Unit - III

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AP/Chemistry

Lecture Number - 13 -> 14

Energy Management -> Conservation

Energy Management:

Definition:

Energy management is planning and operation of energy production and energy consumption units as well as energy distribution and storage.

Objectives (or) Aims of energy management:

* Resource Conservation
* Climate protection
* Minimize waste
* Minimize environmental effects.

The Ultimate aim of this process is not only to save the cost but also to achieve complete environmental sustainability.

Principles of energy management

- It controls the costs of the energy function and not Btu of energy.
- To control energy functions as a product cost.
- To control and meter only the main functions which accounts for only 20% functions which make up 80% of the costs.
- Major effort of an energy management program should be put into installing controls & achieving results.

Steps involved in the process of energy

Step 1: Collecting and analyzing continuous

Step 2: Identify optimizations in equipment

Set points and flow rates to improve energy efficiency

Step 3: Calculate return on investment. Units of energy saved can be metered and calculated just like units of energy delivered

Step 4: Execute energy optimization solutions.

Step 5: Repeat Step 2 to continue optimizing energy efficiency.

Energy Conservation

Definition:

It is the practice of using less energy inorder to lower the costs and reduce environmental impact.

This can be achieved either by using

* energy more efficiently (using less energy for a constant service)

* By reducing the amount of service used.

Objectives (or) Aims of energy conservation

→ To reduce overall energy demand
→ To lower energy cost
→ To reduce energy consumption
→ To lower the overall green house gas emission

Law of Conservation of energy

Energy can neither be created nor destroyed but it can be transformed from one type to another.

Importance of energy conservation

- It reduces our usage of non-renewable energy resources
- To save money on energy costs including utility bills and other energy bills.

- It also cuts down on expanding development where natural resource extraction is impacting natural areas
- When we conserve energy more efficiently we directly reduce the amount of green house gases emissions entering the earth's atmosphere.
- It insists us to replace the energy, used with an alternate energy source

15 ways to Conserve Energy

* Adjust your day-to day behaviors

ex:
Switch off lights (or) appliances when you do not need them.

* Replace your light bulbs.
  Using CFL s LED bulbs
* Use Smart Power Strips
* Install a programmable (or) Smart Thermostat
* Purchase energy efficient appliances
* Reduce your water heating expenses.
* Install energy efficient windows
  Gas filled windows with "low-e" Coatings can be fixed.
  You can ~~replace~~ replace Single-pane windows with double pane windows.
* Upgrade your HVAC System
* Weatherize your home
* Insulate your home.
* Wash your Clothes in Cold water

* Replacing dirty air filters regularly reduce energy consumption upto 15%.

* An microwave is more energy efficient. Microwave oven can be used instead of ordinary stove.

* Using natural light, like sun, we can reduce the energy consumption

* Dress appropriately for the weather inside and outside.

Need for New Energy Sources!.

Fossil fuels and nuclear energy are the important resources used to meet most of our energy needs today.

These are expected to be widely used in the near future. However, fossil and nuclear energy resources are non-renewable and will Someday be exhausted, while their continued use possess environmental risks related to air pollution global climate change, Land use and waste disposal. These issues have Stimulated the search for new energy Sources for producing is using energy.