WITH THANKS TO OUR SPONSORS
FACILITY MANAGEMENT CHALLENGES IN THE KINGDOM OF SAUDI ARABIA

Eng. Ibrahim Al Buloushi
CFO
Daem Real Estate Co.
A subsidiary of Manafea Holding Co.
The Outline

• What is Facility Management?
• Market Size & future potential
• Challenges
• Daem Initiatives for both its current & future projects
• Conclusion
What is Facilities Management?

FM is an interdisciplinary function that smoothly integrates PPP (People, Places & Processes) with the use of technology for the efficient functioning of a built environment.
Market Size & Future Potential

GCC Facility Management Opportunity (USD bn)

Source: Frost & Sullivan
Big Potential for FM

• FM industry has began its growth story in GCC since 6 years only and it is expected to reach almost $6.5 Billion by end of this year

• Globally, the FM industry represent 5% of the World GDP, which is expected to reach $400 Billion by 2017

• FM represent only 5% of a project’s life cycle cost that increases the life span of the project by 50% while achieves cost savings of 25%-30% in operating costs

• The construction industry growth offers tremendous potential business for FM (projects worth more than $630 Billion were awarded to contractors in 2011 & 2012 across all the sectors including residential, commercial, hospitality & retail) where more than $65 Billion awarded to construction contracts
Challenges

• Absence of RERA in KSA

• Enforcement of Owner’s Association Legislation

• Low Awareness of the Sector

• Labor intensive services (specially unskilled) workforce Management

• Building owners are becoming highly demanding, at the same time, end users/customers are increasingly becoming price conscious

• Inflationary Pressures, specially in case of long term contracts

• Visas & Saudization
Tangible Assets
• RE Development both
  - Infrastructure
  - Superstructure
• Properties Trading
• Income Generating Assets
  - Property Management
  - Facility Management

Intangible Assets
• Stocks/Securities
  - Locally
  - Internationally
• Private Equity
• Other Investments
Daem Real Estate Initiatives for current projects

Profit = Revenue - Cost

↑

To increase this...

↑

... increase this...

↑

... or decrease this

Property Management  Facility Management
Early Integration between

• Projects Management Team
• Property Management Team
• Facility Management Team
From design, build and commissioning through handover, operation, maintenance and life cycle, the objective is to deliver best in-class customer service and asset protection to maximize ROA & ROI.
Conclusion

Prevention is **better** than cure

Medical Doctors

Prevention is **cheaper** than cure

FM Experts

Sustainable Facilities: *Successful and sustainable facility management is only possible through the right decisions made at investment level and procurement management and not after project completion*
Thank You
WITH THANKS TO OUR SPONSORS
HOSPITALITY INDIVIDUAL PROJECTS
AND FM INTERNATIONAL STANDARDS

Yasser Almisfer
Managing Director
SilkRoad Hospitality
Hotels

- 951 Hotel in Saudi Arabia in 2011
- Occupancy rate 63%
- 300 rooms & above highest OR 65.8%
- 4 star hotels OR 65.5% and 2 star OR 58.9%
- 36,319,099 Room sold in 2011
Furnished apartments

- 2,026 Furnished Apartments in Saudi Arabia in 2011
- 65.4% Level 3 Furnished Apartments & level 2 34.2%
- Occupancy rate 68.3%
- 21,365,770 Room sold in 2011 within 84,687 Apartments
- 216,978,000 SR on Maintenance spend
- Avg. 89,125 SR per Building per Year
What they spend?

- 116,142,000 SR in Hotel maintenance
  - 122,126 SR Per Building

- 100,836,000 Furnished Apartments maintenance
  - 49,770 SR Per Building
The Big Question

• How many business not Licensed?
  – 70% is not Licensed

• How many personal owned Furnished Apartments?
  – More Than 90%
FM & Hospitality

• What we need?
• How can we convince the owners?
• CA$H is the answer!
What is FM:

"a profession that encompasses multiple disciplines to ensure functionality of the built environment by integrating people, place, processes and technology."

(IFMA)
1:5:200 rule

Construction costs = 1
Rent, maintenance and building operating costs (20 years) = 5
Staff salaries, business operating costs (20 years) = 200.
where should we start?

• General Building Maintenance = CA$H
• Laundry = Environment
• Electricity & Water = CA$H
• Recycling = Environment
Thank you
WITH THANKS TO OUR SPONSORS
FROM O&M TO FM
INCREASING CLIENT / CUSTOMER VALUE
THROUGH FACILITIES MANAGEMENT

Alan Masterton
General Manager
EFS Facilities Services, Saudi Arabia
What We Will Cover

1. What do we mean by FM and O&M?
2. How has facilities management, “FM” developed?
3. How should you apply FM to your properties?
4. What are the benefits of FM, what is in it for you?
5. How to implement an FM format?

6. Where can we see examples of these benefits in KSA?
   – Case Studies:
     • Princess Nora University
     • Durrat ar Riyadh
     • MENA region
Disclaimer

• The comments in this presentation are solely the views of the presenter and are not made on behalf of or represent the views of any of the organizations whose activities are quoted

• The materials on Princess Noura University are based on public information and also with the kind permission of one of the main service providers (Saudi Oger Limited)

• The materials on Durrat ar Riyadh are presented with the kind permission of the client (Durrat Real Estate Development)
1. Definitions: FM and O&M

• Facilities Management, “FM”:
  – Coordinating the physical workplace with the people and work of the organization
    (US Library of Congress)

• Operations & Maintenance, “O&M”:
  – Operations:
    • ensure the facilities provide a satisfactory work environment that meets regulations, performance goals, efficient services and costs and that protects the surrounding environment
  – Maintenance:
    • Service the infrastructure (asset) elements so they operate efficiently, are reliable and safe
    (International FM Association)

*FM: coordinating workplace, people and activities*
1. Definitions: FM

- Integration of processes within an organization
- to maintain and develop the agreed services
- which support and improve the effectiveness of its primary activities

(EN 15221-1)

**FM: integrating processes and maintaining support services**

Alan Masterton; EFS KSA
2. History of FM (North America)

• The management of large, complex facilities:
  • Pre-1980’s:
    – APPA (higher education facilities officers)
    – SAME (society of American military engineers)
    – AFE (association of facilities engineers)
  • Post 1980’s:
    – IFMA (international FM association)

• Real Estate focus:
  – BOMA (building owners managers association)

_Influence from military engineering and higher education_
2. History of FM (Rest of World)

• Pre 1980’s:
  – RICS (land, property and construction association)
    • RICS FM Group (FM, business support, life-cycle costing, service management)

• Post 1980’s (examples):
  – BIFM (British institute of FM)
  – (European FM network)
  – FMA Australia
  – HKIFM (Hong Kong institute of FM)
  – JFMA (Japan FM association)

*Influence from property management*
3. How to Apply FM - structure

- **FM department**
  - **Finance**
    - Forecasts
    - Budgets
  - **Computer Aided FM**
  - **Real Estate Management**
    - Leasing
    - Purchasing
    - Managing
  - **Construction, Fit-out, Refurb.**
  - **O&M**
    - Asset services
    - Occupant services
  - **Utilities / Environment**
    - Asset management
    - Premises / layouts
    - Maintenance
  - **Service center**
    - Records, analysis

- **Office services**
- **Occupant services**
- **Safety / Security**

Alan Masterton; EFS KSA
3. How to Apply FM - activities

**Core Business:**
- Primary activities and outputs

**Facility Management (Support):**
- Strategy: targets, policies, impact
- Tactics: budgets, plans, SLAs
- Operations: deliver, monitor, report

**Space & Infrastructure:**
- Accommodation
- Workplace environment
- Technical / ICT infrastructure

**People & Organization:**
- Hospitality
- Custodial services
- Logistics
- HSE & Security

**Other support services:**
- Procurement
- Project management
- Leasing

*FM: planning and managing services to support the core business*

Alan Masterton; EFS KSA
### 3. How to Apply FM - outputs

**Strategic**
- Strategic Facility Plan
- Real Estate Master Plan
- Financial Plan

**Tactical**
- Operations Plans
- Maintenance Plans
- Construction Plans

**Implementation**
- Execution
- Measurement
- Feedback / corrective action

*Developing and implementing business-driven plans*

Alan Masterton; EFS KSA
4. Benefits to You: FM life-cycle

• Property / facilities:
  – Long asset life
  – High cost of acquisition
  – Large total cost of ownership

• Your needs:
  – Return on investment
  – High facility utilization
  – Optimized operating cost
  – Maintain asset value

Maintain the asset value; optimize the operating cost

Alan Masterton; EFS KSA
4. Benefits to You: value

- **Property quality**
  - High rents
  - Low vacancies

- **Cost optimization**
  - Low cost of ownership

- **Minimum breakdowns**

- **Service integration**
  - Service response

- **Life cycle planning**
  - Long asset life

**Value:**
- Financial
- Customer

**Maximizing financial and customer value**
5. Implementing FM: stages

- **Strategy**
  - Envision
    - Strategy
    - Targets
    - Standards

- **Mobilize**
  - Processes
  - Training
  - Asset data

- **Transition**
  - Implementation
  - Service start-up
  - Service quality

- **Transform**
  - Service innovation
  - Monitoring
  - Customer support

- **Sustain**
  - Service management
  - Life-cycle management
  - Environment management

*Planning, operating and corrective actions*

Alan Masterton; EFS KSA
5. Implementing FM: content

**Strategy**
- Current floor-space
- Capital Plan
- Occupant numbers
- Assets / disposals
- Building uses / utilization
- Owned / Leased
- Budgets / benchmarks

**Operations**
- Annual Plan / budget
- Building modifications
- Occupant relocations
- Staff / resources
- Maintenance program
- Safety / security
- Environment program

**Stay on Target**

**KPIs:**
- Operating cost
- Service quality
- Response time

**Corrective actions:**
- Resources
- Equipment
- Budget
- Timing

*Long term needs, annual plans, KPIs and corrective actions*

Alan Masterton; EFS KSA
What we have covered:

– FM: coordinating workplace, people and activities; integrating processes and support services
– O&M: ensuring a satisfactory work environment and operating efficiently, reliably and safely
– Influence from military engineering, higher education and property management
– Developing and implementing business-driven plans
– Maintain the asset value; optimize the operating cost
– Maximizing financial and customer value

Alan Masterton; EFS KSA
6. Case Studies

- Princess Nora University, Riyadh
- Durrat ar Riyadh development
- EFS MENA region
6. Princess Nora University, “PNU”

Vision: achieve excellence and leadership:

Faculties: Science, Literary, Community and Health

Students (in 1430):
  – 18,250 Bachelor; 505 Masters, 272 Doctorate

Scale:
  – Around 3 million sq.m.
  – Faculties, hospital, laboratories, residential
6. EFS FM at PNU

- PNU Facilities:
  - One of the 3 main contracts

- EFS FM service:
  - Service planning
  - Service QA
  - HSE
  - Commissioning assistance

- Value-add:
  - Plan, establish and assure the services
  - Allows O&M main contractor to focus on service provision
  - Provides client with independent results

*FM service to support and add value to the main O&M service*

Alan Masterton; EFS KSA
6. Durrat ar Riyadh

Vision: high quality community development

Scale:
- 800 residential units
- Retail, school, medical center
- Extensive parks and landscaping

Alan Masterton; EFS KSA
6. EFS Total FM at Durrat

- Durrat:
- EFS Total FM service:
  - QA, HSE, FM Scorecard, customer help desk
  - Cleaning, pest control, security, MEP, landscaping
- Value-add:
  - FM service; planning and control of O&M services and sub-contractors

Facilities management, co-ordinating O&M services

FM and O&M services, by EFS

Alan Masterton; EFS KSA
6. EFS FM in MENA region

Scale:
• EFS: facility management services group:
  o Ten operating companies across the Middle East
• Projects:
  o Currently 100 key projects, value in excess of US$ 400m

Approach:
  o Total FM solutions; project inception to operational phases
    o FM Strategy: targets, policies, value impact
    o FM Tactics: budgets, SLAs, value planning
    o FM Operations: deliver, monitor, report

Maximizing value; moving from O&M to FM

Alan Masterton; EFS KSA
Questions
Thank You
WITH THANKS TO OUR SPONSORS
Panel Discussion

- Eng. Mohammed Al-duraibi
  Vice President of Projects - Da’em Real Estate

- Yasser Almisfer
  Managing Director - SilkRoad Hospitality

- Alan Masterton
  General Manager - EFS Facilities Services KSA

- Naser Ali Al Marzooqi
  Facilities Management Head – Masdar City
WITH THANKS TO OUR SPONSORS
IN AT THE START – FACILITIES MANAGEMENT FROM PROJECT INCEPTION

Chris Bond
Director – FM Consultancy
FMO Ltd
For an asset to have ‘value’ it must have ‘utility’, ‘functionality’ & ‘specification’

It must have a use that is desired either by the Owner directly or by the Occupant

FM is a preserver of value
What do we mean?

The consideration of asset operation at ALL stages in the asset lifecycle
Applicability

- Operational management
- Operational delivery - hard & soft services
- All building types
FUNCTIONALITY

Usability

Operability

Maintainability

Lifetime

RETURN ON INVESTMENT

Revenue

Ops Cost

Why?
80/20 Guide

Whole Life Cost (25 yrs.)

- Owners
- Developers

Operations Phase
Design & Const. Phase
Time Dependency

- Design Development
- Construction
- Operations

Operational Cost Reduction
- Feasibility: Greatest Potential
- Design Development
- Construction
- Operations: Least Potential

Operational Cost Saving

Impact

Cost to Implement Changes

Time
Inputs

Feasibility Cost Modelling

Feasibility & Business Case

Planning

Operational Strategies

Operational Reviews

Operational Specs

Operational Audits

Performance measurement

Operational audits

Exit planning

Decommission

Transition phasing

Operate & Maintain

Commission

Construct

Design

Operational Reviews
Examples

Feasibility Cost Modelling
- Master Community adoption
- Phasing strategy
- Leasing take-up
- Impact on margin
- Scenario modelling

Operational Strategies
- Client organisation structure
- Service delivery models (in-house, outsourced, bundled, market capability)

Operational Design Reviews
- Accessibility
- Ease of movement
- Materials durability
- Storage
- Sustainability
- Energy saving

Operational Specifications
- Input or Output specifications
- Performance systems
- Performance measurement
Benefits

- Better suited to business needs and objectives
- More attractive to occupiers, tenants
- Easier to commission and maintain
- Easier to manage
- Easier to control
- More cost effective to operate
- Less disruption
- Responds to occupants’ needs
- Reduced whole life cost
- Better able to achieve design life
- Preserves asset value
‘A business absolutely devoted to service will have only one worry about profits. They will be embarrassingly large’

Henry Ford
شكرًا جزيلاً
WITH THANKS TO OUR SPONSORS

- MMG
- EFS
- MAF
- DALKIA
- Virtual
- ITCCAE
- INAYA
HERE TODAY BUT GONE TOMORROW? ASSETS FOR LIFE – MOVING FROM COST TO VALUE

Martin Gregory
Managing Director
Facility Masters Overseas
Introduction

Why it is essential to move away from the short term ‘here today gone tomorrow’ asset development approach

• Understanding how FM affects the whole life viability of an asset
• Why FM should be an equal partner with revenue generating functions
• The specification and delivery of FM services must be considered from a value viewpoint
Continuity creates Value

Why is it essential to move away from the short term ‘here today gone tomorrow’ asset development approach

- Long Term Business Objectives
- Market Maturity – Market Drivers & Regulatory Framework
- Stability – Market aspiration
- Sustainability – uninterrupted environment that maintains value

FM providers need to be recognized as long term stakeholders in ensuring asset value for the long term
The Poor Relative

Where should FM sit in the Food Chain -

• FM should be an equal partner with revenue generating functions to have a balanced approach
Let's talk the same language

FM Specifications - The specification and delivery of FM services must be considered from a value viewpoint

- Asset owners want output spec contracts but say “too few providers can respond and when they do they don’t deliver”

- FM providers want output spec contracts but say “asset owners just count bodies and are only interested in price”

Where is the disconnect?
Lose / Lose

Asset Owners
- Contract periods too short
- Contract T & C’s are not suited to operational services
- Over negotiate
- KPI scores are expected to be 95% or above from day 1
- Stick but no carrot
- Poor Handover

FM Providers
- Quality of resource is under estimated
- FM providers say “yes” to unachievable goals
- Lack of innovation in delivering the services
- Over inflate the risk or under value the scope
Benefits

FM providers need to be recognized as long term stakeholders in ensuring asset value for the long term

✔ Mobilisation can be absorbed over a longer period reducing annual operating costs
✔ Investment can be made in training and human capital, improving standards
✔ KPI scores can be improved over time in a more achievable way
✔ Asset knowledge and experience is retained
✔ Asset Performance is achieved over the design life
Thank You
WITH THANKS TO OUR SPONSORS

- MMG Maintenance Management Group
- EFS Facilities Services
- MAF Dalkia
- Virtual
- ITACAEM
- Inaya Facilities Management
GREEN HOSPITALS

Malek El Husseini, P.E.
Business Development Director, ME
GE Healthcare
AGENDA

1 Healthcare Buildings
2 Why Hospitals build Green Buildings
3 LEED VS GGHC
4 Conclusion
Building Impacts

72% of electricity consumption
39% of energy use
38% of all Carbon Dioxide (CO2) emissions
40% of raw materials use
30% of waste output (136 million tons annually)
14% of potable water consumption
Building Impacts

72% of electricity consumption

• A Healthcare Project consumes
• 2.5 times more energy than
• a commercial building
What is a green building?

- Incorporates site sustainability
- Efficient water management
- Efficient energy management
- Intelligent use of materials and resources
- Indoor environmental quality
- Innovative design to increase productivity
Why hospitals build green

- ROI
- Carbon footprint reduction
- Resource conservation
- Risk mitigation from rising energy prices and water scarcity
- Patient/staff satisfaction
- LEED certification
- Community image
Benefits of Green Building: Environmental

Enhance and protect ecosystems and biodiversity
Improve air and water quality
Reduce solid waste
Conserve natural resources
Benefits of Green Building: Economic

Reduce operating costs
Enhance asset value and profits
Improve employee productivity and satisfaction
Optimize life-cycle economic performance
Leadership in Energy & Environmental Design (LEED™) for Healthcare And
Green Guide for Healthcare GGHC
LEED vs. GGHC Project Phases

<table>
<thead>
<tr>
<th>DESIGN</th>
<th>CONSTRUCTION</th>
<th>OPERATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>•</td>
<td>LEED</td>
<td></td>
</tr>
<tr>
<td>• Sustainable Sites</td>
<td>• Sustainable Sites</td>
<td>• Sustainable Sites</td>
</tr>
<tr>
<td>• Water Efficiency</td>
<td>• Water Efficiency</td>
<td>• Water Efficiency</td>
</tr>
<tr>
<td>• Energy &amp; Atmosphere</td>
<td>• Energy &amp; Atmosphere</td>
<td>• Energy &amp; Atmosphere</td>
</tr>
<tr>
<td>• Materials &amp; Resources</td>
<td>• Materials &amp; Resources</td>
<td>• Materials &amp; Resources</td>
</tr>
<tr>
<td>• Indoor Environmental Quality</td>
<td>• Indoor Environmental Quality</td>
<td>• Indoor Environmental Quality</td>
</tr>
<tr>
<td>• Innovation in Design</td>
<td>• Innovation in Design</td>
<td>• Innovation in Design</td>
</tr>
</tbody>
</table>

GGHC - CONSTRUCTION

Integrated Design
Sustainable Sites
Water Efficiency
Energy & Atmosphere
Materials & Resources
Indoor Environmental Quality
Innovation in Design

GGHC – OPERATIONS

Integrated Operations
Transportation Operations
Energy Efficiency
Water Conservation
Chemical Management
Waste Management
Environmental Services
Environmental Preferable Purchasing
Innovation in Operations
Why Bother?

- Good design can reduce energy costs
- Day lighting can improve productivity
- Good indoor air quality can reduce recovery time
- Good indoor air quality can increase productivity and decrease absenteeism
- Choice of appropriate interior finishes can cut cleaning and maintenance costs
Perceived benefits of green buildings

- 8-9% Decrease in operating expenses
- 7.5% Increase in building values
- 6.6% Improvement in ROI
- 2.5 day Earlier discharge from hospitals
Big Picture Expectations

• **Outside facility (community, residents, neighbors)**
  – Minimize site disturbance: during construction, operations, etc.
  – Reduce traffic-related impacts: congestion, contaminants
  – Manage other pollutants, e.g., light noise, chemicals, etc.
  – Provide best use of site for access, views, etc.
  – Be a good “neighbor”

• **Inside facility (staff, patients, practitioners)**
  – Focus on patient safety and healing environment
  – Maximize access to natural light
  – Evaluate shift work impacts: risk, error, ergonomics
  – Optimize nursing unit design for workflow and productivity
  – Maximize building efficiency
Examples of System Interdependencies
Energy Efficiency

- Lamps
  - T8 Linear Fluorescent / Halogen
- Signage & Architecture
  - LEDs
- Lighting
  - Compact Fluorescent
- Solar power
  - Building systems
- Motors
  - X$D ULTRA®
Efficient Water Management

Decreased usage & disposal
- Reverse osmosis for increased boiler cycles
- Non metals treatment for closed loop system
- Continuous cost reduction (CCR) bankbook

Infectious Disease Control
- Patented biocide and corrosion products
- Cooling tower microbiological control & potable water options
- Onsite and remote monitoring
Making your team aware of specific LEED and GGHC credit descriptions

Establish your baseline
- Existing practices around management of the environment
- Existing construction practices
- Baseline assumptions about building design and operations

Rank the probability of achieving each credit

Do financial analysis for each
- Initial cost
- Life-cycle cost
- ROI

Decide which points give the best bang for the buck

Set certification goal
Managing Green During the Life of the Project

• Schematic Design
  – Integrate the architectural design with the building’s performance requirements and energy design
  – Evaluate building materials for sustainability (health, performance, environmental preferability, cost)

• Design Development
  – Evaluate all suggested design decisions using computer models and simulations to ensure they will not compromise building effectiveness
  – Perform a design review

• Construction Documents
  – Ensure that specifications are clearly written and detailed
  – Clearly show high-performance design strategies in construction drawing details to minimize on-site interpretation
Benefits of Green Building: Health and community

- Improve air, thermal, and acoustic environments
- Enhance occupant comfort and health
- Minimize strain on local infrastructure
- Contribute to overall quality of life
Impact of Design on Life-Costs

Cost of Design : 0.1
Cost of Building : 1
Cost of Maintenance : 5
Cost in Use to Client : 50 - 200
Options for Green Building

• US Green Building Council (USGBC)
• Green Globes
• Green Guide for Healthcare (GGHC)
LEED by USGBC (NC V2.2)

• Leadership in Energy & Environmental Design (LEED)
• Four Levels of Certifications
  – LEED Certified (26-32 points)
  – LEED Silver (33-38 points)
  – LEED Gold (39-51 points)
  – LEED Platinum (52-69 points)
• 69 possible points plus 7 prerequisites
LEED for New Const. (N.C.)
Credit Categories

• Sustainable Sites (SS) 14 points
• Water Efficiency (WE) 5 points
• Energy & Atmosphere (EA) 17 points
• Material & Resources (MR) 13 points
• Indoor Env. Quality (EQ) 15 points
• Innovation & Design (ID) 5 points
LEED for NC

- LEED For Healthcare (maybe 2009?)
- LEED AP (Accredited Professional)
- 50 out of 76 during Design (65%)
- 26 out of 76 during Construction (35%)
- LEED Platinum Healthcare
- LEED Gold Healthcare
Options for Green Building

• US Green Building Council (USGBC)

• Green Globes

• Green Guide for Healthcare (GGHC)
Green Globes by Green Building Institute

• Easier than LEED!
• No Healthcare specific program
• Rating Credibility Assured by a Third-party Assessment
Green Globes Environmental Assessment Areas

- Energy
- Indoor Environment
- Site
- Water
- Resources
- Emissions
- Project/Environmental Management
**Green Globes™ Ratings**

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>85-100%</td>
<td>Reserved for select buildings that serve as national or world leaders in reducing environmental impacts and efficiency of buildings.</td>
</tr>
<tr>
<td>70-84%</td>
<td>Demonstrates leadership in energy and environmentally efficient buildings and a commitment to continual improvement.</td>
</tr>
<tr>
<td>55-69%</td>
<td>Demonstrates excellent progress in reducing environmental impacts by applying best practices in energy and environmental efficiency.</td>
</tr>
<tr>
<td>35-54%</td>
<td>Demonstrates movement beyond awareness and a commitment to good energy and environmental efficiency practices.</td>
</tr>
</tbody>
</table>
Options for Green Building

• US Green Building Council (USGBC)

• Green Globes

• Green Guide for Healthcare (GGHC)
Green Guide for Healthcare (GGHC)

• Very similar to LEED
• More healthcare specific
• No third party verification
• Less documentation
GGHC Construction Credits

• Integrated Design
• Sustainable Sites
• Water Efficiency
• Energy & Atmosphere
• Materials & Resources
• Environmental Quality
• Innovation & Design Process
GGHC Operations Credit

- Integrated Operations
- Transportation Operations
- Energy Efficiency
- Water Conservation
- Chemical Management
- Waste Management
- Waste Management
- Environmental Services
- Environmentally Preferable Purchasing
- Innovation in Operations
Thank You
WITH THANKS TO OUR SPONSORS

**MMG**
MAINTENANCE MANAGEMENT GROUP
Building Efficiencies... Since 1999
Lebanon | Syria | United Arab Emirates | Qatar
www.mmg.tel

**EFS**
FACILITIES SERVICES

**MAF DALKIA**

**Virtual**

**ITC'AEM**

**INAYA**
FACILITIES MANAGEMENT
HOW FM CAN ENHANCE EACH STAGE OF A PROJECT LIFE CYCLE?

A CASE STUDY ILLUSTRATED APPROACH BASED ON MMG EXPOSURE IN THE REGION

Youssef Abillama
Co-founder & CEO
MMG
Full Lifecycle Facility Management Services
Typical Ownership Cost of Maintaining and Managing a Property Over 25 Years

Construction Phase: 21%

Maintenance and Management Phase: 79%

- CONSTRUCTION & DESIGN
- HARD SERVICES (operation and maintenance, technical subcontractors)
- SOFT SERVICES (cleaning, security, other services)
- ENERGY (utilities)
- LIFE CYCLE REPLACEMENT (renovations)

Source: MEED
Value Added Services

Typical Project Scheme

- Design & Construction Phase Services
- Handing Over Phase Services
- Operational Phase Services
Design & Construction Phase

- Design & Construction
- Handing Over
- Operation
MMG can provide the following:

- Property Management Strategy Review
- Facility Management Strategy Review
- Infrastructure Maintenance Strategy
- Preparation for RFP for All Operational Services
- Life Cost Modeling
- Procurement & Implementation of CAFM
- Energy and Green Building Design Review
- HSE and Risk Analysis
Country: KSA

Sector: Head Quarter

Project Details:
The CMA HQ Tower is located in the new King Abdullah Financial District (KAFD) on the outskirts of Riyadh and is currently under construction. With 75 above-ground levels, a height of 385 metres and a Gross Floor Area of 193,000m2, it will be the landmark building in the development, and the defining feature of KAFD.
The tower consists of commercial and support facilities and will be CMA’s new headquarters, as well as leasing to third party tenants.

FMO and PRD are providing joint consultancy service to CMA:
- Operational Strategy
- Design Review
- Life Cycle Cost Model
- Strategic Plan
- FM Policies & Procedures Guidelines
- FM Plan & Program
- FM Service Provider Model Development & RFP
Country: Lebanon
Sector: Mixed Use

Project Details:
Water Front City is a master-planned mixed-use community located in Beirut, Lebanon, overlooking the Mediterranean Sea. A USD500m project developed by Majid Al Futtaim Properties jointly with Joseph G. Khoury et Fils Holding. This initial phase includes residential buildings with 350 apartments, 32 retail and Food & Beverage outlets, a health club, green parks, over 1,000 parking spaces and a marina front boardwalk. The future phases include a retail mall, offices and a hotel.

FMO and PRD are providing joint consultancy services to Phase 1 of Waterfront City with the following details:

- Operational Design Review
- Adoption strategy
- Facilities Management Strategy
- Master Community Cost Model
- Plot Service Charge Cost Model
- Governance structure
- Legal documents
Marina Towers

- **Country:** Lebanon
- **Sector:** Residential

**Project Details:**
- It is located near the Beirut Marina in Solidere area.
- It consists of a 26 floor tower.
- Area of 56,000 sqm, and with over 7,000 sqm of land with the main tower reaching a height of 150 meters, making it the second tallest building in Lebanon.

**MMG Role:**
- Operational Cost simulation
- Financial Operational Cost Model
- Preparation of RFP for all operational services
Country: Lebanon
Sector: Residential
Project Details:
- M1 is a ten-story office building divided into four blocks and five levels of parking. The total construction area is around 35,000 sqm including about 18,000 sqm of built up area.

MMG Role:
- MMG was responsible to assist in the Gold LEED Certification of this project. As a result of the consultancy, MMG was able to achieve a 28% energy saving or more than 10 credits points in LEED. Some of the tasks include:
  - A full thermal modeling of the project
  - An analysis of existing MEP designs and providing efficiency measures solutions
  - A comparison of the final proposed design modeling and with Ashrae baseline
Byblos Sudan

- **Country:** Khartoum - Sudan
- **Sector:** Banking
- **Project Details:**
  The facility is a 14 floor building serving as Bank Headquarters and offices for premium international companies. It is one of the few smart office buildings in Khartoum. The consultancy on design was done on design before construction and release of BOQ to the contractors. The consultancy and the meeting were very interactive and contained many addendums between the owner representative, the architect and the MEP consultant.

- **MMG Role**
  - Consultancy on Designing an Integrated Low Energy Building tackling:
    - Building Envelope
    - Green Roof
    - Usage of Argon Instead of Air Filling (in the window glazing)
    - Building Integrated Photovoltaic (BIPV)
    - HVAC – Cooling and Ventilation System
    - Water Cooled Chillers
    - Geothermal Cooling Systems
    - Lighting System
    - Water System
Country: Lebanon

Sector: Mall

Project Details:
- One of the leading Malls and department stores in Lebanon with more than 50,000 sqm of built area and with more than 2.5 millions visitors per year.

MMG Role
- Design consultancy for Energy efficiency tackling mainly:
  - Building Envelope
  - Lighting Efficiency for existing floors
  - Motor Efficiencies (including PF correction)
  - Parking Lighting System
  - Chilled Water Plant’s management system
Handing Over

Design & Construction → Handing Over → Operation
MMG can provide the following:

- Onsite Property Management
- Property Bylaws & Internal Regulation Development
- Facility Management Operational Planning
- Operation and Maintenance Manuals
- Testing & Commissioning
- Snag List Clearance
- Warranty Management
- Asset Registering & Tagging
Country: Qatar
Sector: Sports Facilities

Project Details:
- In order to prepare the facility maintenance and management of the 8 stadiums that hosted the Asian Games in 2006 MMG was mandated to perform a consultancy for QNOC regarding the 8 first division club stadiums.

MMG Role:
- Technical condition survey of the 8 stadiums from all MEP equipments, civil as well as all sports and electronics equipments.
- Assets capturing of the technical equipments with bar coding on all equipments
- Preventive Maintenance Schedule of all the equipments
- Details specification for a full system integration through one central command center
- Issuance and writing of a public tender for the FM of 5 stadiums (3 stadiums were disregarded as they were in a very bad shape).
Old Town Island

- **Country:** UAE
- **Sector:** Residential & Commercial
- **Project Details:**
  - The Old Town Island is a mixed-use development by Emaar, elevated in the format of a market square, alleyways and inner courtyards. It includes 16 buildings of different levels with 409 Residential units, 50 Offices, 130 Retail Units, Restaurants & Cafes in over 300,000 sqm.

- **MMG Role:**
  - MMG role was to help in transitioning and handing over from the main contractor to FM operations.
    - Asset Registry
    - Condition Survey
    - CAFM System Setup
    - As-Built Drawing Logging
    - SOP and Escalation Procedures
    - O&M Procedures
    - Design Defect Assessment
Beirut Tower

- **Country:** Lebanon
- **Sector:** Residential & Commercial
- **Project Details:**
  - Made of 35 floors, Beirut Tower has three distinct elements: the Tower, the Common Block and the Podium with an indoor swimming pool.
  - Area is 1,400 sqm
  - The project is controlled by: BMS, CCTV s, Fire Alarm System, Access Control System, HVAC System, Electrical Distribution Boards, etc...
- **MMG Role:**
  - Property Management Strategy Review
  - Facility Management Strategy Review
  - Financial Operational Cost Model
Operation

Design & Construction

Handing Over

Operation
Operational Phase

MMG can provide the following:

- MEP Operation & Maintenance
- Full Integrated Facility Management
- CAFM Implementation
- Co-owners Association Management
- Leasing Services
- Energy Audit and Implementation
- Green Building Certification
- Renovation & Replacement
Marina Mall

- **Country:** UAE
- **Sector:** Mall
- **Project Details:**
  - Located in the most prestigious area of Beirut Central District
  - Space 200,000 sqm
  - Over 300 stores
  - The project is controlled by the following systems: Chilled water systems, Fans and extract ventilations, Fire fighting system, Domestic water supply, Irrigation, Elevators, escalators and travelators, Emergency power system, HV system including electrical transformers and switch gears, Low current systems, Foot fall traffic system, LPG system, Musical fountains etc...

- **MMG Role:**
  - Full Operation and Maintenance Services (MEP with more than 30 technical staff)
  - Technical Subcontractors Management
Baraka Mall

- **Country:** Jordan
- **Sector:** Mall
- **Project Details:**
  - Located in the heart of Sweifieh, Amman.
  - Retail Area: 16,000 sqm
  - Underground Parking: 15,000 sqm for up to 350 cars.
  - The project is controlled by Advanced electro mechanical system: BMS, CCTV system, Access Control system, Lighting System, Chillers, Boilers, Ventilation, Pumps, ETC...

- **MMG Role:**
  - Full Operation and Maintenance Services (MEP with more than 10 technical staff)
  - Technical Subcontractors Management
  - General Services Management (Cleaning, Security, Parking, Landscaping, etc...)
**Country:** UAE  

**Sector:** Residential  

**Project Details:**  
- WASL is the asset management group for Dubai Government’s real estate arm. It manages thousands of properties all over Dubai.
- Karama is a project of 107 residential and commercial buildings located in the busy area of Karama in Dubai. It comprises of retail areas and 2,694 apartments in various type of buildings.
- Samari Residences project with a total built up area of 2.4 million sq.ft. includes 19 residential buildings and 1,732 apartments.

**MMG Role:**  
- Total Facility Management with more than 70 persons
Musanada

**Country:** UAE

**Sector:** Education

**Project Details:**
- Musanada is the asset management arm of Abou Dhabi government.
- MMG, working in a JV with Brookfield Multiplex
- Project comprises of 112 schools in Al Ain and Abou Dhabi.

**MMG Role:**
- Full Operation and Maintenance Services (MEP with more than 100 technical staff)
- Technical Subcontractors Management
- Set-up of Call center with 24/7 support
American School of Doha

- **Country:** Qatar
- **Sector:** Education
- **Project Details:**
  - The ASD is an independent US-accredited college preparatory school.
  - It comprises
    - 9 buildings
    - 300 classrooms
    - 100 Residential villas
    - 2 pools
    - 11 sport fields
- **MMG Role:**
  - Total Facility Management
  - Financial Operational Cost Model
  - QHSE Resident Officer
West Bay Towers

- **Country:** Qatar
- **Sector:** Mixed Use
- **Project Details:**
  - West Bay (Al Dafna) is a business and entertainment hub gathering the most prestigious hotels and skyscrapers in Doha.
  - Project consists of 5 exclusive towers, totaling around 170,000 sqm including over 500 luxurious flats in addition to 49,000 sqm of commercial areas.

- **MMG Role:**
  - Total Facility Management with more than 120 staff
  - Full Hospitality Services (cleaning, waste management, gardening, concierge, bellboys, etc...)
Thank You
WITH THANKS TO OUR SPONSORS
ROLE AND VALUE OF HSE IN DRIVING OPERATIONAL EXCELLENCE

David Brown
Center of Excellence Head
EFS Facilities Services, KSA
1. Misconceptions

2. A Tool in the Management Toolbox

3. Case Studies

4. The Benefits

5. Conclusion
1. Misconceptions
2. A Tool in the Management Toolbox

1. HSE is nothing new its been around since the start of time

2. It reflects the companies character

3. It’s a fundamental Management tool to be used alongside other Management Tools

4. Its done naturally by competent staff and managers
3. Case Studies

UBS BANK London Campus

$8 Billion saved in six months

CYRIL SWEETT Ltd

Increased contract win ratio 3 fold
4. The Benefits

- Increased Productivity
- Improved Quality
- Increased Staff Retention
- Improved Customer Perspective
- Reduced Costs
- Reduced Down Time
5. Conclusion

The implementation of good HSE practices, that become an integral part of the organisations operating practices is a valuable tool in any managers toolbox.
Bring in experts. Snip away red tape

INDIA WAS recently ranked the worst in a survey of 12 Asian bureaucracies – Vietnam scored better. It’s time to let professionals compete for top posts and help make the system more efficient.
Thank You
WITH THANKS TO OUR SPONSORS

MEFMA

MAINTENANCE MANAGEMENT GROUP

Building Efficiencies... Since 1999

Lebanon | Syria | United Arab Emirates | Qatar www.mmg.tel

EFS

MAF

DALKIA

Virtual

ITUcacEM

INAYA

FACILITIES SERVICES

FACILITIES MANAGEMENT
Business Central Tower, The tallest Commercial twin tower in Middle East.

Dilip Khatwani
Co-founder & CEO
Reliance FM
Business Central Tower, The tallest Commercial twin tower in Middle East.
The Challenge and the Learning
A Case Study
Dilip Khatwani
CEO Reliance FM, Board Member MEFMA
Framework

• The Take Over process?
• The Risk Assessment?
• Operational Challenges
• Key points for Success?
• Conclusion
The Take Over Process

- Property Details
The Takeover Process

- Takeover of Documentation such as Drawings, Warranties, manuals, etc.
- The Snagging process
- Introduction to the Contractors, Suppliers of Equipment, Consultants and owner representatives.
- The defect liability Period.
The Takeover process

- Deploying Manpower for transition and operations.
- Defining Occupant Handbook for tenants
- Defining Fit out Guidelines for offices
- Defining a tenant directory
The Takeover Process

- The Parking Management Plan

- The Risk Assessment and a Mitigation Plan
Operational Challenges

• To optimize manpower, as per the occupancy of the tower.
• To ensure safety and security of the towers
• To monitor ingress of people to the project right from occupants, to suppliers, to contractors to visitors.
• To monitor and implement the Annual Maintenance Contracts for the equipment.
Operational Challenges

- To monitor energy management of the project.
- To coordinate interior works inside offices
- To liaise with Civil Defense, The TECOM Authority and other related bodies.
- Fire Control System
- Communication
Key Points for Success

• Documentation
• Hire staff who are safety conscious and have worked on High Rise towers
• Strong Communication
• A strict safety program
• Use of Technology
• Hire FM at the Design Stage
FACILITIES MANAGEMENT
THE KSA SCENARIO WITH REFERENCE TO THE AUTOMOBILE INDUSTRY

Shauquat Alam
Facility Manager
Universal Motors Agencies
TALK OF THE SESSION – 30 MINUTES!

1. Economic scenario of KSA.

2. Automotive business in KSA.

3. Facility Management – concept & ideas.


5. Advantages of FM in Automotive dealership.

6. Cross floor discussion & conclusion.
1. Kingdom remains virtually unscathed due to global economic downturn and the recessionary period.

2. FM industry is still in the nascent stages and developing in GCC.

3. Saudi Arabia is expected to open newer opportunities for FM to grow at over 25% growth by 2017.
IMF forecast - Talent will be the fuel of the 21st century.

The average population of KSA is predominantly young with some 80% under 39 years old and 60 percent under 21; and, hence their life style is much sophisticated with concerns to receive world-class services.
IMF forecast

The Facility Management sector will act as the engine of growth and it will be one of the main beneficiaries of continued large economic expansion.

KSA’s $400-billion plan over the next five years aimed at upgrading energy projects, and the social and physical support infrastructure[like, FM services] in such areas as power, water, transportation, education, housing, etc.
Facility Management?

IFMA defines FM as:

“The practice or coordinating the physical workplace with the people and work of the organization; integrates the principles of business administration, architecture, and the behavioral and engineering sciences.”
FM : Facilities management?

“Facility Management is the integration of space and infrastructures [*] and ensuing continuous availability of interrelated functions of people and organization [**] to entities by maximizing productivity in business support and social responsibility services and minimizing effect of uncertainty on objectives to maintain a sustainable business . “

[Note: Examples,
[*] – planning, design, workplace, construction, lease, occupancy, maintenance, furniture, cleaning, etc.
[**] – catering, ICT, HRM, HS&S. accounting, marketing, hospitality, etc. ]
Facility Management – Redefined

FACILITY MANAGEMENT -
- SPACE & INFRASTRUCTURES
- CONTINUOUS
- UNCERTAINTY & SUSTAINABLE
- SOCIALLY RESPONSIVE
This is how we see a Green Facility

ENERGY
- Healthy Comfortable
- Durable
- Energy Efficient
- Environmentally Responsive
- Sustainable
- Socially Responsive
- Risk Free
- Business Continuity

INDOOR AIR QUALITY

WATER

MATERIALS

SITES

Define Green?

- Energy Efficient
- Healthy & Safe
- Durable
- Water Efficient
- Environmentally Responsive
- Sustainable Community
- Risk Free conditions
- Business Continuity mode
- Socially Responsible
Every organization wants its facilities to:

- Be cost competitive & Be time responsive.
- Accommodate changes & Sustainable.
- Increase personnel efficiency.
- Be protective in business operation.
- Be risk free & Socially responsive.
- Reflect Organization’s brand: its reputation, culture, vision and values.

Businesses seek ways to provide services “safe, faster, better, cheaper, continuous”
AUTOMOBILE INDUSTRY – 2012 : KSA SCENERIO!

1. KSA is the largest automobile market in the Near East and fifth in the world.

2. Automotive sales is about 3% of KSA’s GDP.

3. Experts have forecasted car sales in the Kingdom would grow to $19 billion (SAR69 billion) in 2010 and swell to $25 billion (SAR94 billion) by 2013.

1. Increased lending by local banks offering easy and flexible financing options will further drive demand for new vehicles.

2. Vehicle sales in Saudi Arabia are expected to jump over 30 percent from around 676,000 units in 2010 to 880,000 units by 2013.
1. The world renowned brands.. * Porsche * Toyota 
* Mazda * Hyundai * BMW * Ford * Mercedes-Benz
*GMC * Opel *Peugeot * Nissan * Rolls Royce *Skoda *Jaguar * Audi * Lamborghini * Volkswagen * Honda * Isuzu * Fiat * Mitsubishi ..[>21]

2. Share of Saudi Car Market [2009]- Toyota [42.5%]; Nissan [20.0%]; Mitsubishi [12.5%]; Honda [9%] and Others [16%] (source: NCB)

3. The KSA automobile market is competitive with cut-throat pricing and hence each dealer has to concentrate on the core business.
WHAT FM CAN DO IN AUTOMOBILE INDUSTRY!

1. Produce customer value of a higher order.

2. Introduce best international practices which help reduce operating costs while improving services.

3. Alleviate client concerns to enable them to be free to focus on their core business.

4. Remove redundancies and wastage which help in reducing management expenses.

5. Never compromise on the “quality & value of the properties”.
FM – Services!

Do unto others as you would have others do unto you...
### FM SOLUTIONS: AUTOMOBILE INDUSTRY

<table>
<thead>
<tr>
<th>SOFT SERVICES</th>
<th>HARD SERVICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>House Keeping Services</td>
<td>Electro-Mechanical Services</td>
</tr>
<tr>
<td>Landscaping [External &amp; Internal] Maintenance</td>
<td>HVAC</td>
</tr>
<tr>
<td>Security Services</td>
<td>Water Management &amp; Plumbing</td>
</tr>
<tr>
<td>Pest Control</td>
<td>Energy Management</td>
</tr>
<tr>
<td>Waste Management</td>
<td>Risk, Health &amp; Safety Services</td>
</tr>
<tr>
<td>Vendor Management</td>
<td>Communication Support Management</td>
</tr>
<tr>
<td>Mail Room Services</td>
<td>Information Technology Support Services</td>
</tr>
<tr>
<td>Publicity &amp; Event Management</td>
<td>Space Management</td>
</tr>
</tbody>
</table>
## FM SOLUTIONS: AUTOMOBILE INDUSTRY

<table>
<thead>
<tr>
<th>STAFFING SOLUTIONS</th>
<th>HOSPITALITY SERVICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aftersales Support Services</td>
<td>Catering Services</td>
</tr>
<tr>
<td>HR&amp;Admin Support Services</td>
<td>Customer Care Services</td>
</tr>
<tr>
<td>Help Desk Services</td>
<td>Vehicle Pre-Delivery Inspection Services</td>
</tr>
<tr>
<td>Parts Warehouse / Dispatch Management</td>
<td>Facility Logistic &amp; Traffic Flow Management</td>
</tr>
<tr>
<td>Program Audit Support Services</td>
<td>Corporate Identity Support Services</td>
</tr>
<tr>
<td>Warranty / Insurance Support Services</td>
<td>Employee Health Management</td>
</tr>
<tr>
<td>Social Resonsiblility Support Services</td>
<td>Knowledge &amp; Training</td>
</tr>
<tr>
<td>[eg: MICRO Q-SERVICE STATION]</td>
<td></td>
</tr>
</tbody>
</table>
FM SOLUTIONS : AUTOMOBILE INDUSTRY
FM – Customer Care!

The Core Business –
How to make the whole company more customer focused and competitive!

Be PERFECT?
P - professional; E – efficient
R – reliable; F – friendly
E – expert; C – caring
T - trustworthy
FM – helps .... to create a productive, focused team spirit, encourage all to push the boundaries, be creative and willing to go the extra mile, and offer....

A VALUE-ADDED SERVICE TO CUSTOMERS.
FM – Customer Care!

6 - Elements

- 1. Product Element
- 2. Sales Element
- 3. After-Sales Element
- 4. Location Element
- 1. Culture Element
- 1. Time Element

Customer Satisfaction

GREY AREAS of concern
Figure 1-A: Site Organization for the Vehicle Operations and Vehicle Maintenance Complex.
FM – Focus : Core Business!

Figure 2-A: Functional Area Relationships for the Vehicle Operations Administrative Facility.
When it comes to building a new facility, prior planning is essential. These plans, created by Edwards & Associates Consulting, Inc., were drawn up with such items as budget, traffic flow, atmosphere, needed equipment and future growth in mind.
The type of building you design will not only impact your acquisition cost, but your future utility cost. Depending on the climate, drive-in stalls in some areas are much more expensive to heat than a drive-through facility. In other climates, though, a drive-in stall building is lower in cost and more energy efficient.
A highly process driven ISO9000:2000 and ISO 18001:2007 [OHSAS] certification is necessary that can elevate clients concerns related to management of assets and enable them to ......

....CONCENTRATE ON THEIR CORE BUSINESS !!
Our model on achievement

Universal Motors Agencies

- U - Understand needs
- M - Manage Services
- A - Accurate Services

Diagram:
- Audit
- FM Strategy
- Monthly Reports
- Daily Operation
- Implementation
Our target[s] to achieve

The need of the hour

- Organize the FM sector.
- Form an Agency [eg: MEFM] to control / advise the FM sector.
Any Questions, please!

Makah today 2012

FM ??
Thank you
WITH THANKS TO OUR SPONSORS

[Logos of sponsors]
THE CONVERGENCE OF FACILITY AND ENERGY MANAGEMENT

A CASE STUDY OF THE HOSPITALITY SECTOR

Iskandar Moussa
Regional Business Development Manager
MMG
The convergence of Facility & Energy Management: The case of the hospitality sector
CSR, Green initiatives, and cost optimization programs are all pushing energy management at the forefront of clients’ requirements within a Facility Management contract.
A large number of FM companies are venturing in energy management and efficiency:

- Directly through in-house department
- Through a specialized subsidiary
- Through outsourcing
Energy Management can give the edge in some FM contracts ...today

...but will certainly give the edge in a majority of FM contracts in the near future!
The energy dilemma is here to stay

The facts

× 2
Energy demand by 2050
Electrical energy demand by 2030

Source: IEA 2008

The need

÷ 2
CO₂ emissions to avoid dramatic climate changes

Source: IPCC 2007, figure (vs. 1990 level)

Energy management is the key to address the dilemma
Low-cost energy efficiency opportunities exist in all parts of the building sector.

A typical building can save 5 to 30% with measures having payback periods of less than five years.
Opportunities can be grouped into two broad categories:
1. Low-cost/no-cost measures that involve changes in operating or maintenance practices;
2. Measures that involve capital investments in new equipment
   - “Efficiency retrofits”: existing installations replaced with energy efficient components
   - Modification of existing installations
What’s in it for FM clients?
What’s in it for FM clients?

One converged FM & EM services on:

- Energy Supply/ Electrical distribution
- Lighting
- Pumps & Motors
- Fans/AHUs
- Cooling & Refrigeration
- Boilers
Energy Services Lifecycle

1. Consulting:
   - Energy Audit
   - Recommissioning

2. Low Cost/No Cost EEMs
   - Systems balancing
   - Demand management
   - Load control
   - BMS fine tuning
   - ......

3. CAPEX based EEMs
   - Lighting retrofits & control
   - Systems upgrades
   - Automation
   - Heat recovery
   - Renewable Energy
   - ......

4. Metering and Targeting
   - Energy Information System
   - Remote Energy Monitoring
   - Energy Dashboards
   - ....
RECOMMISSIONING.--The term 'recommissioning' means a process--
“(i) of commissioning a facility or system beyond the project development and warranty phases of the facility or system; and
“(ii) the primary goal of which is to ensure optimum performance of a facility, in accordance with design or current operating needs, over the useful life of the facility, while meeting building occupancy requirements.
FM/EM consulting: Energy Audit

- Audit criteria
- Audit scope
- Selection of audit team
- Audit plan
- Checklists preparation
- Initial walk-through
- Collecting energy bills and available data
- Preliminary analysis
Energy Audit... & More

- Data inventory and measurements
- Analyzing energy use patterns
- Benchmarking and Comparative analysis
- Identifying energy efficiency potentials
- Cost-Benefit Analysis
- Writing audit report with recommendations
- Preparing action plan for implementation
- Implementing the action plan

Energy audit execution

Energy audit reporting

Post-audit activities
Case Study:

Four Seasons Hotel
Marrakech
Case Study:
Four Seasons Marrakech

- EEG undertook the energy audit for the property in 2012
- Worked closely with the department of engineering (acting FM) and all its staff, following the daily operations and procedures.....
- All resort’s departments were involved in the analysis
- Similar work and procedures can be done if FM was totally outsourced to a 3rd party,...., or in any other sector (commercial, governmental,...)
Case Study: Four Seasons Marrakech

Utilities overview:

- Hotels have one of the highest utilities budget in the building sector.
Case Study:
Four Seasons Marrakech

Facility includes:
- Cooling System: Water cooled chillers with Cooling Towers (3 chillers x 376 RT each)
- Hot water boilers for domestic hot water/space heating
- Steam boilers for laundry
- > 60 heat exchangers
- >14000 bulbs and related load in excess of 420KW
- Comprehensive BMS
Case Study: Four Seasons Marrakech

Low Cost/No Cost EEMs:

<table>
<thead>
<tr>
<th>Low Cost/No Cost</th>
<th>KWh</th>
<th>Cost Savings</th>
</tr>
</thead>
<tbody>
<tr>
<td>RADEEMA power subscription modification</td>
<td>182,239</td>
<td>$5,925</td>
</tr>
<tr>
<td>Load and Demand Management</td>
<td>44,800</td>
<td>$18,599</td>
</tr>
<tr>
<td>Chilled Water temperature reset</td>
<td>4,300</td>
<td>$3,500</td>
</tr>
<tr>
<td>Sauna hermetic sealing</td>
<td>44,800</td>
<td>$344</td>
</tr>
<tr>
<td>TOTAL electrical energy Savings - 4%</td>
<td>231,339</td>
<td>$28,368</td>
</tr>
<tr>
<td>Total gas and water savings</td>
<td></td>
<td>$7,046</td>
</tr>
<tr>
<td>TOTAL SAVINGS for low cost/no cost EEMs</td>
<td></td>
<td>$35,414</td>
</tr>
</tbody>
</table>

→ Savings from the above no cost EEMs are larger than the investment made on the energy audit consulting work
Case Study: 
Four Seasons Marrakech

Electrical Energy CAPEX based EEMs:

<table>
<thead>
<tr>
<th>EEM</th>
<th>Code</th>
<th>Brief Description</th>
<th>Project Cost ($)</th>
<th>KWh Savings</th>
<th>% Savings of Total Energy Consump.</th>
<th>Cost Savings ($)</th>
<th>% Savings of Total Energy Cost.</th>
<th>Payback</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>Lighting Retrofit &amp; Control</td>
<td>LED Retrofit , Daylight control, motion detectors</td>
<td>$ 229,820</td>
<td>1,773,692</td>
<td>22.28%</td>
<td>$ 151,392</td>
<td>21.60%</td>
<td>1.52</td>
</tr>
<tr>
<td>8</td>
<td>Motor Eff. Measures</td>
<td>Inverters / VFDs on AHUs &amp; Pumps</td>
<td>$ 39,501</td>
<td>139,012</td>
<td>1.75%</td>
<td>$ 11,121</td>
<td>1.59%</td>
<td>3.55</td>
</tr>
<tr>
<td>9</td>
<td>Adiabatic Cooling</td>
<td>Adiabatic Evaporative Cooling on refrigeration systems</td>
<td>$ 6,327</td>
<td>26,896</td>
<td>0.34%</td>
<td>$ 2,270</td>
<td>0.32%</td>
<td>2.79</td>
</tr>
<tr>
<td></td>
<td><strong>TOTAL CAPEX Electrical Energy Efficiency Projects</strong></td>
<td><strong>$ 275,648</strong></td>
<td><strong>1,939,600</strong></td>
<td><strong>24.36%</strong></td>
<td><strong>$ 164,783</strong></td>
<td><strong>23.51%</strong></td>
<td><strong>1.67</strong></td>
<td></td>
</tr>
</tbody>
</table>
Case Study: Four Seasons Marrakech

Thermal Energy CAPEX based EEMs:

<table>
<thead>
<tr>
<th>EEM</th>
<th>Brief Description</th>
<th>Project Cost ($)</th>
<th>Gas savings ($)</th>
<th>% Savings of Total Gas Cost</th>
<th>KWh Savings</th>
<th>% Savings of Total Energy Consump.</th>
<th>Electrical Energy Savings ($)</th>
<th>Total savings ($)</th>
<th>Payback</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Low Cost/No Cost in Laundry</td>
<td>$5,016</td>
<td>$5,016</td>
<td></td>
<td></td>
<td>$5,016</td>
<td>$5,016</td>
<td>1.53</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Solar Thermal System Hotel and SPA</td>
<td>$396,000</td>
<td>$242,316</td>
<td>47.70%</td>
<td>200,933</td>
<td>2.52%</td>
<td>$16,075</td>
<td>$258,391</td>
<td>1.53</td>
</tr>
<tr>
<td>2</td>
<td>Cooling Tower Heat Recovery</td>
<td>$60,000</td>
<td>$29,352</td>
<td>5.78%</td>
<td>26,675</td>
<td>0.34%</td>
<td>$2,134</td>
<td>$31,486</td>
<td>1.91</td>
</tr>
<tr>
<td>4</td>
<td>Economizer on Boilers</td>
<td>$20,000</td>
<td>$4,035</td>
<td>0.79%</td>
<td></td>
<td></td>
<td>$4,035</td>
<td>$8,070</td>
<td>4.96</td>
</tr>
<tr>
<td>5</td>
<td>Heat Recovery on refrigeration condensor</td>
<td>$25,000</td>
<td>$10,721</td>
<td>2.11%</td>
<td>15,225</td>
<td>0.19%</td>
<td>$1,218</td>
<td>$11,939</td>
<td>2.90</td>
</tr>
<tr>
<td><strong>Total CAPEX Thermal Energy EEMs</strong></td>
<td></td>
<td><strong>$501,000</strong></td>
<td><strong>$291,440</strong></td>
<td><strong>56.38%</strong></td>
<td><strong>242,833</strong></td>
<td><strong>3.05%</strong></td>
<td><strong>$23,462</strong></td>
<td><strong>$314,902</strong></td>
<td><strong>1.59</strong></td>
</tr>
</tbody>
</table>

→ Total EEMs provided more than 30% cost savings on electrical energy and 56% on thermal energy
BMS: The hidden treasure in FM/EM

- Facility Managers, in their energy management scheme, should proactively work with BMS operators to go beyond mere “alarms” and controls.
- A proactive and dynamic utilization of the BMS may provide substantial cost savings without any investment.
- In FS Marrakech, the BMS is used to continuously change settings, controls and operations on a daily basis according to the variable parameters (occupancy, weather,...)
- Savings from a good usage of a BMS can be double digits.
EIS: Energy Information Systems in FM/EM

“What you can’t measure, you can’t manage”

- A central Energy information System with comprehensive dashboards is essential in any FM contract with a scope of energy management and efficiency!
THANK YOU
WITH THANKS TO OUR SPONSORS