# Energy Management & Planning

# **Energy Planning**

• Planning of energy production, usage, supply, import etc. to meet the energy demand efficiently and economical.

# Need of Energy Planning

- Successful energy management and economical development
- To meet present and future demand ol energy. This increase the reliability of energy supply.
- The economical growth of the country/organisation is depended on energy cost and energy performances, by transparent or effective energy planning, the energy performance is to improved and lowering the energy cost.
- To reduce the usage of more pollting fuels & increase usage of renewables and meet the future energy demand.

# **Steps of Energy Planning**

- Make commitment by key executive/olticers.
- Form Energy strategy & Energy policy.
- Measure present & past energy performance.
- Analyse performance and energy demand.
- Set goal & objectives (short term/medium term/long term)
- Establish detailed energy plan with time-limit.
- Check feasibility of energy plan (technical & financial)
- Implement energy planning and measure result.
- Evaluate the energy pertormance (Improved or not)
- Review the energy plan and modified if necessary & repeat the above steps.

### **National Energy Plan & Strategies**

# Short-term

- Optimum use of equipments/system by reducing operating losses
- Promoting alternative and renewable energy
- Use environmentally sound energy system.

# Medium-term

- Substitution of best fuel and demand side management (DSM)
- Better urban planning & improve transport infrastructure
- Shift over renewable Irom conventional energy sources

# •Long-lerm

- Enhancing energy efficiency in all energy conservation system
- Promoting standards & labeling for energy efficiency
- Privatization ol energy sector
- Efficient production of fossil fuel and electricity

# **National Energy Plan**

## The salient features of NE plant are:

- Rationalizing tariff patterns and energy costs
- Promoting energy efficiency and renewable sources of energy
- Fuel substitution which is environmentally sound
- Encourage energy conservation and energy management
- Adopt advance energy technology or plant replacement work, including obtaining statutory approvals;
- liaising with and providing technical support to mechanical/electrical design engineers on new and refurbishment projects regarding sustainability, energy and water conservation;
- Carrying out site inspections and energy surveys;
- Preparing detailed schedules of work/feasibility studies and cost estimates;
- Benchmarking energy consumption against best practice guidelines
- Organising events and workshops;
- Compiling reports to strict deadlines.

# **Energy Manager-Duties & Responsibilities**

#### **Duties:**

Establish an energy conservation cell & prepare an annual activity plan

Develop and manage training program for energy efficiency at operating levels

Develop integrated system of energy efliciency and environmental improvement

Initiate activities to improve monitoring and process control to reduce energy costs

Co-ordinate implementation of energy audit/efficiency improvement projects through external agencies

Establish / participate in information exchange with other energy managers of the same sector through association

Provide information to BEE and Designated Agency of the respective States as demanded in the Act

#### **Responsibilities/activities generally include:**

Developing, coordinating, and implementing the aims and objectives of strategies and policies to reduce energy consumption,

Devising policies and systems for buying energ and helping with contract negotiations;

Providing technical and practical advice and offering training on energy elliciency;

Developing promotional activities and materials to publicise particular schemes;

Contributing to sustainable development initiatives;

liasing and negotiating with contractors, the building supplies industry, council services and other relevant organisations;

Ensuring accurate records are maintained and energy monitoring data is collected regularly;

Preparing specifications, drawings and tender documents for building services, improvement.

# **Organisation of Energy Management**

- An energy management team comprises energy manager who leads the energy team staff and energy representative from each department.
- Energy management cell is as important as other department like finance, personnel, HR, material, operation, maintenance etc.
- Energy cell can encourage other department through communication and narrate the ideas I between teach depart.
- Energy team is responsible for efliciency, energy cost, energy planning, energy conservation, internal energy audit etc.



# **Force-Field Analysis**

- Before making energy actions plan, the lorce-field analysis is to be done. At first we decide the i goal then now we can find out the different factors (forces) among them, some forces actin towards the l achieving goal positive forces) and some forces acting in opposition to achieving goal negative forces) In other words the barriers must be overcome and influences exist in the organisation must be automatically work towards achieving goad.
- Barriers work in opposite to achievegoal negative Forces
- Influences work towards achieving goal positive Forces

# Steps for force-field analysis are:

- State the goal and indicate the direction : Write down the goal and indicate its direction (ie. i from lelt to right) which shows moving towards for achievemnent ol goal. i
- Identuification of barriers (negative forces) : Find out barriers works against the achievement of the goal, these may be internal or external to the organisation. i
- Identification of influence (positive forces) : Find-out influence work towards the i achievement of goal, these may be internal or external.
- Measure the relative strength : Estimate relative strength of all forces as low medium andi high strength forces. i
- Set priority of forces : Set priority of forces cither can be strengthened or weakened through i the action plan and achieve the pre-determined goal.

• An example of force-field analysis chart is shown below.



# **Energy Awareness Programs- Training and Motivation**

# <u>Staff Awareness:</u>

 Staff awareness is most effetive tool for energy management in the plant premises. Designing and carrying out an effective stall awareness campaign help energy managers to meet energy reduction targets, lower operating costs, improve workplace comfort and protect the environment.

# A comprehensive staff awareness campaign :

- Increases understanding about the benelits of energy efficiency
- Makes the link between people's actions and behaviour, energy use and potental saving
- Motives employees to change the way they use energy
- Reduces energy consumpton and saves money.

#### An effective staff awareness campaign can:

- Boost moral with people working together for a common goal
- Contribute to a healthier environment by reducing greenhouse gas emissions
- Enhance your department/agency's reputation as a leader in energy and environmental awareness and acton.

This is an opportunity to lower your department/plant's energy use and change peoples behaviour beyond their work environment.

#### Staff awareness can be done by:

- Display posters and slogans
- Staff communication
- Staff motivation
- Arrange training programmers
- Benchmarking and competition
- Print and visual materials
- Consultation and information exchange

# **Motivating and Training**

Raising individual awareness and keeping staff involved in energy management activites generate real benefits.

- Promotion
- Incentives
- Incremental change
- Bonus
- Posting and training