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Building Energy Saving Gensus Appraisal of the Drill of Building Energy Saving Management in Construction Industry in Greater China, Asia and Worldwide

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I. Introduction

No one is perfect. Energy saving is performing far from perfect. Building energy saving management is uneasy to attain and it is far from reach to working out building energy saving. Though some measures might build in and some forms of figures come up by the evaluation of the variables get along. Subjective approach is dared to say. Iceberg Theory" quotes one see only the top cannot know the problems and difficulties at the bottom.

Monitoring is the necessary tools to go into right track. The following advocates the stages in the succession of Building energy saving management. (See Figure 1) The following study sequences should be performed on order to achieve energy efficiency & intelligence. We analyzed the calculation results to determine if the project would pass the building energy performance evaluation. We hoped that this research would help the designer to design better ventilation operations to achieve reduced energy consumption.

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II. Several Circumstances Turn New Era

The pollution in China made it worst from acceptable ranges. The construction wastes and chemical sludge damage the sea, farm and economy as a whole. It pollutes over 70% of fresh air. Even worst, the spread out is hazardous to neighboring cities such as Hong Kong, Macau and Japan. "Hot Bomb" destroys the weather and consequently difficult to survive for both work and live. New Era is ready to call over the world. The general adoption of Building energy saving management (BESM) is covered up by public and private sectors. (See Figure 1)

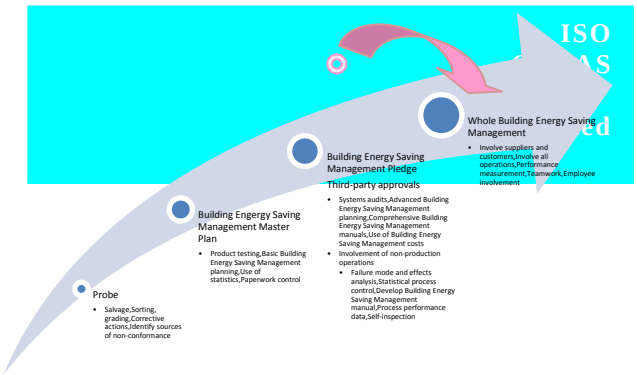

Figure 1 : Stages in the Appraisal of Building Energy Saving Management

Structure shift for private Building Energy Saving Genius is everywhere in Mainland china. This is also applicable to Hong Kong as well. Hong Kong should reshapes its own character and put the environmental awareness into building culture. The very good examples are the public housing estates and Tsing Yi College and more.

The construction for the bridges and buildings are encouraged to accustom the prefabricated products. Diversification is contemporary approach for the

building production so as to compete in the industry. Hong Kong is in famous link between China and Europe as its oriental international trade. Let the construction rule over the market in its fiscal policy freehand that share about 70% of the Hong Kong industry. Building energy saving management is the prosperous fore step construction industry.

The following advocates the Achievement to Energy Efficiency & Intelligence. (See Figure 2)

Structure shift for public The slogan quoted "Recycle, reuse and refill in the use of building materials and any kinds.

BESM is the wise in the control of waste products. Micro organisms are therefore adapted to eat up the pollution oil and dirt in the river. The better is the environment, the better our human beings. Good Environment is at its best for pleasure and lives and work.

Environmental awareness, political concern and general public urge the Building energy saving management approach a success. With our higher education, controlling the resources and reduction of wastes call for people in the street in a position to new era of BESM. The Building energy saving genius is the brainstorm for public to such a change.

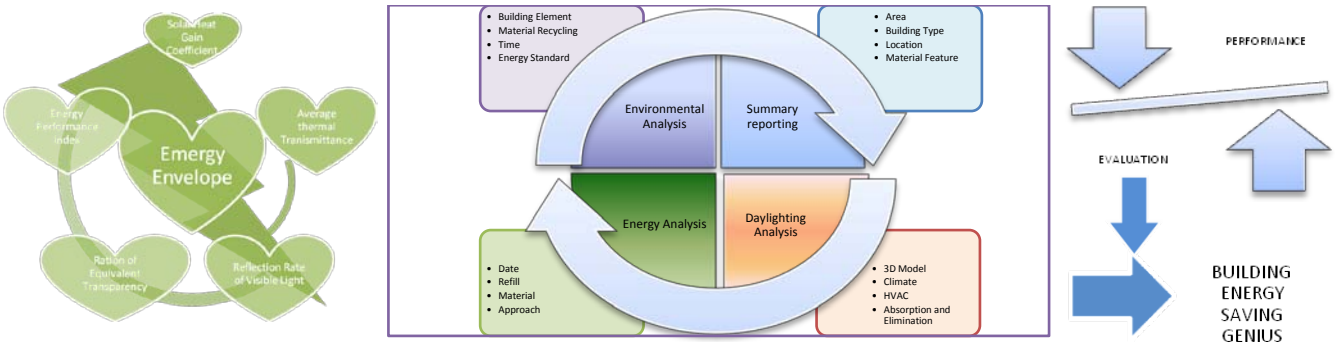

Figure 2 : Achievement to Energy Efficiency & Intelligence

a) Government Enhancement

The value for energy saving is now in line with money saving. We are asked to pare down our construction wastes. The Governor announced in 2010 that in order to building energy saving management the plastic bags, construction wastes should be kept to the minimal. A fine is imposed on handling these products. The Government implements the certification scheme under (HKBESA) that it is the quality management certification authorized bodies which is the government ownership to very company the cortication system.

b) The Certification System: ISO 9001, ISO 14001 & OHSAS 18001

i. *ISO 9000*

Contractors, nominated sub-contractors and suppliers to implement ISO 9000 and to achieve registration with HKBESA by different target dates: main contractors by 31/03/93 concrete suppliers by 01/1992, nominated sub-contractors by '94 – '95, and consultants within 3 years.

ii. *ISO 9001*

Provision of consultancy Service of Integrated management System certified for Government Bureau.

iii. *ISO 14001*

Provision of consultancy Service of Integrated Environmental management System certified for Government Bureau.

iv. *OHSAS 18001*

Provision of consultancy Service of Integrated occupation health and safety management System certified for Government Bureau.

- ✧ For version issued in 1999
- ✧ 2nd version issued in July 2007
- ✧ OHSAS 18002 – occupant health and safety management system guidance for the implementation of OHSAS 18001.

The certification ISO 14000 is the Environment control System for the requirements of the company to survive. The certification system should be progressively smoothly and systematically.

OHSAS involves OH&S Policy, planning, implementation and operation, checking and correct action, management review and continuous improvement.

c) Benefits of BESMs

To the organizations

- ➢ The potential reduction in the number of accidents
- ➢ The potential reduction in downtime and associated costs
- ➢ Demonstration of legal and regulatory compliance
- ➢ Demonstration to stakeholders of your commitment to health and safety
- ➢ Demonstration f an innovative and forward thinking approach

- Increased access to new customers and business partners
- Better management of health and safety risks, now and in the future
- Potential reduced public liability insurance costs

d) Findings and Controversial Issues

i. *Findings*

Energy Saving Management on overview in Asia and worldwide; Essential of BESM expansion in Asia and worldwide Original Building Energy Saving Management manufacturing (BESM) demand to build finished products in the once of the lowest total cost regions in the world; Large number of component suppliers makes use of China as a logical choice in close proximity to BESM foundation. Induce BESM competitors in China and worldwide.

ii. *Controversial Issues*

It is to gain a overall view of the situation comprising of nearly Zero Energy Buildings, skills, deficiencies, green skills The development of Net or Nearly Zero Energy Building (NZEB) definitions and the implication for regulatory reform Regulatory frameworks for energy efficient buildings Affordable solutions in sustainability for new building developments such as innovative materials and methods to improve sustainability Skills to implement successful collaborative and multidisciplinary environment for building design, engineering, building and construction Building Energy Saving Management is to prevent loss and wasted protection. It is the better use of limited resource. The Environmental system in construction is the control of its availability of the goods and products simultaneously keep the standard in utmost condition. Maintaining Environment Management in high standard is our human phenomenon. The goal is the minimal cost in handling goods and products simultaneously keep the standard in utmost condition. The implementation of BESM is through trial and fault that we learn finally the success. Success is the mother of failure. It is what the BESM about.

e) Targets of the Research

What we achieve as follows

- Investigate the objectives of BESM and the development of BESM to the international growth in construction industry.
- Forecast the characters of clients, engineers, architects, and main contractors have insights towards the BESM in construction works, and
- View the spectacular requirements for the building projects.

f) Study Methodologies

The studies of this methodology are analysis as follows

- BES Plans drives to construction projects as necessity made either the technical and contractual skeleton of the construction industry.
- BES Plan uplifts the Building Energy Saving Management of construction projects contractually.
- By virtue of the special nature of the construction industry, there is no necessity to adopt a 'Whole Building Energy Saving Management' approach in all construction projects.

Feedbacks from the construction are demanded to the survey and a number of charts drawn out. (See Figure 3) Data taken on: 418 Main contractors; 260 Large/small sized developers; 336 Professional civil/structural/building engineers;279 Registered engineers/architects (See Figure 3).

Hypothesis 1: Critical factors include the measurement of energy saving management, competent persons carried out the plan.

Hypothesis 2: Unpredictable factors include the handling of first-time documents for BS and extra costs incurred. Practice makes perfect

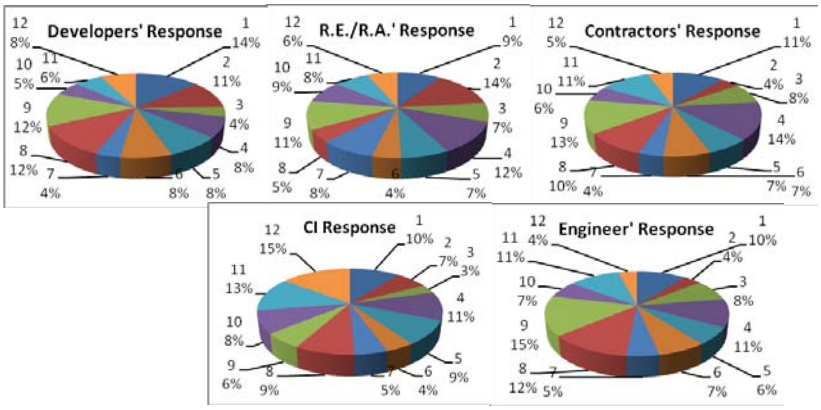

Figure 3 : Survey Response

g) Inclusions of the Building Energy Saving Management Plan

- Highlights
- The BESM Logistics
- Quality award Scheme consists of the following two awards:

The Genius in Energy Saving and Quality Status Award Scheme

BESM Performance pledge will be presented to the one who has the willingness to work with energy saving management into practice in the industry. Through assessment and recommendation by the

Independent Examination Board. Once can attain the Certificate for Appraisal in a year. The one has award chosen to be the brilliant energy saving in the year who has strong sense of energy saving, leadership with quality management improving the performance of work and enhance the productivity in the industry. Green Environment Practice always in the mind of the continents.

h) Outcomes in Setting up of a Building Energy Saving Management Approach Around the World

Under the historical in Beijing (AFP) on Jan 11, 2012, the Chinese built tycoon behind a 30-storey energy-saving that used only 15 days. China Engineering Company reshapes the construction to formulate new energy. Reduction of energy consumption similar to the least waste is our Environmental Science. Working on the goal of minimizing the cooling load and eliminating the need for auxiliary heat, various passive improvement strategies were first brought in. These strategies included insulation, double glazing, vented roof, shade trees, reduced glass area, overhangs, and high efficiency mechanical systems on roof and wall.

i. *Structure Shift for Private Building*

Energy Saving Genius is everywhere in Mainland china. This is also applicable to Hong Kong as well. Hong Kong should reshapes its own character and put the environmental awareness into building culture. The very good Portfolios:

Building Energy Saving Management Plan adopted all over the world relatively to Change:

ii. *China*

Air-con tycoon moves into eco-friendly building the Chinese tycoon behind a 30-storey energy-saving building that built up in 15 days only. China should come up effective systems for building energy saving evaluation and certification, implement economic incentive policies for building energy saving, and enhance the popularization of building energy saving knowledge.

iii. *Australia*

Constructing the energy flows through an environment is not new. In the 2000s drought conditions in Australia pushed in the use of embodied energy analysis methods to water. The study of embodied water is prompted. (Boutique hotel Stendhal, Vienna, Austria Boutique hotel Stendhal was the first hotel to achieve a zero energy balance France Very low energy buildings are enlarged with standard of high energy efficiency by national Building Regulations. They neglected traditional heating systems and active cooling resulting in a saving of energy consumption of 70 to 90% compared to the existing building stock.

iv. *Germany*

Saudi Arabia and Germany put a joint cooperation agreement with the two countries in the field of energy efficiency in buildings, maintain the electrical energy that official estimates enhance in consumption in the country

v. *Britain*

Biodiversity Assessment In our philosophy, development governs the environment. Natural environment including the biodiversity assessment is to be worked out for developments situated nearby areas with high ecological value. UK Estate reshape is a symbolic illustration. Blossom vegetation in the existing estate is to be shielded as an integrated landscape strategy.

vi. *Canada*

Endowed 22 months to build a leading edge manufacturing facility is one certified under the LEED (Leadership in Energy and Environmental Design) program which rises up the adoption of sustainable green building design techniques and construction practices by tools, materials and performance criteria, pertaining to all aspects of the building. “The whole idea behind LEED is not only energy efficiency, sustainable design or indoor air quality (IAQ), but also an overall improvement of construction practices to reduce waste and/or contamination caused by the construction process,” said Daniel.

vii. *Hong Kong*

Energy is heat and light, and in more complex mechanical, electrical, chemical and nuclear forms requires energy efficient. Voluntary is the framework of energy efficiency in Hong Kong, the Government is to further facilitate the public in choosing energy efficient appliances and raise public awareness on energy saving, the Government has brought in a imperative Energy Efficiency Labeling Scheme (EELS) through the Energy Efficiency (Labeling of Products) Ordinance. Renewable with the gradual reduction of available fossil fuel reserves and the unfriendly impacts on the environment made by the burning of fossil fuels, the use of renewable energy is becoming increasingly important, especially in Hong Kong, which is highly energy dependent. Learn more about renewable energy.

viii. *Japan*

Avail laws, regulations, technical standards, evaluation systems and energy-saving services. Japan intends to study in building energy saving management carried out. The Building-Energy Manager's Association of Japan (Source: Managing Energy-Saving Technology in the Building) this association has been conducting an energy-saving diagnosis project as an aid project of the former Ministry of International... (Source: Managing Energy-Saving Technology in the Building) This association has been conducting an energy-saving diagnosis project as an aid project of the former Ministry of International Trade and Industry since the fiscal 1996. This diagnosis service is a free project, which is conducted taking two days in principle. Two professionals, partner-up, selected from member companies

of this association, and are sent to the client's office. Diagnosis items are listed below: (1) Analysis evaluation of real energy consumption in the building (2) Energy-saving diagnosis and measure planning on the building and the facility (3) Report of an improvement proposal below is a flow chart that shows a process of energy-saving diagnosis.

ix. *South Africa*

Building energy management, electricity saving, Energy Consulting, Energy Saving, franchise, grid feed, Industrial Energy, Industrial Energy Saving, Inverters, low power lighting Industrial & Commercial Industrial and commercial generators in nine are sold out in Southern African countries. Heavy duty high output permanent installed sets designed to be reliable and cost effective. Prime Power Operations Users reliant on diesel power as primary source of power effective power station designs with reliability Residential 2-3 bedroom free standing houses with 60A single phase connection Permanent installation in sound attenuated enclosure delivery good quality of power

x. *Taiwan*

Towards very low energy buildings provide a significantly higher standard of energy efficiency than the minimum required by national Building Regulations. They are very often designed without traditional heating systems or active cooling.

xi. *USA*

Green Building – Energy saving Tuesday, December 16th 2008 by Ahmad Isnaini Regarding Smart Film, its breakthrough feature is that the customer could easily and directly roll and adhere Smart Film to glasses by simply peeling off its protective film without adding any extra adhesive in-between Smart Film and the glasses, and also can repetitively adhere Smart Film to the glasses in case of installation misalignment.

xii. *Portugal*

Solar XXI, Lisbon, Portugal Solar XXI is a prototype New Zero Energy Building (NZEB), importantly; the building was constructed at no additional cost to a typical office building.

xiii. *Denmark*

Crowne Plaza, Copenhagen Towers, Orestad, Denmark Crowne Plaza is described as the first CO, neutral hotel building in Denmark and has the largest Building Integrated Photovoltaic system (BIPV) in northern Europe and Denmark's first groundwater based cooling heating system. Green Lighthouse, Copenhagen, Denmark The Green Lighthouse was built as a prototype NZEB building for the Climate Summit in 2009. It demonstrates impressive sustainability and was the first public CO, neutral building in Denmark. Osterbro Community Housing Sustainability Project Copenhagen, Denmark the existing 1960s Community Housing buildings accommodate low income residents. The process of retrofitting these buildings for social environmental and economic sustainability is one that involves

xiv. *Germany*

Empowering and involving the residents Neue Burse Student Residence Hall, Wuppertal, Germany Two near identical student residence buildings originally constructed in 1977 have been extensively upgraded for improved functionality and thermal performance, one to Low Energy building standard and the other to Passivhaus standard information regarding energy monitoring, occupant behavior and education, commissioning and defects rectification is included in addition to the sustainability measures undertaken to achieve sustainable retrofit buildings Waste Disposal Building Remscheid, Germany The office building of the Waste Disposal Unit was constructed in 1968 and completely renovated in 2004. The energy concept and the architectural quality were recognized by the State with the State Prize for Architecture, Residential Building and Urban Planning. Wuppertal University NZEB experts have been monitoring and evaluating the building operation for energy efficiency and thermal comfort. Decathlon Building, Wuppertal, Germany The remarkably energy efficient building as an entrant in the Madrid Solar Decathlon in 2010 gave us an amazing multidisciplinary learning experience.

xv. *Switzerland*

IWB Energy Customer Centre, Basel, Switzerland with a view that this seven-storey building is situated with poor solar access. Organizing Minergie-P energy standard Gundeldinger Field, Basel, Switzerland, engineering works industrial site has been delocalized to community business, activity and leisure centre with a public character. Sustainability measures induce renovation rather than demolition, water saving devices, sensor-controlled energy lighting, recycled and green building materials, ecological paint, roof gardens and a370m2 photovoltaic solar installation.

The statistics on BES are tabulated in the world as follows: (See Figure 4).

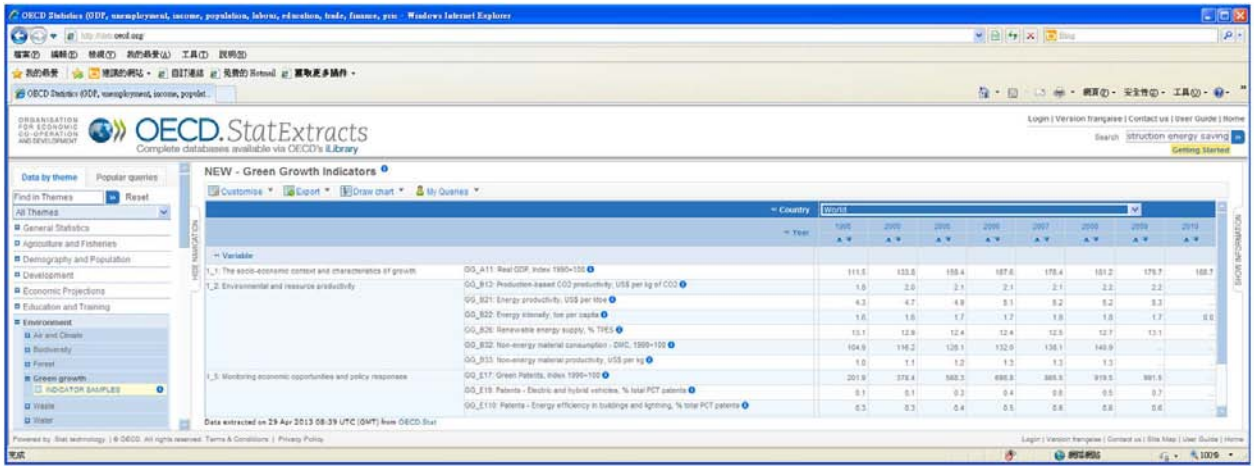

Figure 4 : Statistics on Green Growth Indicators, Statistics on Building Energy Saving

i) Factors Affecting Building Energy Saving Man

j) Factors Affecting Building Energy Saving Management Construction

The puzzling we face is impoverished workmanship by the contractors in completing the works. Poor compliance appears in the drawings and specifications between different parties. MC has the intention to target the works to cost and schedule rather than the Building Energy Saving Management in construction. Communication and hence the cooperation problems among the parties exist. One design, one builds make conflict and errors. The consequences affect human beings and the works affect the life of people. Works for maintenance have extended the real facts for buildings period. The setting up of a Building Energy Saving Management is difficult. The misused materials add up the defects ground and not up to standard laid down by Building Authority.

k) Discussion

In this study research we notice that the design misinterpretation, craftsman training and the waste of materials greatly the leading of energy loss. There will be a saving if everything go better fall in the right pathway. The materials should be planned ahead such reuse, recycling and refill tin order to avoid the wastage. The on-site workers should attend the training course necessary for energy saving consumption in construction industry. The contractors should bear in mind that energy saving is the first hand solving instead of the profitability. We should maintain our energy saving in our workplace and work it out in practice.

Energy saving team should set up to supervisor the more appropriate use of material and products. Energy Saving Management is a long-term planning we should devote more time in designing the subjects occasionally in the three main scopes namely Design Stage, Construction and Erection of Building components. Though there are many contingent factors to hinder our way such as political concerns, human psychology, social ethics, and the surroundings, pirate pace rule over finally. Feedback, decision-making, inspection, testing, sampling energy saving control, production, pre-casting, and the instruction control all count on the coexistence among themselves.

Hong Kong face more or the less the situation as in Mainland China. Pollution climb up the peak and the severe weather we count on. Major problems in energy saving work on the first hand, communication skills and know ledges are the key strategy of sustainable development towards the energy saving approach laid down by Government. The leaflet hand in between the parties concerned energy saving management is not established well among the trade are the problems. On the second hand, the laws and regulations are malfunctioned. Some even not building up energy efficiency codes not up to standard log for their industries. One trade one policy. Unfortunately the building design codes for assorted climatic zones marking 50% energy saving, have been directed but only worst than 5% of newly-elongated buildings as a whole in the country adopting the design codes of building energy saving. Design codes and practice are published on the vellum only not in force. On the third hand, though the "China Energy Saving Law" was trumpeted and also activated in 1998. Non-government intervention is a fiscal policy let the market walk in their way. The chisel is not clearly rehearsed in every walk of life. Fourthly, the environment publication such as the mass media the TV tend to bring out green cycling is good. However, in reality the on-site workers, contractors and consultants not accustomed and easily fake out. More, the platform is too lack in energy saving management and far from exercising. The equipment, technology and process are not accomplished towards the goals of energy saving management. Failure is the consequences the foundation of miserable BESM SKELETON.

III. Change in Current Situation in China

30-storey energy-saving building mark a change that built up in 15 days with the intention to duplicate the model across the vast and heavily polluted nation.

a) New Features

30-storey energy-saving building The prefabricated building, the five-star T30 Hotel at Dongting Lake, Hunan province which opened on January 18. It is an Internet sensation after time-lapse video posted online showed it being constructed by 200 builders in just 360 hours. Zhang Yue is the billionaire chief executive of the Broad Group air conditioning company always find ways of speeding up the buildings with rollback of waste of materials and energy. The feature is emphasized that quadruple-glazed windows which use energy-saving lighting.

In feeding up with the green environment, the pre-fabrication used much more than most European buildings. In 2013 20 building built up a month and by 2014, up to 50 buildings a month as summarized in the mainland China.

China is much more polluted than Europe and harmful to our health and will offset the economic benefits of our growth The president that constructed the building won a UN Environment Programme "Champions of the Earth" award last year. The cities of China are among the world most polluted after three decades of rapid urbanization. Zhang founded Broad in 1988 with his brother, Zhang Jian that studied thermo dynamics and that revived an old energy-saving technology for non-electric air conditioning which they have now sold in 75 countries around the world. The hotel which is composed of prefabricated parts were made at a factory owned by the Broad Group in Hunan that employs 10,000 people, using steel, glass and insulation sourced inside China. The group has three such factories in China and plans to expand that number to 40 to promote its patented Broad Sustainable Building model at home and abroad.

Energy efficiency indicators of major energy consuming equipment: By 2010, energy efficiency of newly added major energy consuming equipment is expected to reach or approach international advanced level, and some automobiles, motors and household electric appliances are expected to reach the international leading level (See Table 5 & Figure 5)

Table 5 : Energy Efficiency Indicators of Major Energy Consuming Equipment

Items	Unit	2000	2010
Coal-fired industrial boiler (under operation)	%	65	70-80
Medium and small sized motor (design)	%	87	90-92
Fan (design)	%	75	80-85
Pump (design)	%	75-80	83-87
Air compressor (design)	%	75	80-84
Average oil consumption of automobiles (for passenger purpose)	L/100km	9.5	8.2-6.7
Room air conditioner (energy efficiency ratio)		2.4	3.2-4
Electric refrigerator (energy efficiency index)	%	80	62-50
Household gas cooker (thermal efficiency)	%	55	60-65
Household gas water heater (thermal efficiency)	%	80	90-95

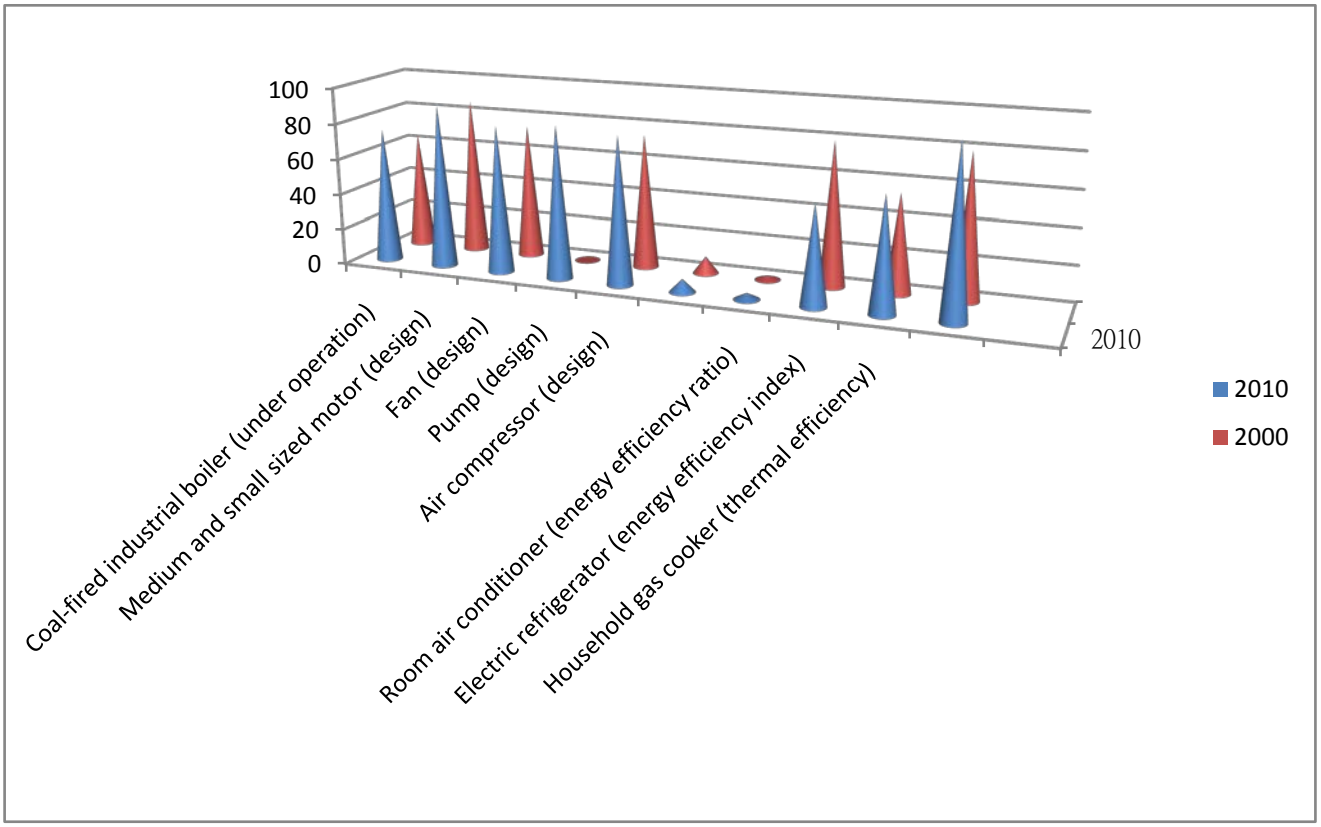

Figure 5 : Energy Efficiency Indicators of Major Energy Consuming Equipment

IV. Conclusion

BES is a relatively new concept in China and Hong Kong, there are at present no courses available to train works, supervisory staff, managers and chief executive officers in the techniques of implementing Building Energy Saving Management Plans in the construction industry. This is one area, which the construction industry in China and Hong Kong should address urgently. In the training programmers, some of the potential problems, as noted in this paper, which are likely to arise during the implementation of BES Plans in the construction industry, must be highlighted. This will help to building industry will function in the manner intended to achieve Building Energy Saving Management construction effectively all around the world. Construction industry is the great demand for energy saving were the problems of our wastes is announcing. Survey has its own constraints. The size we use for sampling is too board in a sense and cannot reflect the specified the real situation details.

The survey cannot truly tell us the inside story of the particular projects. Training is an essential tool to tailor made for our contractors, developers, consultants and engineers and concerned on-site staff. It is recommended that energy saving prove to be the new features of cost-effectiveness in the nowadays economy and is cozy to program the green strategy and peek at the internet or website. More importantly, it is to sum up the medication and modification of the harmful products in industry as they danger our lives. The option of energy culture in the life cycle is a continuous process and cultivation practice is our major issue. Enlightening policies such as labeling the slogans on the site and guiding our ideas and minds on the right track on the energy saving. Once uses the environmental friendly energy saving components in the authorized list is our first step.

The methodology is to quicken the aim of energy saving we should raise up the standards and specification in our countries relatively with the prey and hasten our Government laid down laws and regulations on the energy saving a starting stone. Fine and impose punishment on those who exhaust the energy wrongly. One puts on energy saving technology policy on contour much easy for workers. Energy saving highlights through the mass media deliver the message on energy consumption information, energy saving technology, processing and equipment development in the workplace. The mechanism on the supervision of the energy control on site and accomplish our purpose of energy saving by volume of publications, TV, radio and newspapers. Competition on energy saving is also helpful in our industries compared with overseas. Tailor-made courses for energy saving should be provided to the workers on-site, contractors, engineers and people

involved in construction. Energy saving management should be initiated in primary stages in the technical institute and vocation education.

The European Union is setting stringent targets for energy efficient buildings-in very specific carbon emission reduction targets to be finished by 2050. There is an acknowledgement that buildings have a long lifespan (and long intervals between significant refurbishments). Significant change needs to be implemented in the very near future to cast on long term goals.

Europeans have strong sense of urgency and commitment to tackling the condition and throughout Europe there are a variety of concepts and voluntary standards for energy effectiveness and efficiency of buildings comprising of Passivhaus, Zero-energy, 3-litre, Plus-energy.

Simultaneously, energy saving is a long-term strategic guideline in China own economic and social development. It is urgently that the NDRC has therefore commutated the plan of Energy saving, which aims to pushing the whole society towards energy saving and energy intensity reduction, to removing energy bottlenecks, to building an energy saving society, and to promoting a sustainable social and economic development. The objective of building a society that is seeing each side in every aspect. The programming period is divided into the Eleventh Five Years Plan period running to 2010 and the period from 2010 to 2020. The energy saving objectives and the focus of development by 2010 are implemented whereas the objectives stated for 2020 are proposed. The Plan is as follows: key areas and key energy saving projects; implementation measures; the current situation in respect of energy utilization in China; tasks for energy; the way forward for energy saving, principles and objectives.

There are hundreds of Building Energy Saving Management services (BESM) companies in China and worldwide including both multi-national and domestic industries. However, this research only focus on couple world-wide largest Energy Saving Management services provides engaged with China's operations. Finally, the study sequences should be performed on order to achieve energy efficiency & intelligence. Building Energy Saving Management is Building Energy Saving Genius.

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Authors' Biographical Notes

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