none"> <li>● Positive thinking</li> <li>● Act &amp; improve</li> <li>● Recharge by itself</li> <li>● Management skill</li> </ul>	<ul style="list-style-type: none"> <li>● Obedient</li> <li>● Honest</li> <li>● Powerful</li> <li>● Provide productivity</li> </ul>
Weakness	<ul style="list-style-type: none"> <li>● Can be emotional</li> <li>● Negative thinking</li> <li>● Can be dishonest</li> <li>● Can be personal</li> </ul>	<ul style="list-style-type: none"> <li>● Keep moving</li> <li>● Weakness conscious</li> <li>● Can be dangerous</li> <li>● Not visible</li> </ul>

## 2. Seeing is “believing” & “action”

Rolling PDCA process of,

*Seeing*   
*Appreciating*   
*Taking action*   
*While obtaining result*   
*Making further improvement* 

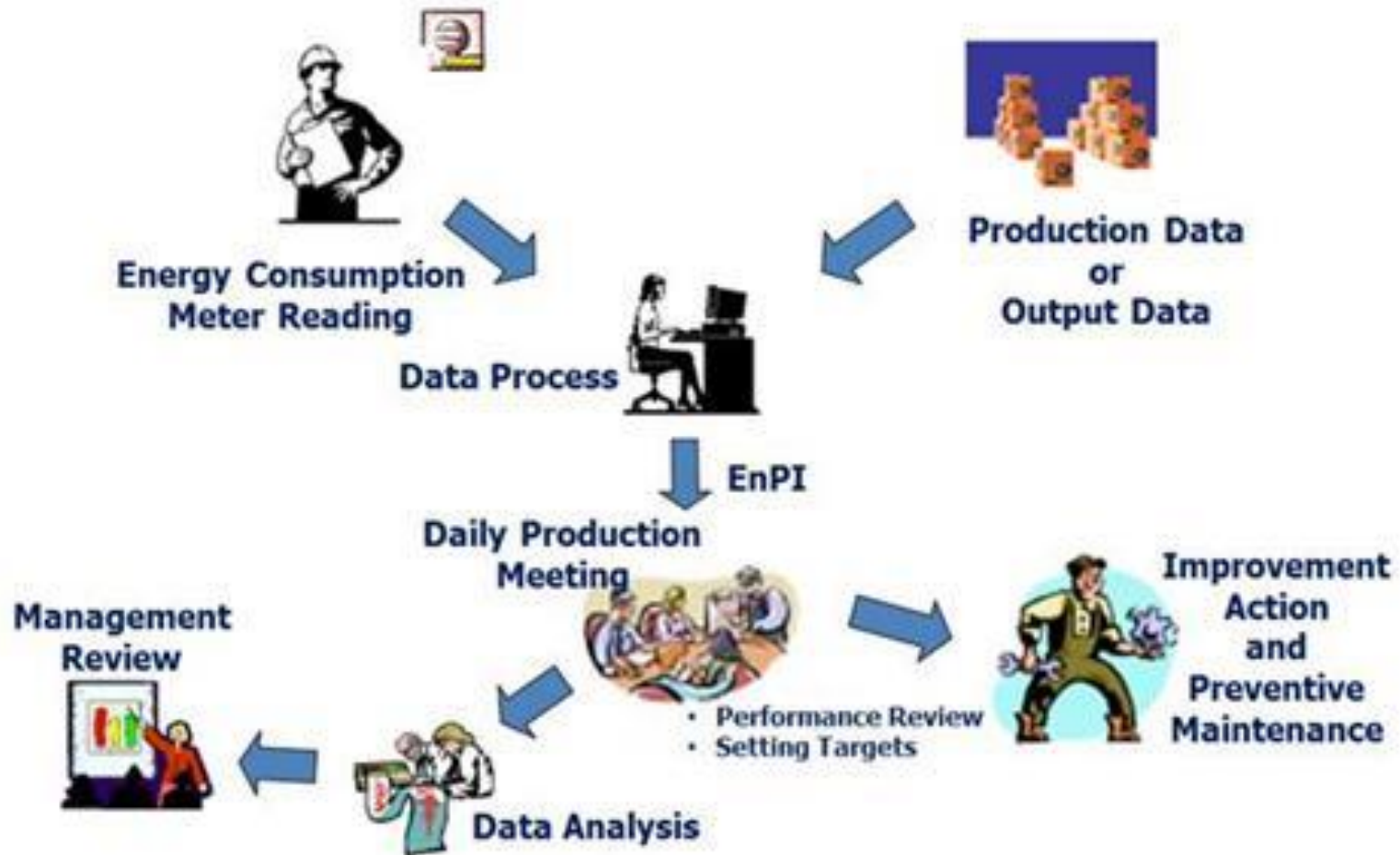


**Wonderful world of “Seeing” for Management “action”**



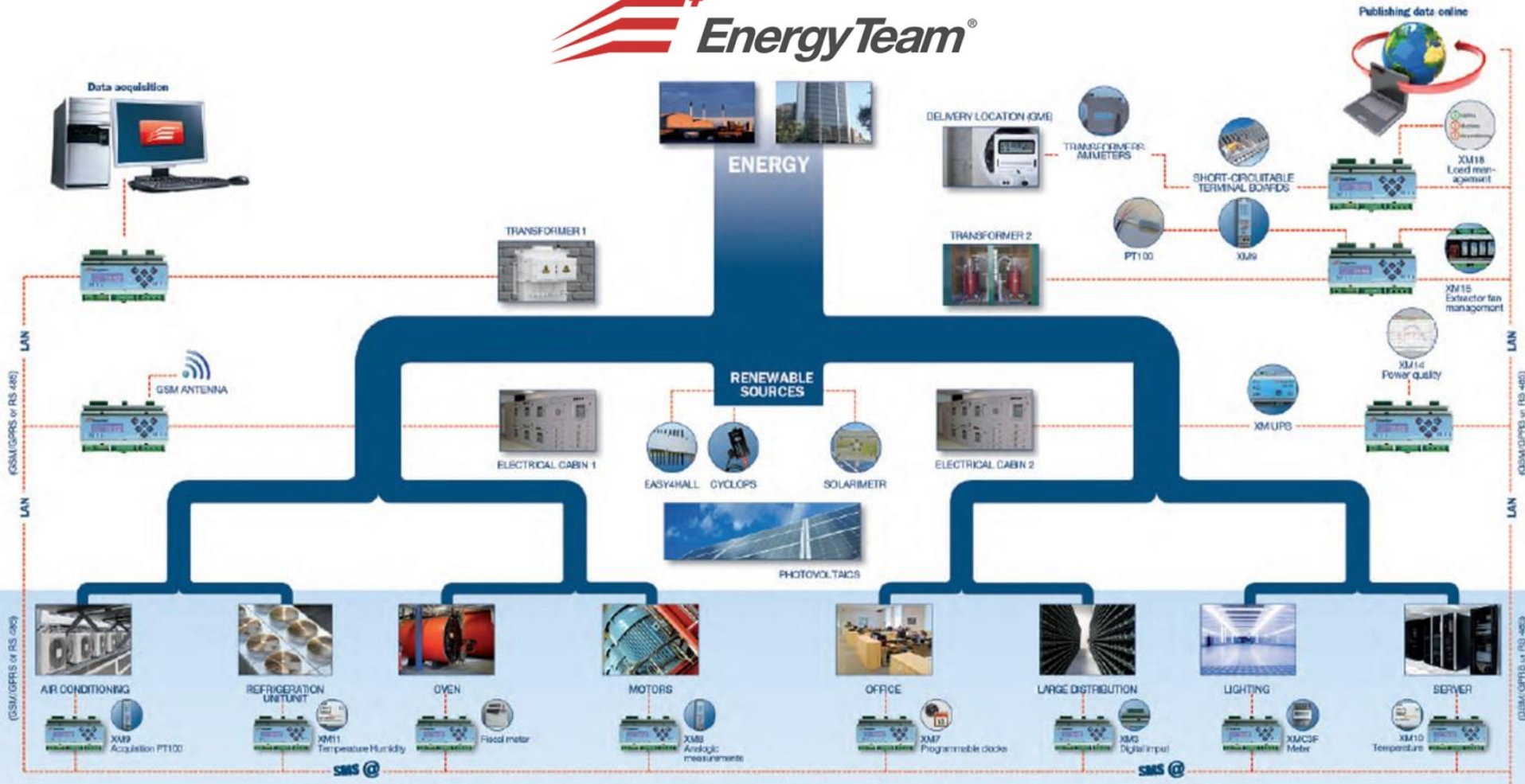
## 2. Seeing is “believing” & “action”

### Monitoring & Action Principle



## 2. Seeing is "believing" & "action"

*If you cannot measure it, you cannot improve it...*



## 2. Seeing is "believing" & "action"

*If you cannot measure it, you cannot improve it...*

**Let's start small and innovative!!**

### NEW NG9 Plus

 **EnergyTeam®**



- ✓ NG-9 PLUS the world' smallest analyzer
- ✓ 9 channels within 9 cm (5 DIN modules)
- ✓ Special probes from 1 to 2000 A \* on request up to 8000 A
- ✓ 0,5 class on the entire measure chain
- ✓ Use of Rogowski on single, three or mixed phase mode
- ✓ Installation and space costs reduced by 85%
- ✓ No need for plants shutdown!
- ✓ Analog / digital / temperature inputs together in a single device
- ✓ Harmonics up to 15<sup>th</sup> and THD

*Three meters in ONE*

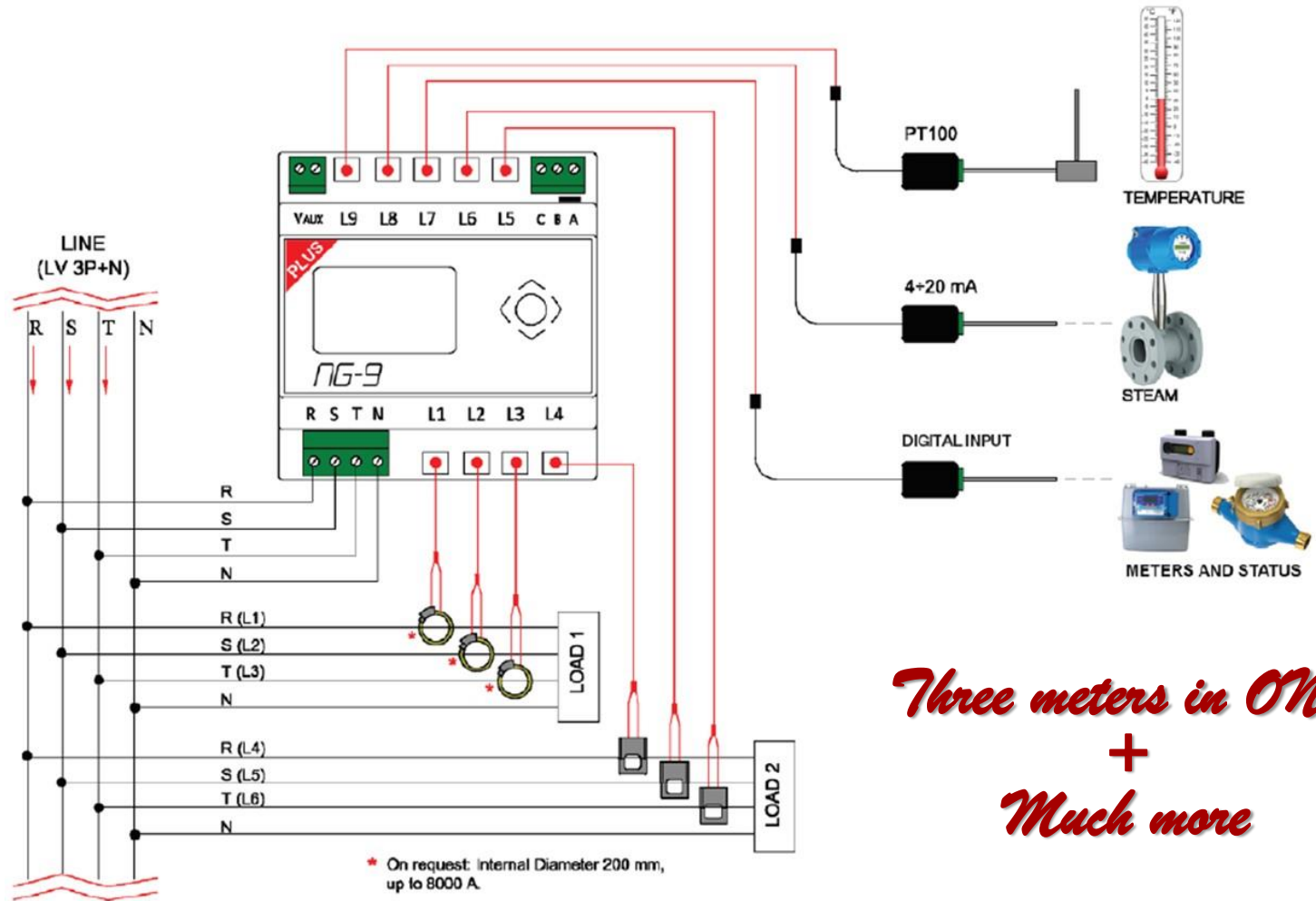


## 2. Seeing is "believing" & "action"

**Let's start small and innovative!!**



EXAMPLE OF CONNECTION: 2 THREE-PHASE SYSTEMS + PROBES



*Three meters in ONE  
+  
Much more*



## 2. Seeing is “believing” & “action”

**Let's start small and innovative!!**



### **NG – Gateway**

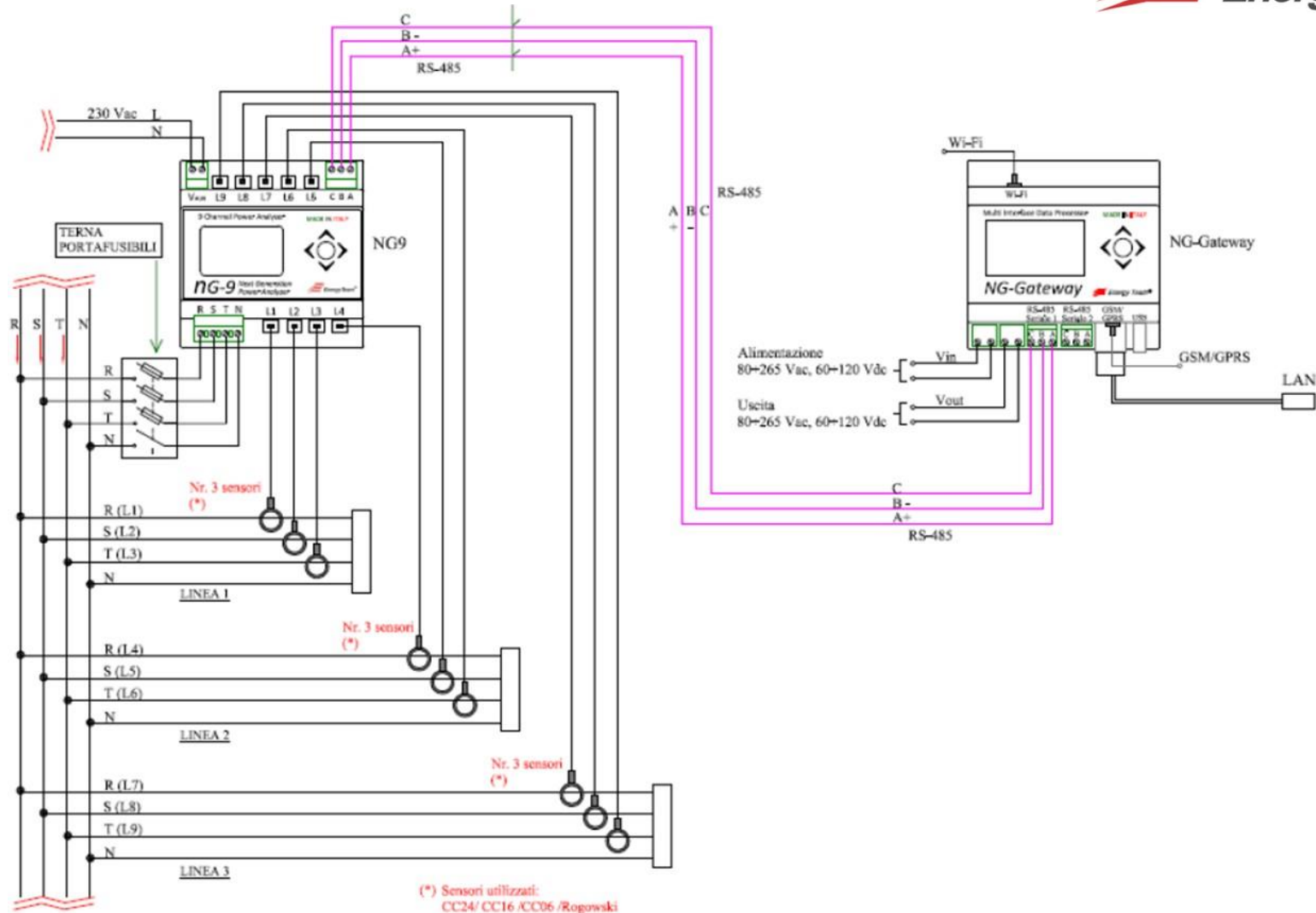
# **ADVANCED INTERFACE FOR ENERGY DATA COLLECTING AND PUBLISHING**



- ✓ Flexible ETH/Gateway
- ✓ 2 Integrated Serial RS485
- ✓ Flexible Wi-Fi/ Ethernet/GPRS connectivity
- ✓ 1600 measures
- ✓ Ideal for acquiring and filing data from instruments measuring electricity, water, gas heat and steam, etc.
- ✓ 5 Years data storage

## 2. Seeing is "believing" & "action"

**Let's start small and innovative!!**



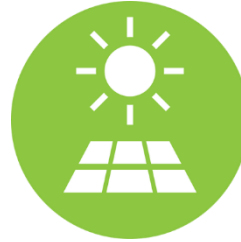
## 2. Energy Monitoring for PV

### Photovoltaics

#### Irradiation and string control



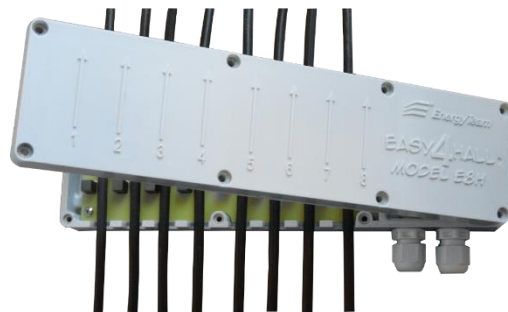
**Solar Irradiation  
and panel Temperature**



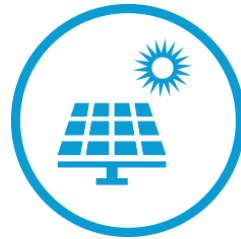
**Solar irradiation sensor  
with PT100 Temperature  
probe**



**Digital and analog outputs  
(4-20 mA) and  
RTU GSL-IT-DA Modbus.**



**Split core multichannel device for  
string current measurement in  
photovoltaic systems**



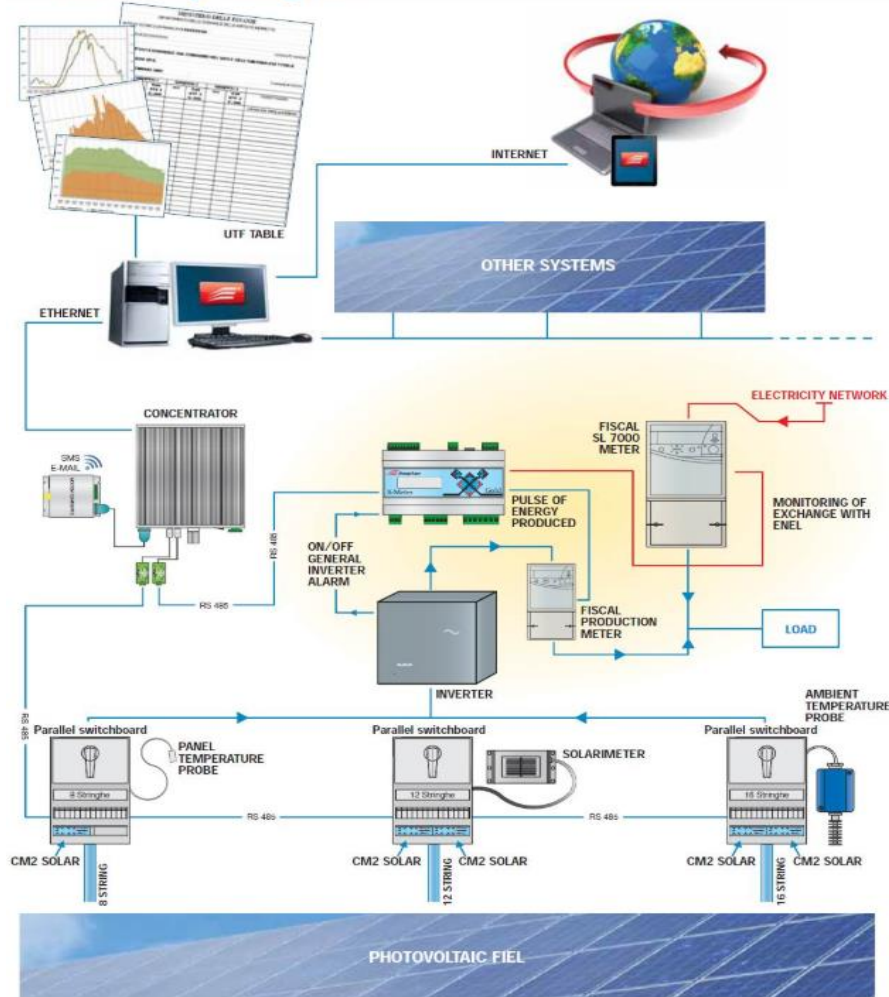
**Split core multichannel device  
for string current  
measurement in photovoltaic  
systems**



**Precise and accurate  
data readings**

## 2. Energy Monitoring for PV

### Assembly diagram







## 2. Seeing is “believing” & “action”

### Monitoring devices in the Nipco's panel design



**NIPCO is a qualified sole EnMS partner of**  **EnergyTeam®**







## 2. Seeing is “believing” & “action”

**Let's start small and innovative with site oriented approach**



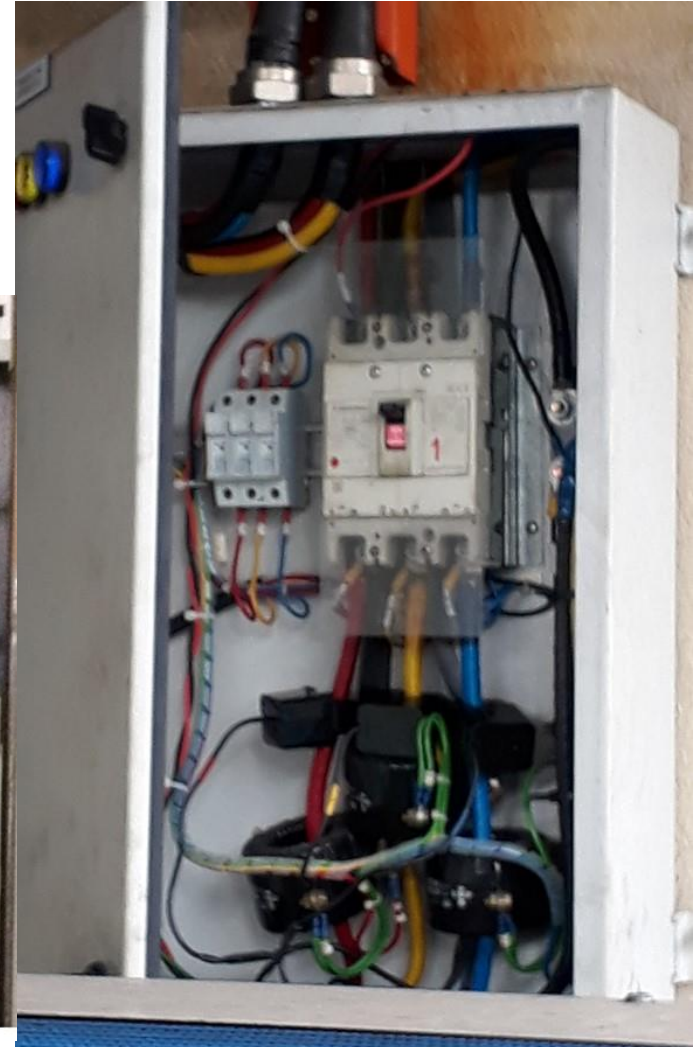
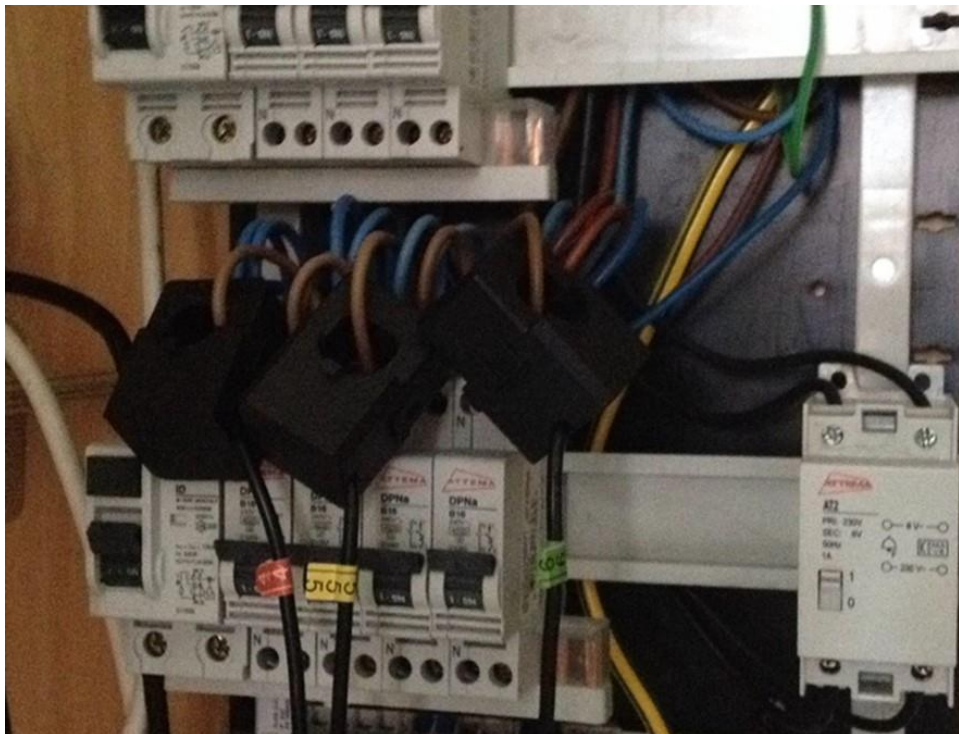
**EnergyTeam®**

**Energy Monitoring & Action  
solution provider with eyes on  
site level sight**



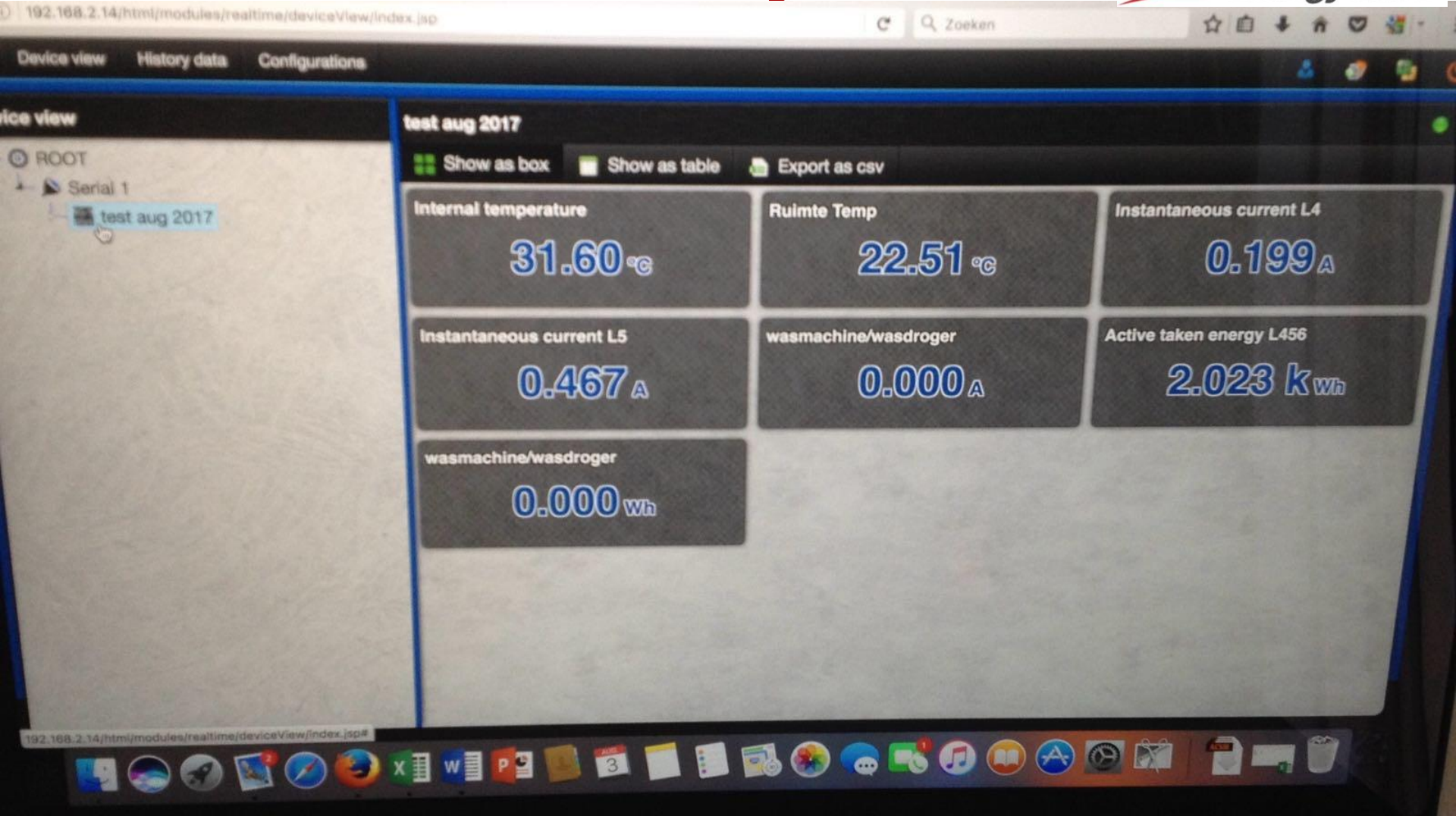
## 2. Seeing is "believing" & "action"

**Let's start small and innovative  
using simple way to conduct  
practical way for energy  
measurement & verification**



## 2. Seeing is "believing" & "action"

Let's start small and innovative for significant result











Satisfied client...



### 3. Energy Performance Indicator “EnPI”

## Energy Performance Indicator

# EnPI

$$y = ax + b$$

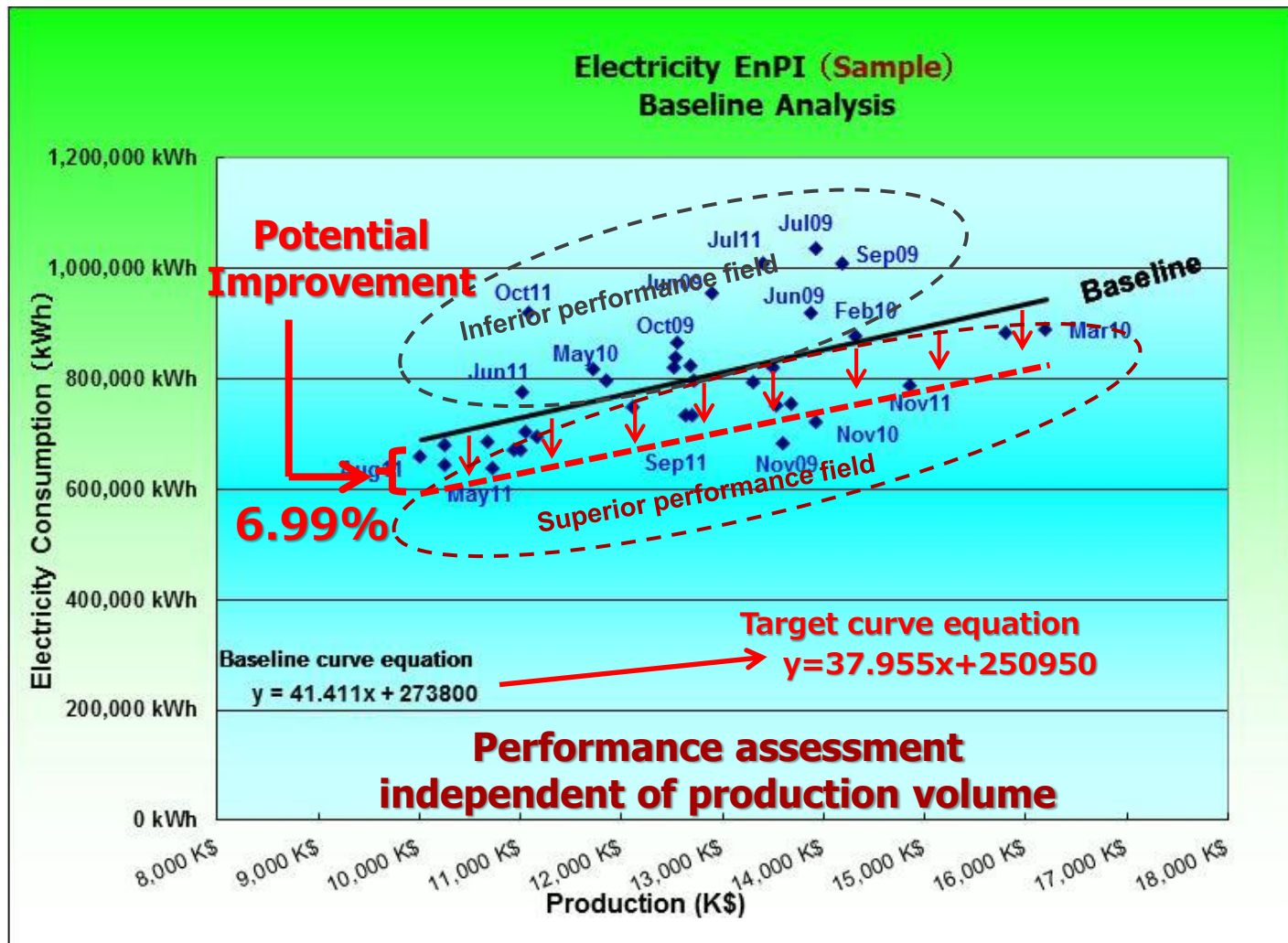
Energy use

Energy efficiency factor

Business output

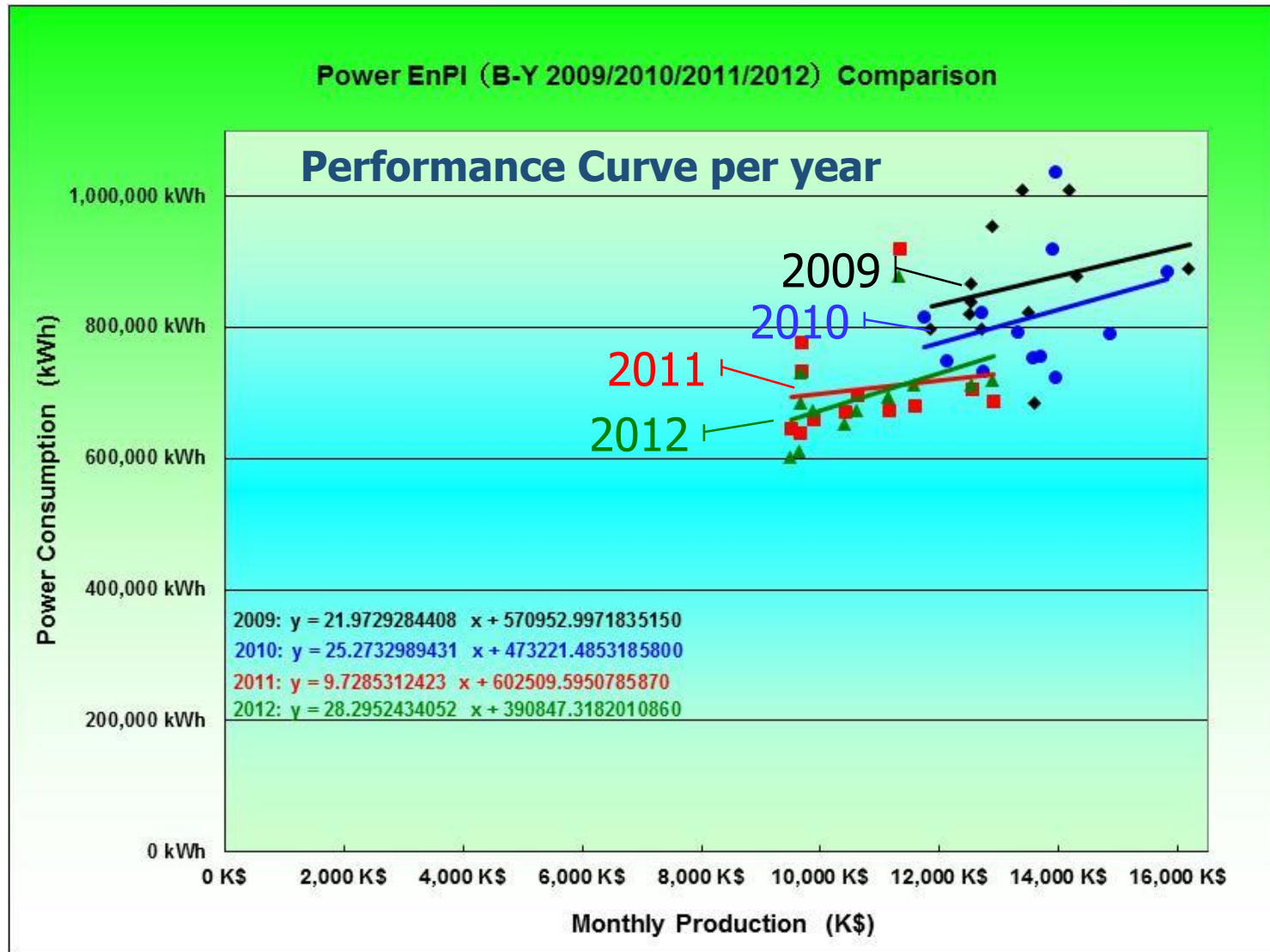
Fixed energy use

### 3. Energy Performance Indicator "EnPI"



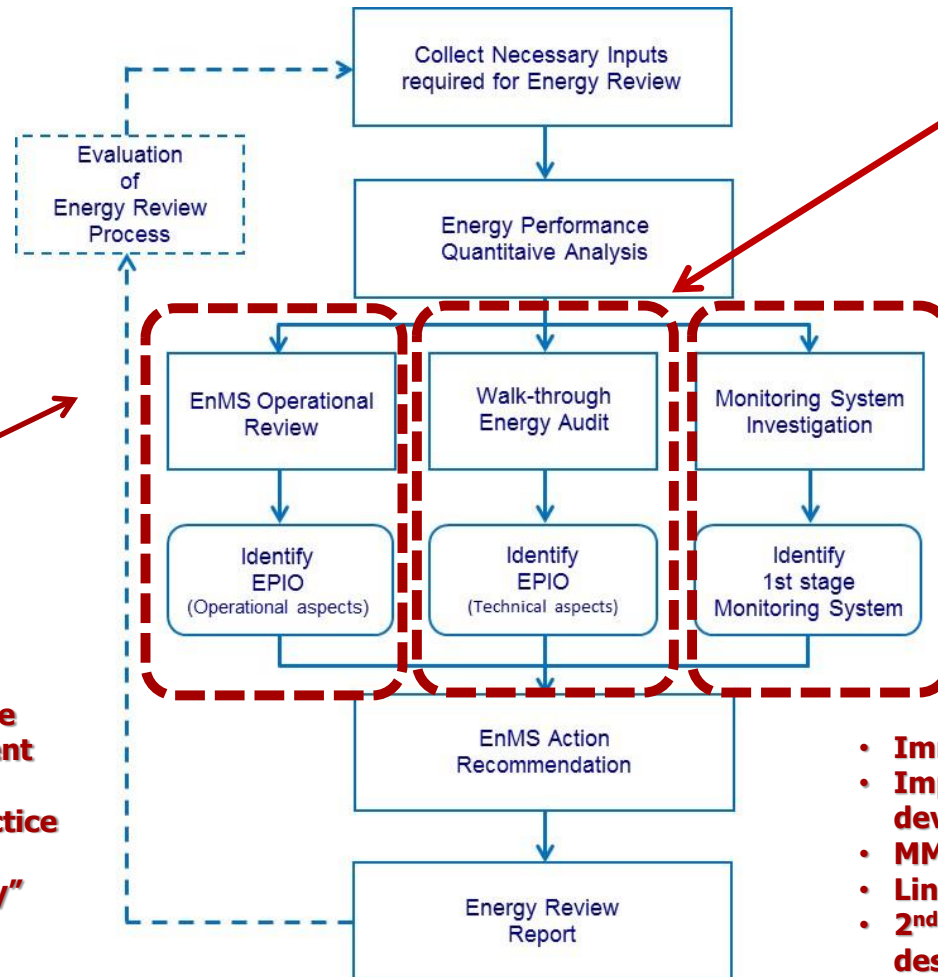
(Using the fact delivered)

### 3. Energy Performance Indicator "EnPI"



## 4. See what you are and how to improve

### Energy Review Process



- Power System in General
- HVAC, Chiller & Cooling Tower related
- Chiller System
- Air Circulation System
- Compressed Air System
- Boiler Room, Steam System and Steam User
- Lighting System
- Combustion Process
- 'Water Treatment

- Top Mgmt Commitment
- EnMS related Training
- SEU Equipment List Enhancement
- EnPI: Baseline & Target
- Improvement procedure
- "Miyeru-ka" Procedure
- "Aircon/Lighting" Procedure
- Documentation Enhancement
- Maintenance Management
- Enhance ment for Best practice
- Through leakage control
- Establish annual "EnMS-day"

- Immediate "Miyeru-ka" Solution
- Improvement procedure development
- MMI development
- Link with company intranet
- 2nd Phase "Miyeru-ka" system design



### EPIO by enhancing EnMS Operation

Nº	EPIO Items	% gain	Nº	EPIO Items	% gain
1	"EnMoS" operation & procedure	5.9%	2	Air leak action procedure	0.8%
1-1	Baseline and target	↑	3	Steam leak action procedure	0.2%
1-2	All workforce energy awareness		4	Waste mgmt. at product change	0.5%
1-3	Improvement procedure		5	Fine tuning cleansing efficiency	0.3%
1-4	Preventive maintenance drive		6	°C setting review in all rooms	1.3%
1-5	Communication improvement		7	Improved lubricant specifications	0.4%
1-6	Energy/production transparency		8	Aircon 1°C up with new uniform	0.8%
1-7	Quality check thru energy use		9	Air ventilation review	0.7%
1-8	Production planning enhancement		10	Top management leadership	Inc. gain
1-9	Evaluation transparency		11	EnMS training for all workforce	Inc. gain
1-10	Management review		12	Define Aircon use procedure	0.9%

### EPIO requiring NO/Low Investment

Note: "% gain" can be varied by site to site

Inc. gain: Incalculable gain



## 4. See what you are and how to improve

**Case Study  
Company K**

### EPIO requiring Investment

Nº	EPIO Items	% Gain	Nº	EPIO Items	% Gain
1	Boiler & steam distribution	2.5%	6	Lighting facilities	1.1%
2	Chiller/Cooling Tower	2.2%	7	Steam $\Delta P$ energy recovery	1.7%
3	Motor/Pumps renewal	2.8%	8	Steam purchasing	0.9%
4	HVAC facilities	1.3%	9	Power receiving/distribution	0.7%
5	Compressed air system	2.1%	10	Rooftop PV integrated with EnMS	2.1%

Note: "% gain" can be varied by site to site

Inc. gain: Incalculable gain

## 5. Skill/Competence, Awareness & Motivation



**“competence, training and awareness”**

**Our programme focuses on practical aspects using case studies**

**Our session is two-way communication,**

**Respecting participants business background**

**Visiting “3-day ISO 50001 class EnMS Workshop” conducted in Singapore (Apr.2013):**



PUB team in action..



↑ Winston Tan, Assistant Manager, Energy Efficiency & Conservation Department, National Environment Agency Singapore (NEA) presents New Energy Conservation Act.

# 5. Skill/Competence, Awareness & Motivation

Topic	Topics	Prime Purpose	Duration
1	EnMS seminar for the top and senior management	Evaluate energy performance in business	2 hour session / 3 times
2	EnMS Overview "Practical Guide to ISO 50001 class Energy Management System"	Gain overall understanding of EnMS	3.5 hour session / twice
3	"Managing Significant Energy Use (SEU) items" Asset Performance Management	Gain understanding of EnMS requires asset management	3.5 hour session / twice
4	Energy Performance Indicator (EnPI) identification exercise per managing units	Gain knowledge of how to evaluate quantitatively	1 day session / twice
5	"Energy Review" exercises to identify Energy Performance Improvement Opportunities (EPIO)	Understand energy use and identify EPIO	4 day sessions
6	"Energy Monitoring Designing" best suited for organization in achieving performance improvement	Identify immediate monitoring method with procedure	1 day session / twice
7	"Performance Improvement Procedure" exercise	Master improvement procedure linked with other MS	1 day session / twice
8	"EnMS aspects in ISO 14001:2015 Environment Management System" Training	Link EnMS with ISO 14001:2015	1 day session / twice
9	"Energy performance Improvement Awareness Training" for the entire workforce	Gain understanding of energy use by entire workforce	30 minutes session 20 times
10	"Lean Energy Procurement" for the best practice operation	Understand procurement approach lifecycle energy use	3.5 hour session / twice



## 5. Skill/Competence, Awareness & Motivation

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### **Registered Electrical Energy Managers (REEM) Development Program**

*(Business operator using 3,000,000 kWh per 6 months is required to designate REEM at site)*

**Qualified as ISO 50001 class REEM**

**Sustained as ISO 50001 class REEM**

### **Why do you need competent REEM**

**REEM is considered:**

**One of the most important tasks in business operation,  
*however***

**it is the most under rated but critical position**

**for the role and responsibility engaged in:**

**organisation's sustainability business development**





### **Sustainable Business Development Program**

**All in one**

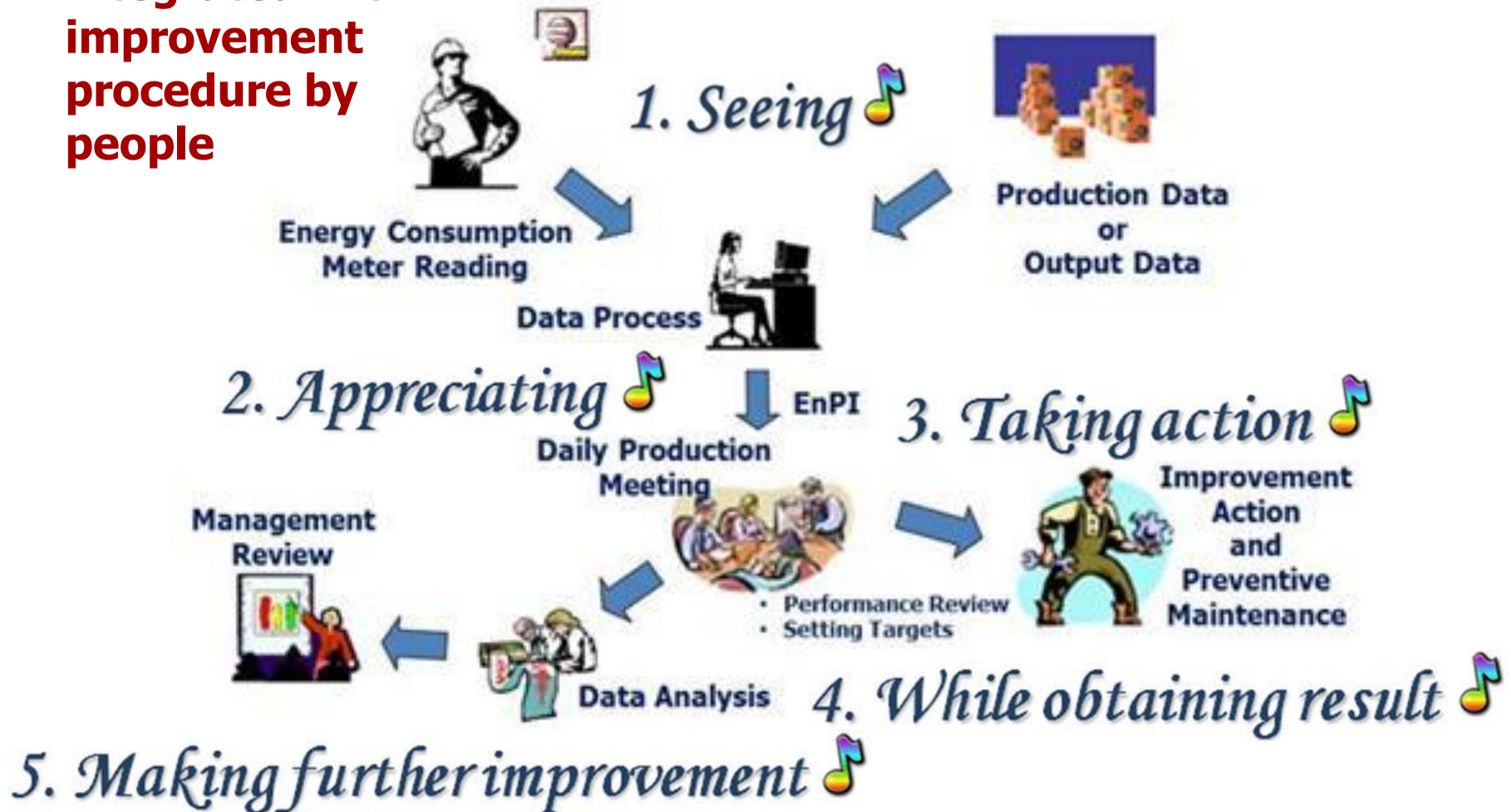
- **SUSTAINABILITY (Ethics)**
- **Management System**
- **Business Development (Marketing skill)**
- **Communication**
- **Discussion skill**
- **Self-promoting skill**
- **Attentiveness**

## 6. Continual performance improvement

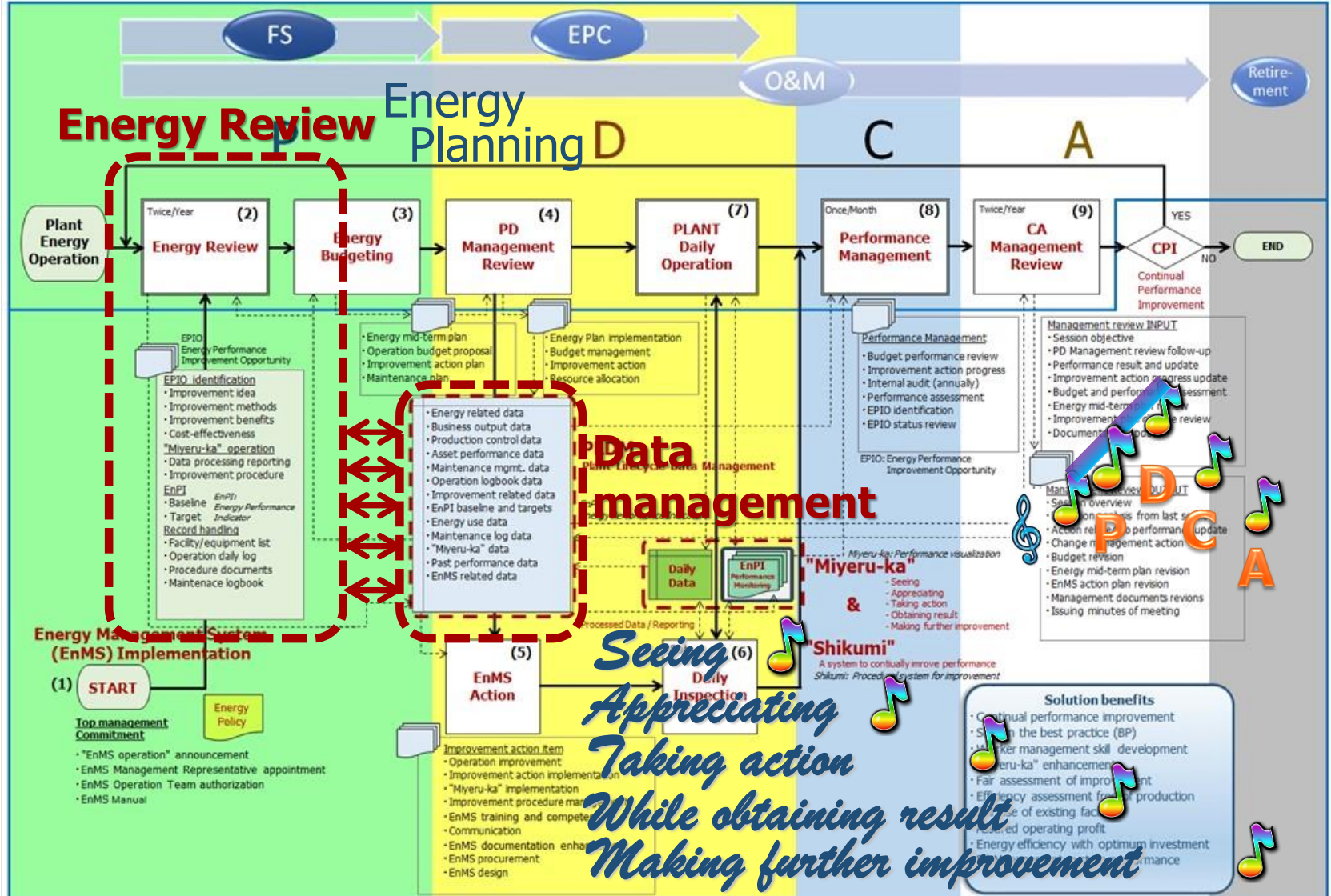
Best practice operation

**“Seeing”  
integrated with  
improvement  
procedure by  
people**

### Monitoring & Action Principle



# 6. Continual performance improvement



## 7. Lifecycle energy efficient procurement

### Air Compressor A



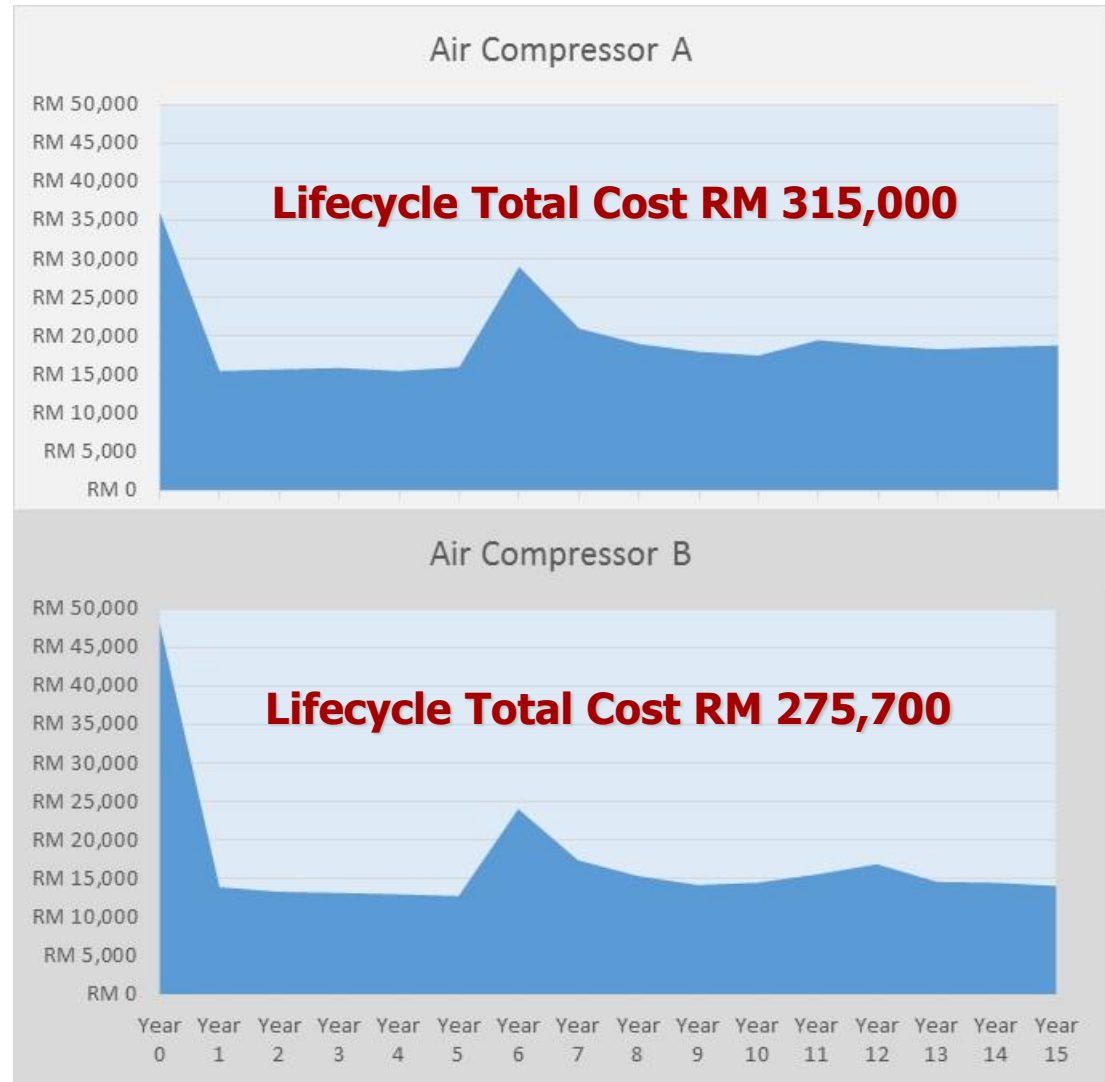
**RM 36,000**

**7.5 kW**



**RM 48,000**

### Air Compressor B





# 7. PV Module kWh Yield Lifecycle procurement

**CIS Thin Film  
(180W)**



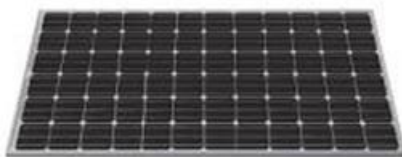
**RM 187,600**

**HIT  
(240W)**



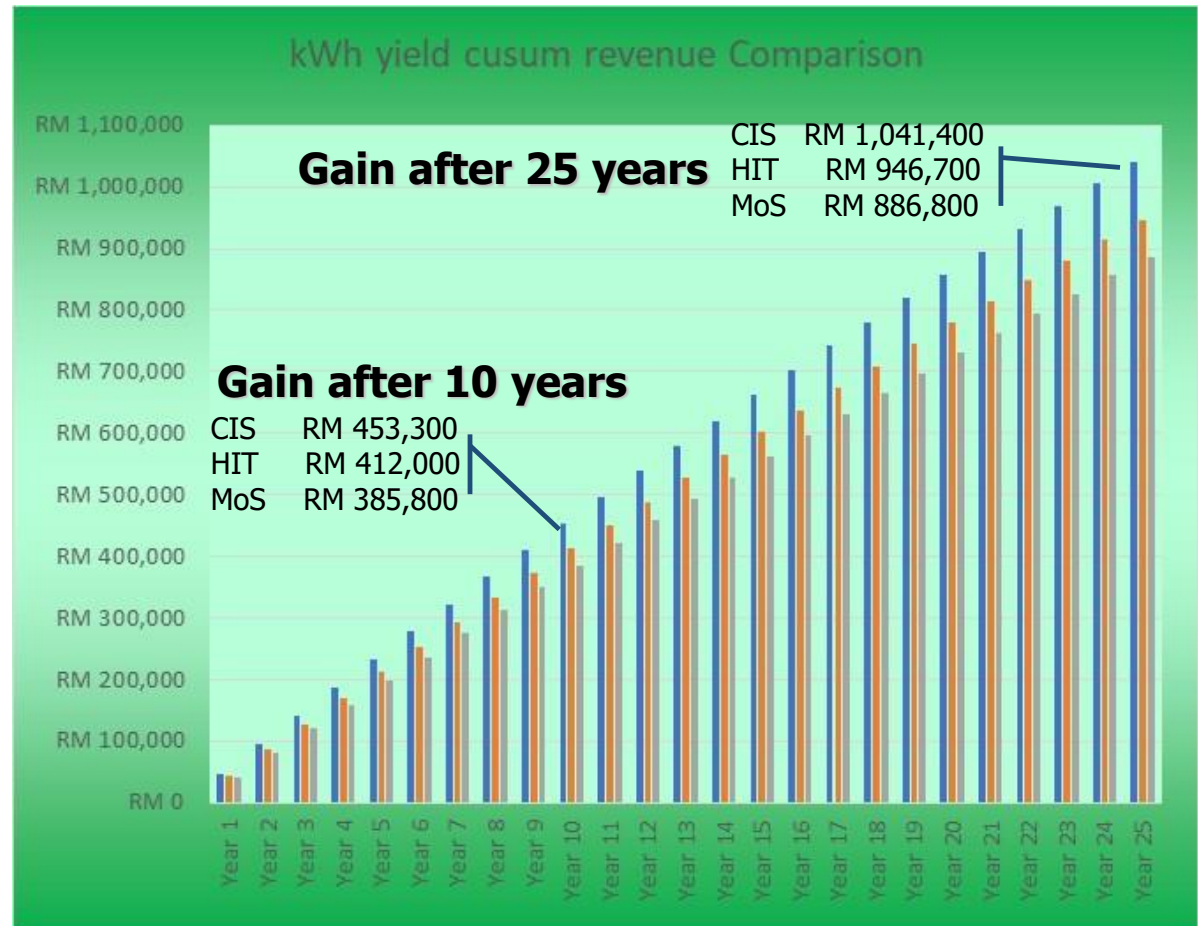
**RM 187,600**

**Monocrystalline  
silicon (220W)**



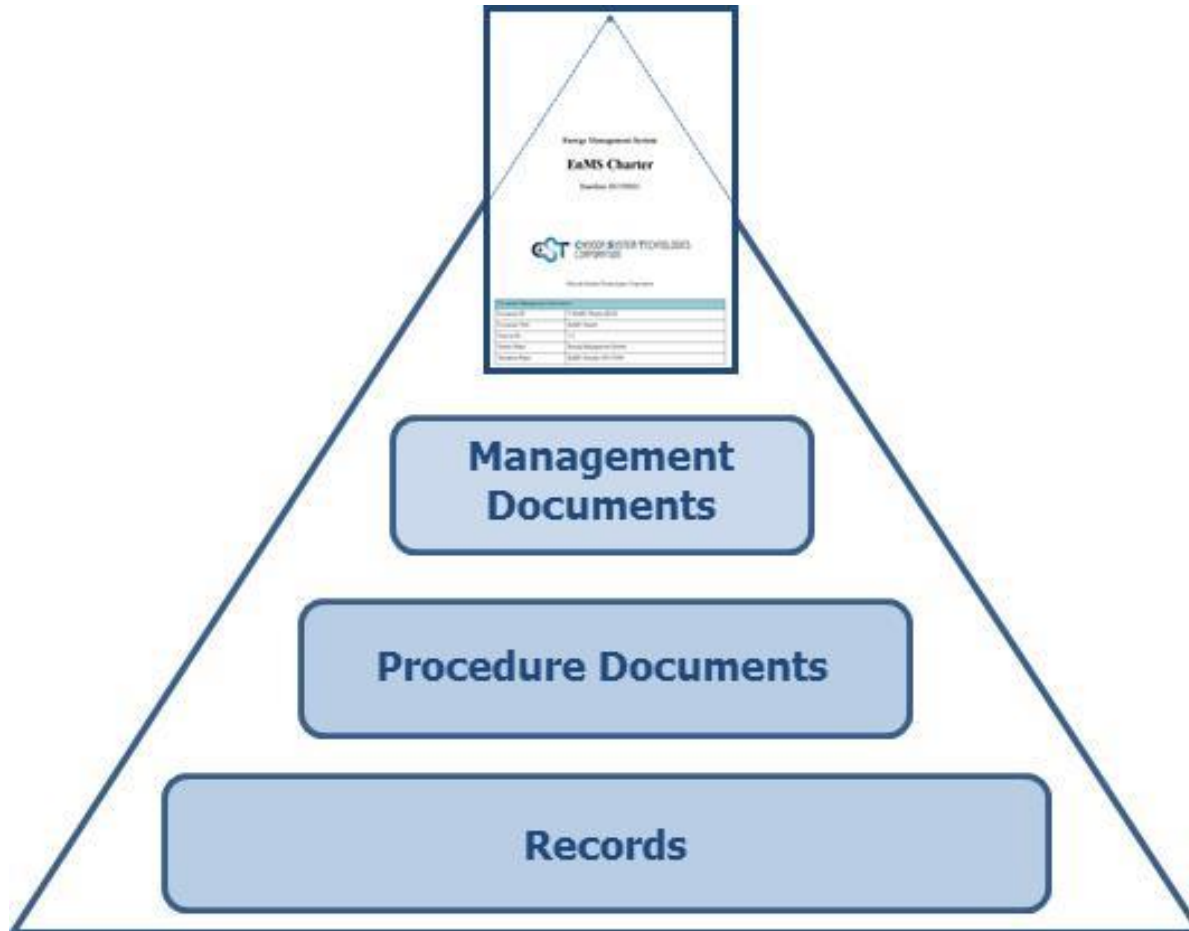
**RM 111,300**

**75 kW**





## 8. Documented information



# 8. Documented information

## ISO 50001:2018 class documentation

### 12 Key documents

Documentation is a must EnMS operation

Documentation

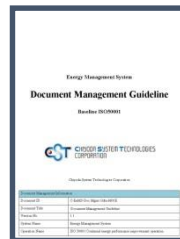
### Energy Policy



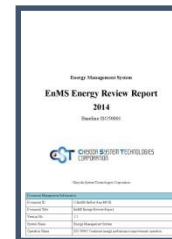
### The Manual



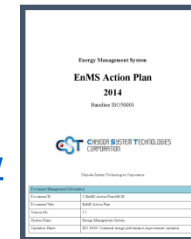
### Document Management Guideline



### Energy Review Report



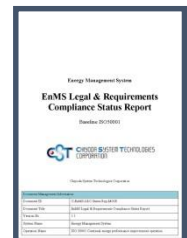
### Action Plan



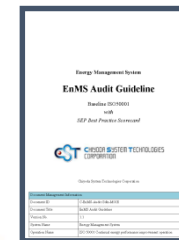
### Training Plan



### Legal & Requirements Compliance Status Report



### Audit Guideline

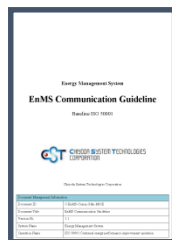


Management Documents

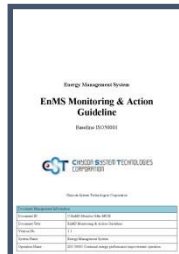
Procedure Documents

Records

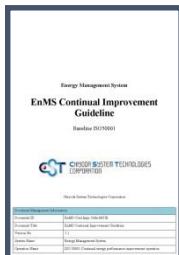
### Communication Guideline



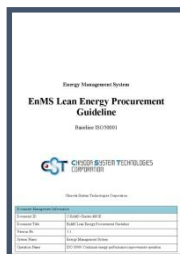
### Monitoring Guideline



### Continual Improvement Guideline



### Procurement Guideline



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EnMS-MR	Quality Manager	EnMS Director
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## 9. Performance over conformance M.S.

### ISO realization for Certification Issues





## 9. Performance over conformance M.S.

### ISO learned from ISO 50001:2011



for Management System Upgrade

## 9. Performance over conformance M.S.

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*ISO MS 50001 class EnMS*

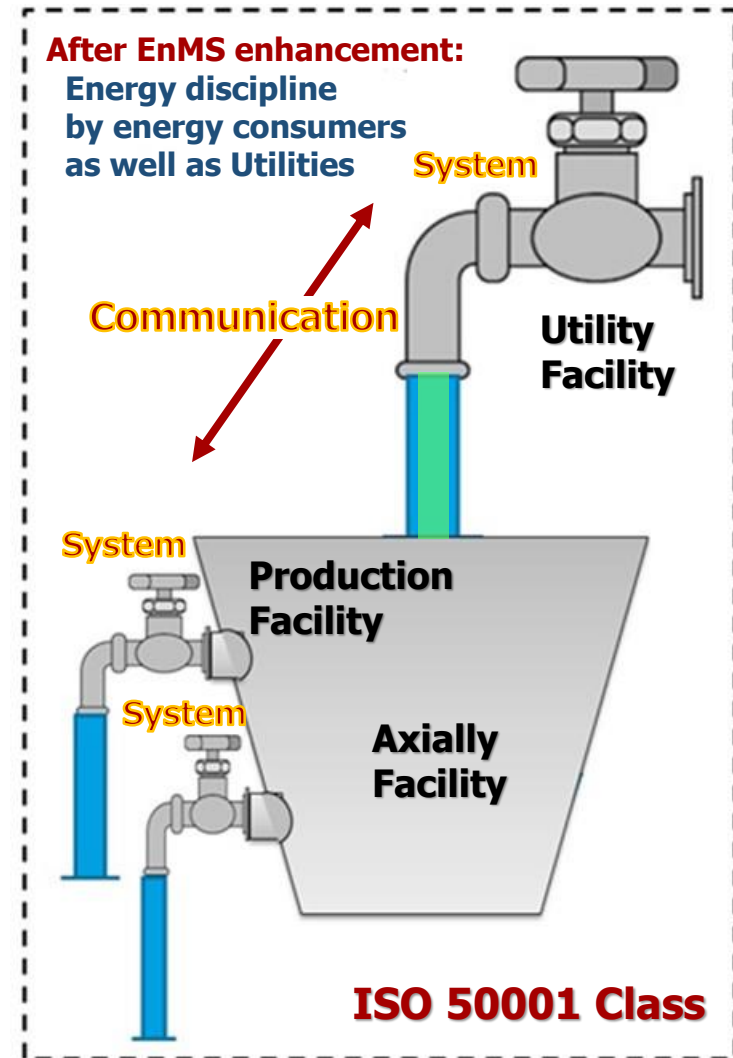
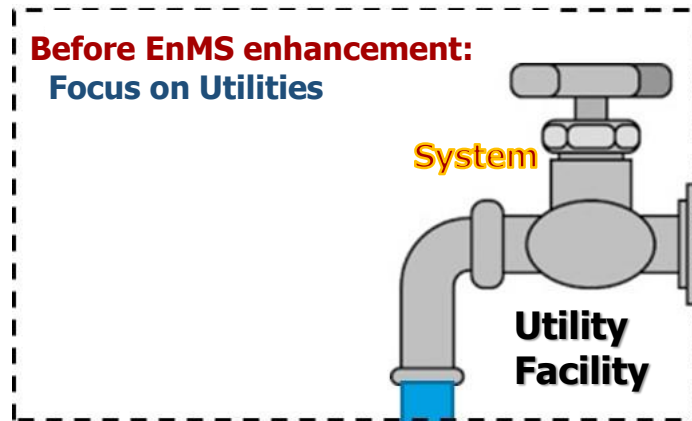
### **Performance over Conformance**

- 1. People are “energy”**
- 2. Top management commitment**
- 3. Energy Monitoring System**
- 4. EnPI**
- 5. Turns risk into opportunities**
- 6. Existing facilities revival**
- 7. Improvement by operation**
- 8. Energy Efficiency Procurement**
- 9. It sustains the best practice**
- 10. Asset Performance Management**

**Continual Performance Improvement Cycle**

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## 9. Performance over conformance M.S.



### **What is “asset”**

#### **People:**

To drive asset items to the best quality & performance as well as themselves “asset” of the organization

#### **Utility facility:**

To convert energy to be suitably used for the business purpose

#### **Production facility:**

To produce business outputs

#### **Incidental facility:**

To make people work effectively comfortably and safely...such as light, AC,

*They are Significant Energy Use Items as ISO 50001 defines*





## 10. Asset Performance Management

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**Our mission is:**

**Protecting Company's Assets**

**Protecting "asset" means:**

**Ensure the asset items are performing  
to the best of ability**

**Asset Performance Management**



## 10. Asset Performance Management

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Site oriented

### Our mission

#### **Asset Performance Management (APM)**

**Having positive discussion on “optimum performance” with the site operation members for existing operating facilities, and Plan and Do improvement or best practice sustainability**

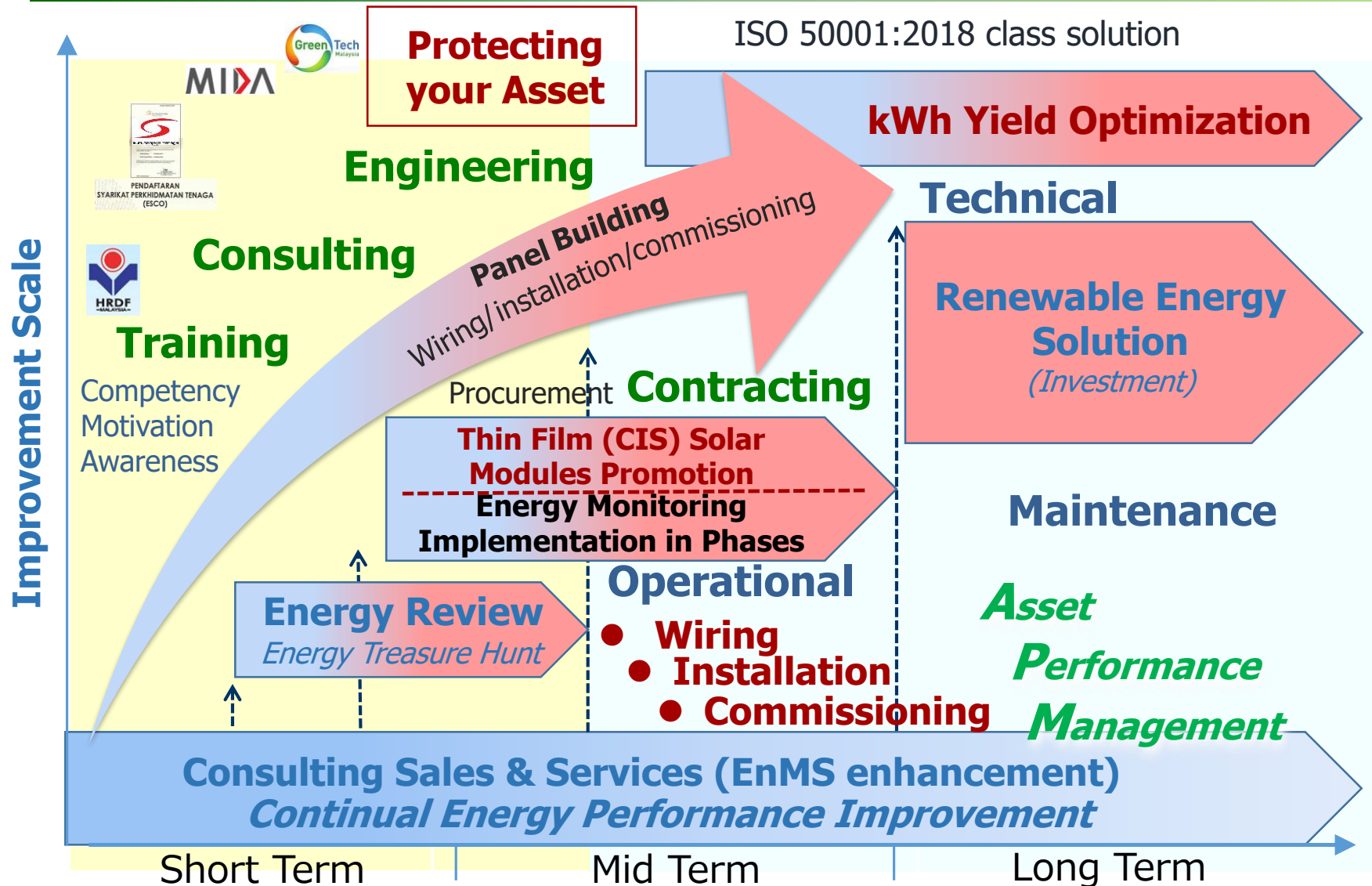
**EMV, the positive result in performance**

*[Case studies]*

- 1. Compressed Air system air volume/pressure to demand/supply optimum balance operation followed by performance EMV.*
- 2. Applying molecular technology surface treatment method to old machine for youth revitalization proving with performance EMV.*



# Sustainable Business Development Partner



## 10. Asset Performance Management

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### **Asset Performance Management**

**efficient use**



**Highest productivity** (kWh Yield Optimization)

**&**

**Highest quality product**



**Sustainable business development**

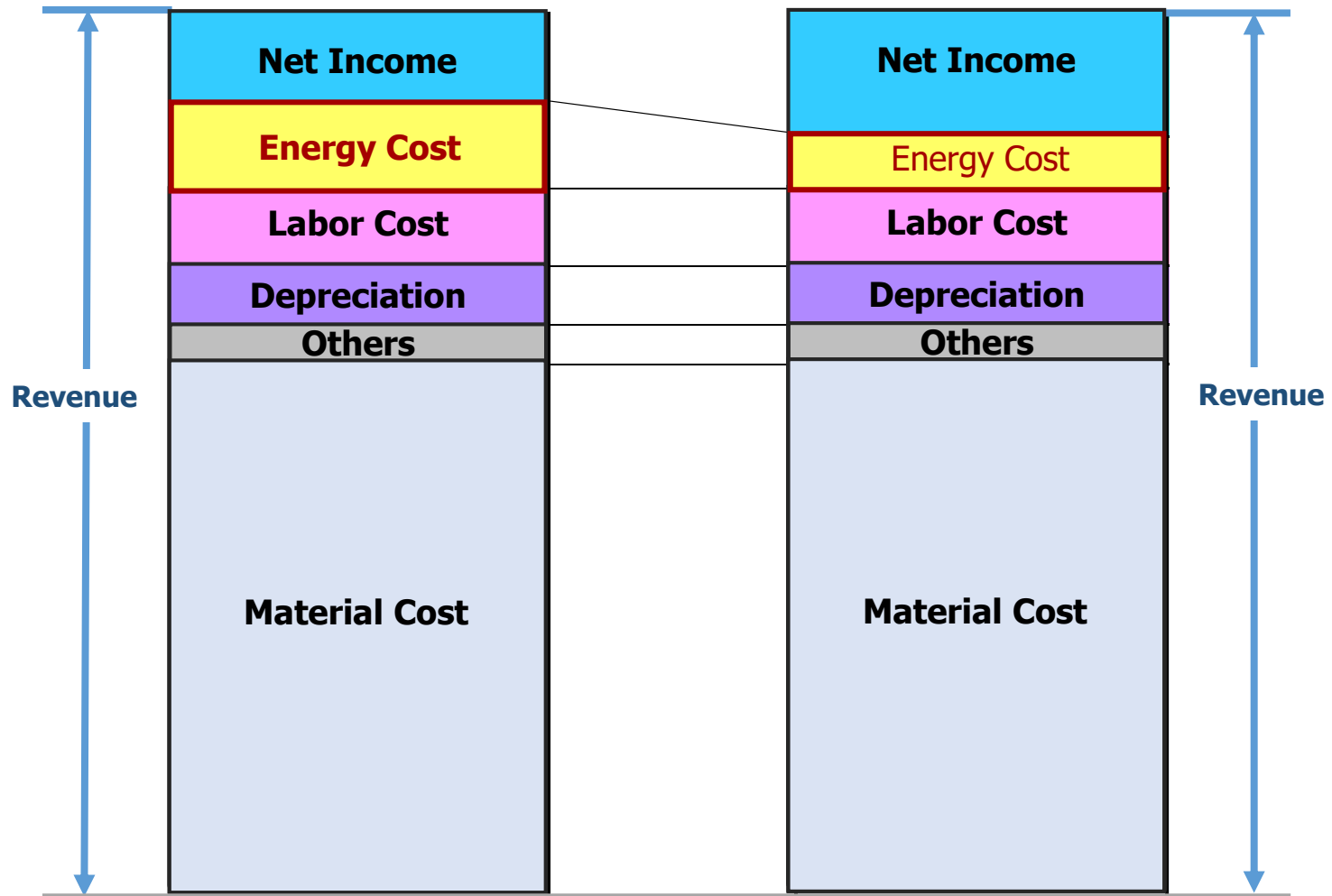
**Energy is a business matter**





# 10. Asset Performance Management

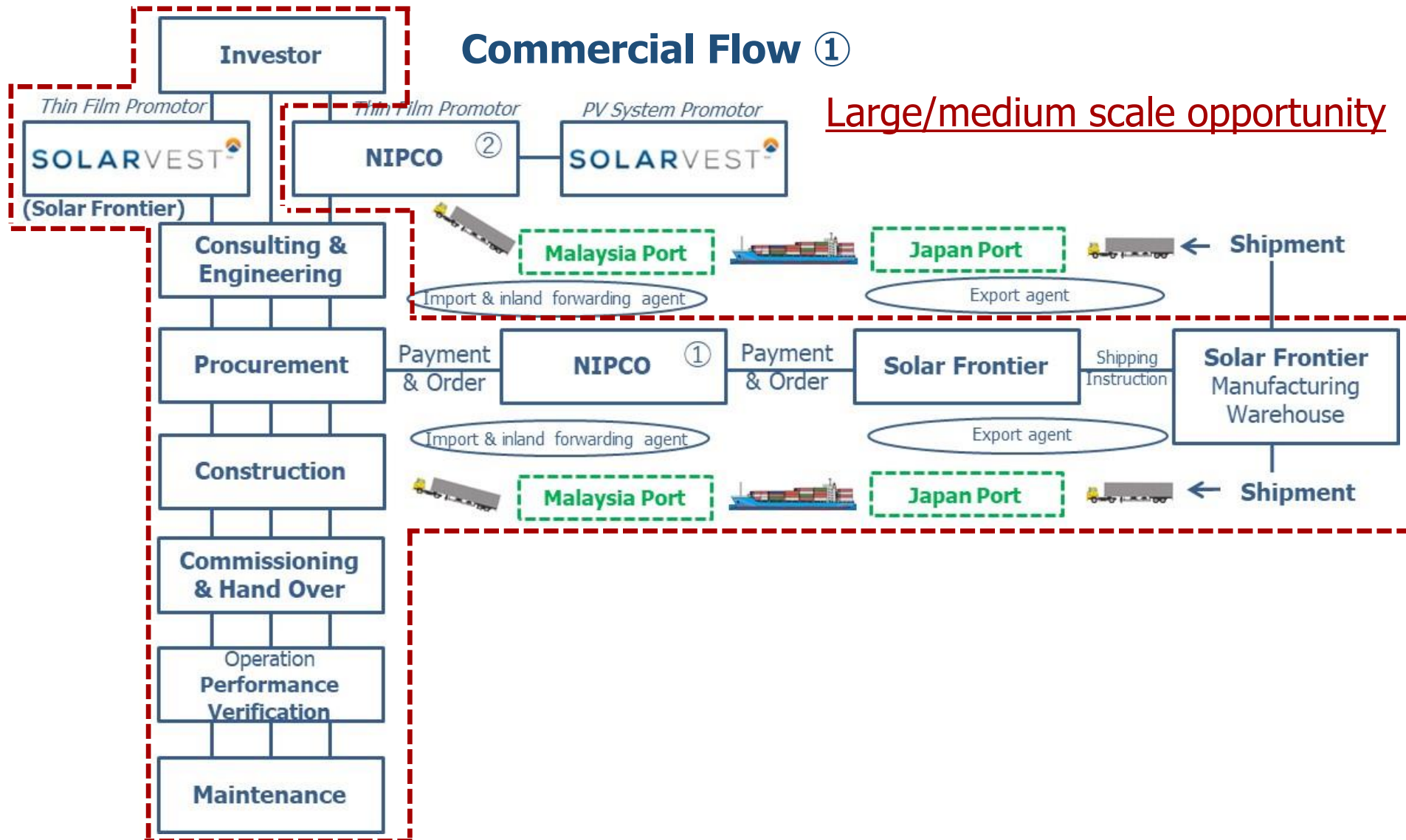
## Business Impact with Energy Management



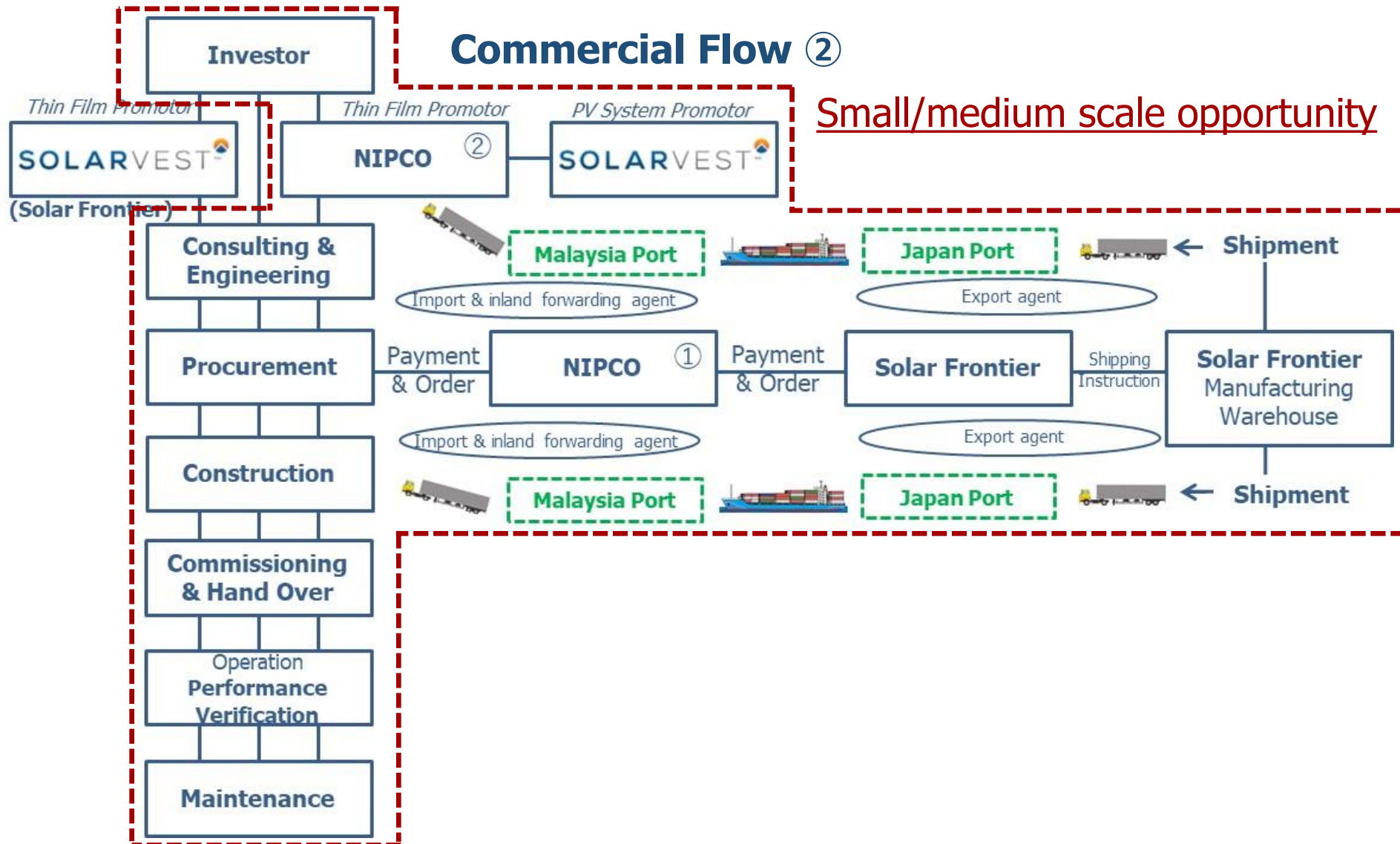
# 11. CIS Thin Film Solar Module Promotion

## Commercial Flow ①

Large/medium scale opportunity



# 11. CIS Thin Film Solar Module Promotion



**Would like to become sustainable partner with you ...**



**Thank you so much for your continuing collaboration**