



EnerSpices

The stimulus for your Energy Initiative

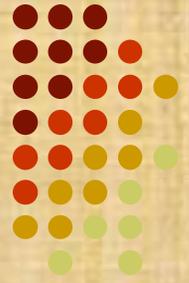


What spices are to food, Performance Testing is to energy management! The journey of energy conservation starts with efficiency improvement and matures to effective utilization.

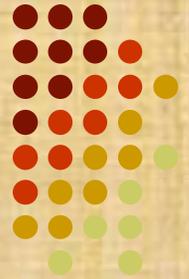
Add the stimulus of performance testing to your energy Test Buds with our EnerSpices program...."

**THERE CAN BE ECONOMY ONLY WHERE
THERE IS EFFICIENCY**

BENJAMIN DISRAELI, FORMER BRITISH PRIME MINISTER

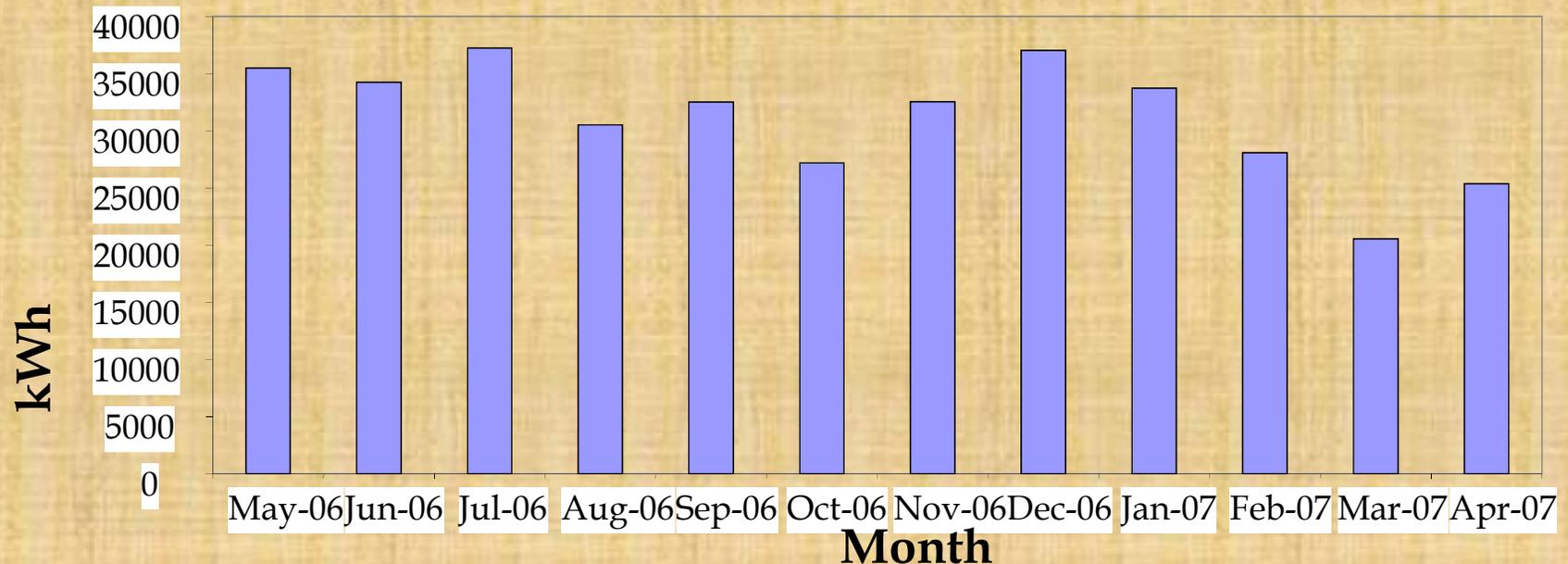


TrendSpices

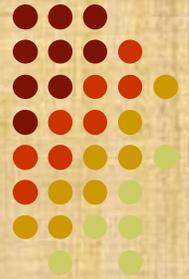


Analysis of historical data of electricity bills, fuel bills and production data for past 24 months to identify tariff related benefits, demand management opportunities etc.

Rs.15000/- per plant (Maximum of three energy meters)



ElecSpices



- **TRANSFORMER EFFICIENCY :**

Deliverables:

To find out transformer efficiency and possibilities of efficiency improvement by measurement of necessary electrical parameters at transformer and load profile. Comparison of transformer performance at various loads with manufacturers test certificate

UoM:

Rs. 15,000/- per transformer

- **DIESEL GENERATING SET :**

Deliverables:

To find out fuel consumption per unit generated by measurement of power generated, fuel consumed, flue gas temperature and % CO₂ in flue gas

UoM:

Rs. 10,000/- per set

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- **MOTOR LOADING:**

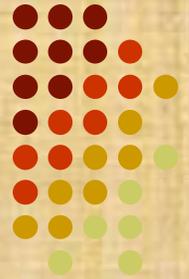
Deliverables:

To identify partially / over loaded motors by measurement of parameters like power factor, input voltage / current and power drawn from mains

Charges per motor

up to 10 th motor	: Rs. 500/- per
for 11 th to 30 th motors	: Rs. 400/- per
for 31 st to 60 th motors	: Rs. 350/- per
for 61 st to 100 th motors	: Rs. 300/- per
101 st motor onwards	: Rs. 250/- per

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- **HARMONICS MEASUREMENT:**

Deliverables:

Measurement of total harmonic distortion in voltage and current waveforms at key location by power analyzer

UoM: Per PCC

Rs.15,000/- per PCC

- **EARTH PIT TESTING:**

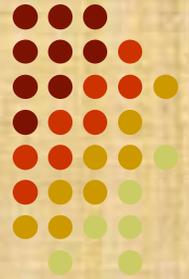
Deliverables:

Measurement of earth resistance to identify faulty earth pits and earth continuity through out the entire distribution network

UoM: 5 Pits or Part thereof

Rs. 5,000/-

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- **THERMOGRAPHY :**

Deliverables:

Thermo graphic snapshot of PCCs, MCCs to identify overheating areas and thereby affecting safety limits

UoM: Per Day

Rs. 30,000/- per day

- **HEALTH OF POWER FACTOR IMPROVEMENT CAPACITORS :**

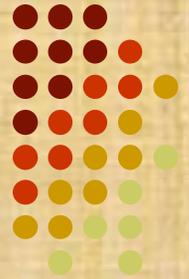
Deliverables:

To identify faulty capacitors, additional capacitors to improve power factor and possibilities of connecting APFC panel

UoM: Per Day

Rs. 5,000/- per 500 kVAR

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- **LIGHTING:**

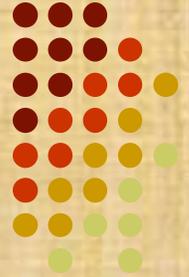
Deliverables:

To find out installed light efficacy by measurement of Lux level at various locations and power consumed by respective lamps

UoM: Per 25000 square feet

Rs. 5,000/-

ThermSpices



- **BOILER EFFICIENCY:**

Deliverables:

To find out boiler efficiency and evaporation ratio by measurement of parameters like temperatures, pressures, flow rates for fuel/water/steam/flue gas

UoM: Per Boiler

Non-IBR BOILER : Rs. 5,000/-

IBR - Smoke Tube Oil Fired Boilers

Upto 10 TPH capacity : Rs. 10,000/-

11 to 30 TPH capacity : Rs. 15,000/-

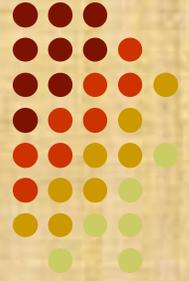
IBR – Water Tube Coal Fired

Upto 10 TPH : Rs. 15000/-

Between 11 TPH and 30 TPH : Rs. 20000/-

Power Boilers (with Superheater) : Rs. 30000/-

ThermSpices



- **FURNACE EFFICIENCY**

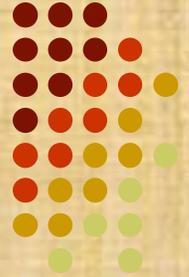
Deliverables:

To find out furnace efficiency and specific energy performance by measurement of furnace surface temperature, quantity of material heated, fuel-electrical consumption, flue gas temperature

UoM: Per Furnace

Oil fired upto 1 MKcal/hr	: Rs. 15,000/-
Coal fired upto 1 MKcal/hr	: Rs. 20,000/-
Oil fired 1 to 5 MKcal/hr	: Rs. 20,000/-
Coal fired 1 to 5 MKcal/hr	: Rs. 25,000/-

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- **THERMIC FLUID HEATER EFFICIENCY:**

Deliverables:

To find out Thermic fluid efficiency by measurement of parameters like CO₂% temperatures of flue gas, pressures, power consumption of TF circulation pump

**UoM: Per Thermic Fluid Heater
Upto 1 Mkcal/hr.**

Oil fired : **Rs. 10,000/-**

Coal fired : **Rs. 15,000/-**

Between 1 to 5 Mkal/hr.

Oil fired : **Rs. 15,000/-**

Coal fired : **Rs. 20,000/-**

Above 5 Mkal/hr.

Oil fired : **Rs. 25,000/-**

Coal fired : **Rs. 30,000/-**

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- **STEAM SYSTEM EVALUATION:**

Deliverables:

To find out efficiency of steam distribution by measurement of surface temperatures, pipe length, insulated and un-insulated surfaces and steam trap performance

UoM: 250 mtr. and 20 traps OR part thereof Rs. 10,000/-

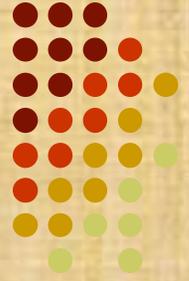
- **STEAM TRAP EVALUATION:**

Deliverables:

Performance evaluation, identification of ineffective steam traps & additional requirement to ensure delivery of steam at right pressure for the process

UoM: 20 traps OR part thereof Rs. 5,000/-

MechSpices



- **CHILLER PERFORMANCE EVALUATION**

Deliverables:

To find out power consumption per ton of refrigeration by measurement of chilled water flow rates, temperatures at the inlet and outlet of evaporator, condensers and power consumed by compressor

Per Chiller Consisting of 1 chiller,
1 cooling tower and 3 pumps
(primary, secondary and cooling tower)

Rs. 25,000/-

Each Extra Pump

Rs. 3,000/-

MechSpices



- **AIR HANDLING UNIT:**

Deliverables:

Assessment of performance of AHU by measurement of air flow, pressure and dry/wet bulb temperature at supply and return side

Up to 15 AHU **Rs. 2000/-each**

From 16 to 40 AHUs **Rs. 2000/-each**

From 41 to 100 AHUs **Rs. 2000/-each**

- **COOLING TOWER:**

Deliverables:

To find out cooling tower effectiveness and liquid/gas ratio by measurement of cooling water flows, air flows, dry/wet bulb temperatures and power consumed by fans and pumps

Per cooling tower including 1 fan and 1 pump: Rs. 15,000/-

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- **AIR COMPRESSOR:**

Deliverables:

To find out actual free air delivery, specific power requirement, volumetric efficiency and isothermal power required by conducting pump up test on the compressor and measurement of input power.

Charges per compressor:

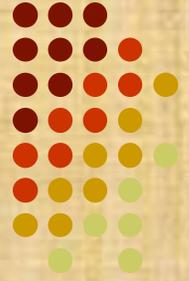
Upto 5 compressors

Rs. 7500/-

Above 5 compressors

Rs. 7500/-

MechSpices



- **CENTRIFUGAL PUMP:**

Deliverables:

To find out pump efficiency at operating conditions and system resistance and operating duty point of the pump by measurement of flow, pressure, head and power consumed

Charges per pump set:

Upto 5 pump sets	Rs. 5,000/-
For 6 to 30 pump sets	Rs. 4,000/-
For 31 pump sets onwards	Rs. 3,000/-

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- **FANS AND BLOWERS:**

Deliverables:

To find out volume flow rate and power input to fan shaft by measurement velocity of air in the duct and power consumed by the fan/blower

Charges per fan or blower:

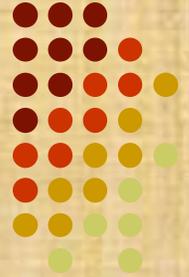
Upto 5 fans or blowers

Rs. 4,500/-

For 6 and above fans or blowers

Rs. 3,000/-

InstruSpices



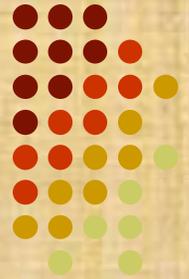
- **ULTRASONIC FLOW METER:**

This a non contact flow measuring device using Transit Time Effect principle. There is a transmitter and receiver which are positioned on opposite sides of the pipe. The meter directly gives the flow. Water and other fluid flows can be easily measured with this meter.

Rs. 10,000/- instrument rental charges per day including technician



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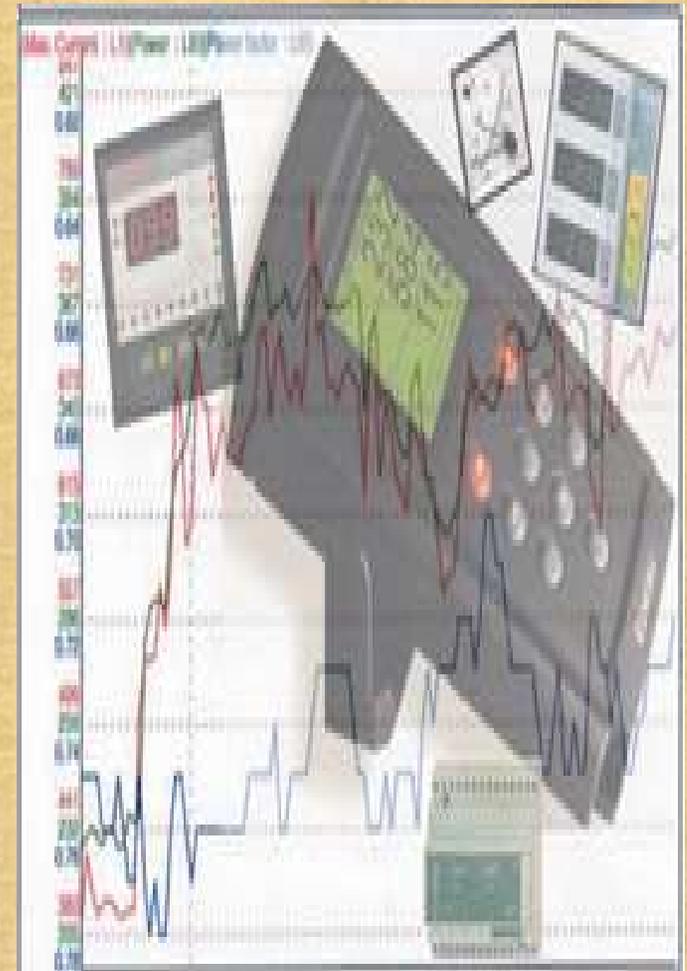
- **POWER & HARMONIC ANALYZER**

These are instruments for measuring major electrical parameters such as kVA, kW, PF, Hertz, KVA_r, Amps and Volts. In addition these instruments also measure harmonics and power quality parameters.

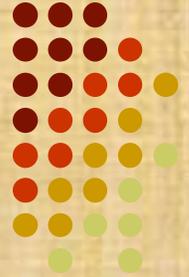
Rental charges per day:

Rs. 2000/- for 1 CT and

Rs. 4,000/- for 3 CT instrument including technician



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- **FLUE GAS ANALYZER:**

A hand bellow pump draws the flue gas sample into the solution inside the Orsat. A chemical reaction changes the liquid volume revealing the amount of gas. Percentage Oxygen or CO₂ can be read from the scale.

Rs. 8,000/- instrument rental charges per day including technician



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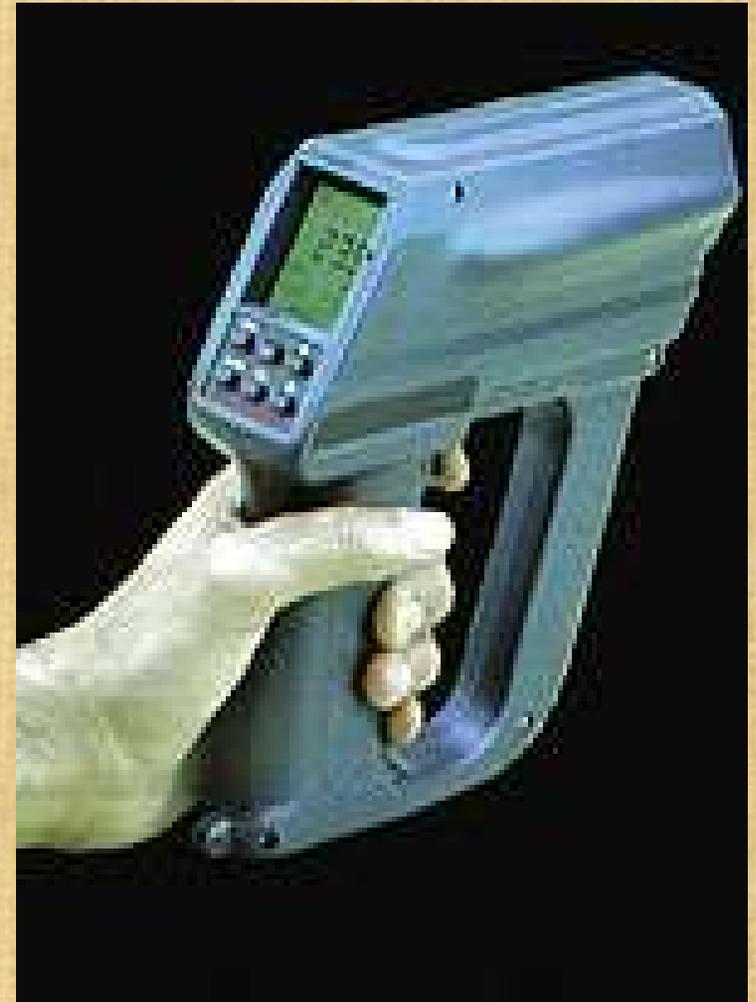


- **INFRARED PYROMETER:**

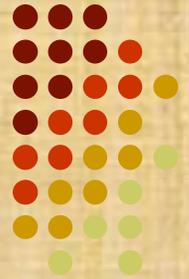
This is a non-contact type measurement which when directed at a heat source directly gives the temperature read out. Can be useful for measuring hot jobs in furnaces, surface temperatures etc.

Rental charges per day:

Rs. 2000/- for non contact
and **Rs. 4,000/-** for contact
instrument including technician



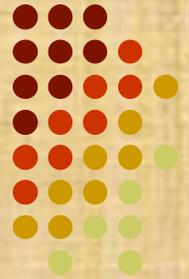
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- **ANEMOMETER:**
This is used for the measurement of Air Velocity.



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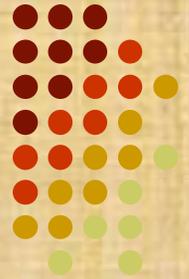


- **LUX METER:**

Illumination levels are measured with a Lux meter. It consists of a photo cell which senses the light output, converts to electrical impulses which are calibrated as Lux.



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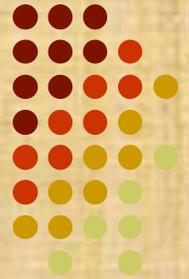


- **PITOT TUBE:**

Air velocity in ducts can be measured using a Pitot tube and inclined manometer for further calculation of flows.



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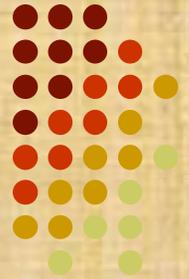
- **TEMPERATURE INDICATOR AND SENSORS:**

These are thermocouples which measures for example flue gas, hot air, hot water temperatures by insertion of probe into the stream.

For surface temperature a leaf type probe is used with the same instrument.



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- **Anemometer + Swing
Psychrometer + Temperature
Sensor + Temperature
Indicator**

Rs. 10,000 per day

- **Orsat Apparatus +
Temperature Sensor +
Temperature Indicator**