Facts Findings of Energy Management & Conservation in the Port of Colombo

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Terminals of Colombo port ...

- Sri Lanka Ports Authority - *Public*
- South Asia Gateway Terminal – *Public Private Partnership*
- Colombo International Container Terminal - *Public Private Partnership*
Energy is more important..

- Sri Lanka heavily depends on fossil fuel.
- No fossil fuel available in Sri Lanka.
- 1/4 of total import cost for fossil fuels.
- Colombo port is energy intensive as others.
- Energy bill is paramount factor.
- Demand side Energy management is utmost.
Energy usage directly proportional to:

- **Sustainability**
- **Efficiency**
- **Competitiveness**
- **Profit from Terminal Operations**
Demand Side Management

Fuel/Electricity intensive areas

Tugs & Boats
1. Engine Efficiency
2. Turbo Charger Efficiency
3. Aux Machines Efficiency
4. Engine Maintenance

RTG Cranes
1. Engine Efficiency
2. Turbo Charger Efficiency
3. Productivity of cranes
4. Minimize of Idling speed
5. Introduced Hybrid system
6. Battery powered A/C

Prime movers
1. Fuel efficient PMs
2. Turbo Charger Efficiency
3. Minimize Idling
4. Introduce Tracking System

Lightings
1. Replace Magnetic ballast from Electronic.
2. Replace HID Lights from LED
3. Use of Sun lights
4. Use of Solar tubes
5. Use of Solar PV system
6. Use of Wave Energy
7. Use of Wind Energy

Other
1. Power factor Correction
2. Reduce of power failures
3. Energy efficient Equipment
4. Monitoring System

ATTITUDE CHANGE
Demand Side Management

Fuel/Electricity intensive areas

Tugs & Boats

1. Engine Efficiency
2. Turbo Charger Efficiency
3. Aux Machines Efficiency
4. Engine Maintenances

ATTITUDE CHANGE

* It founds that engine efficiency is very low.
* Turbocharger efficiency also very low
* Tugs cannot deliver desired output
* Consuming of more diesel
* Consuming more lubrication oil
* Auxiliary machines also in low performance
* Exhaust gas contents more Sox
* Higher operating cost
* Loss of opportunity
Demand Side Management

Fuel/Electricity intensive areas

RTG Cranes

1. Engine Efficiency
2. Turbo Charger Efficiency
3. Productivity of cranes
4. Minimize of Idling speed
5. Introduced Hybrid system
6. Battery powered A/C

- Engine always running on full speed.
- Productivity of the crane is very low
- Generated Reverse power run of waste
- Operators bad attitude
- Consuming of more diesel
- Consuming more lubrication oil
- Higher operating cost
- Acquire hybrid power system
- Fuel saving of 100lt/day/unit
- 1/3 of reverse power from generation
- Control of carbon emission

ATTITUDE CHANGE
Demand Side Management

Fuel/Electricity intensive areas

Prime movers

1. Fuel efficient PMs
2. Turbo Charger Efficiency
3. Minimize idling
4. Introduce Tracking System

ATTITUDE CHANGE

- Consuming of more diesel
- Consuming more lub oil
- Difficult to trace the PM
- Low productivity
- Higher operating cost
- Fuel saving
- Control of carbon emission
Demand Side Management

Fuel/Electricity intensive areas

Lightings

• HID lights wattage are high
• Magnetic ballast also high power consuming
• Utilized more daylights
• Energy saving
• Control of carbon emission

ATTITUDE CHANGE

1. Replace Magnetic ballast from Electronic.
2. Replace HID Lights from LED
3. Use of Sun lights
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**Demand Side Management**

**Fuel/Electricity intensive areas**

- Power factor Improvement (Existing pf varies from 0.8 to 0.5)
- Use of High efficiency motors
- Comprehensive Application system
- Maintaining of Maximum Demand

**Other**

1. Power factor Correction
2. Reduce of power failures
3. Energy efficiency Equipment
4. Monitoring System

**ATTITUDE CHANGE**
Challenges

• Barriers to approach to new technology
• Education, training and attitude changing of the staff.
• Cost Involvement.
• Obstacles to transform alternative energy sources.
• Obstacles to transform to high quality long lasting Products
Conclusion

• Emission of CO$_2$ from any place of the world will be a disaster for some other place. (According to the Butterfly Effect Concept)
• Already plan to consume almost all the fossil deposits within our generation.
• If we can save the environment for future generation, while achieving the desired targets will be the best investment today.
• By Improving Energy Efficiency in the Port, It can limit the use of fossil fuel and CO2 emissions protecting the environment meanwhile a monetary saving can be achieved. Further Renewable energy can be used for a part of Energy usage.