

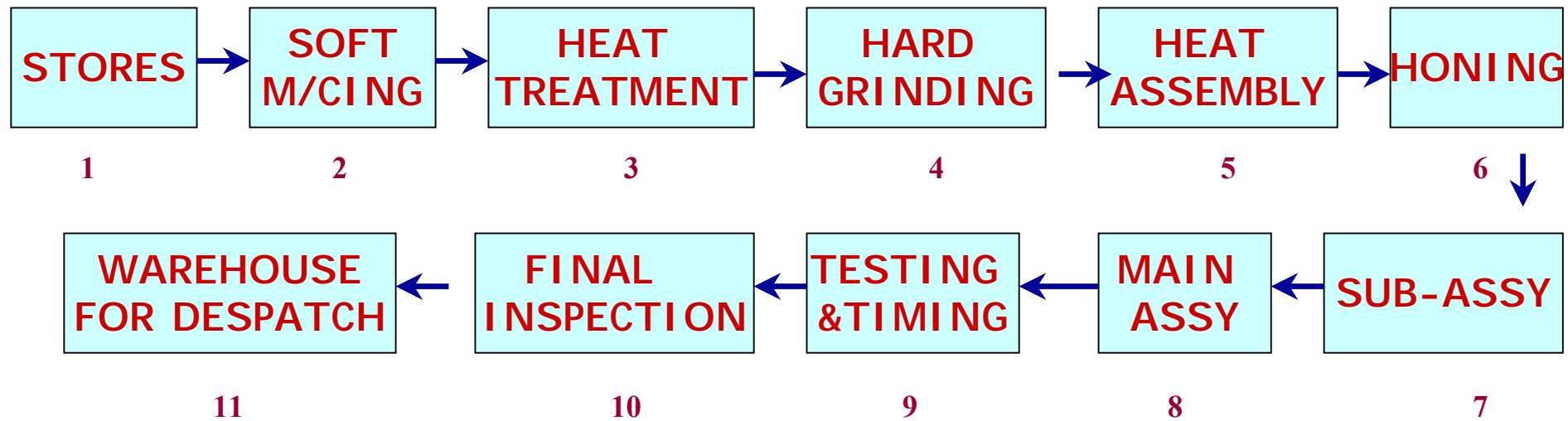
DELPHI – TVS is a joint venture between Delphi automotive Systems USA and T V Sundaram Iyengar & Sons, India for manufacture of Diesel Fuel Injection Equipment. Delphi is the largest automotive component manufacturer in the world and TVS, established in 1911, is the largest automotive component manufacturer in India.

The company has a track record of sustained growth since it was set up.

Delphi-TVS Diesel Systems has been certified under ISO 9001, EAQF 94, QS 9000, ISO 14001 AND TS 16949.

The company has 415 employees and its annual turnover is of the order of Rs. 1500 million.

PUMP MANUFACTURING DETAILS.

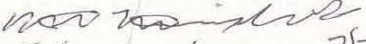




ENERGY POLICY

We, **DELPHI-TVS Diesel Systems Limited**, are committed to conserve our electricity consumption in all our activities through

- Selection of energy efficient equipments and processes.
- Continually setting objectives to reduce specific energy consumption by 1%, every year.
- Fuel conservation through enhanced use of renewable sources like solar.
- Creating energy conservation awareness among employees.
- Promoting employees participation in energy conservation programmes through TPM circles.

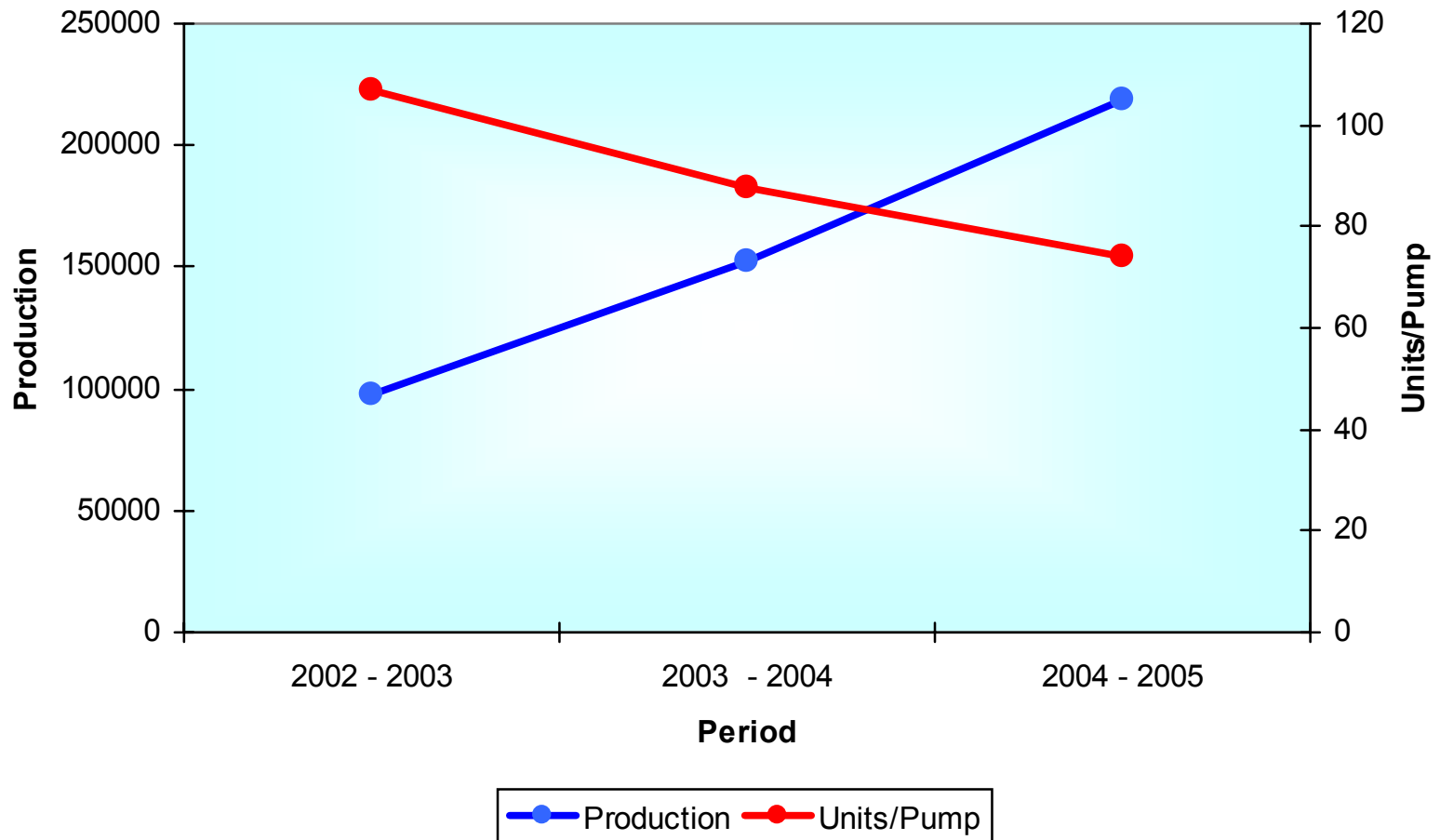

7/7/04
N.C.Krishnakumar
Executive Vice President



DESCRIPTION	UNIT	2002- 2003	2003- 2004	2004 - 2005
Annual Production	Nos	97750	152587	219144
Total Energy Consumption	Lakhs kWh	104.5	133.4	166.2
Specific Energy Consumption	Units/Pump	106.9	87.52	74
Specific Energy Consumption Reduction over 2001 - 2002	Percentage	-	18.13%	15.45%



Specific Energy Consumption



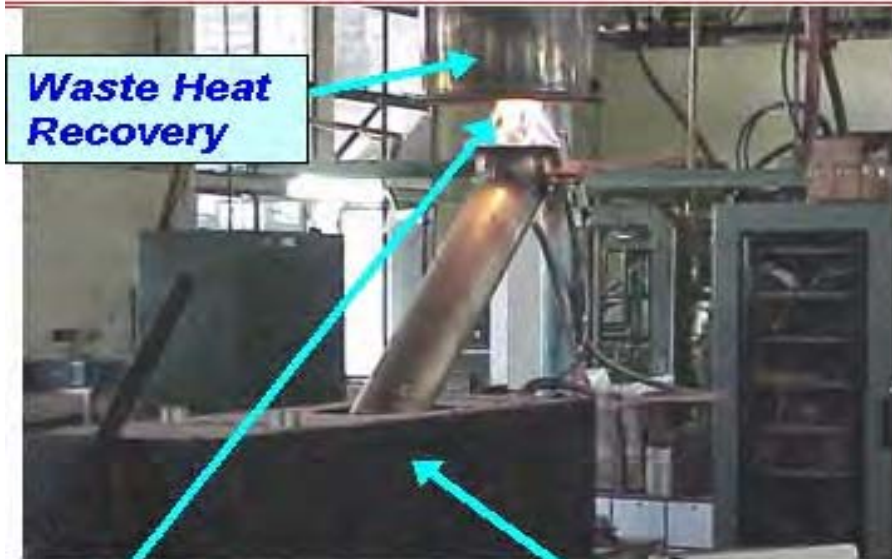
**MAJOR ENERGY CONSERVATION PROJECTS IMPLEMENTED
DURING THE YEAR 2004 –2005**

1. Flux Max Guard

*1. Increasing the
Combustion
Efficiency of the
Fuel by introducing
Flux Max Guard
and thereby
increasing the Units
generated Per Liter*



Savings Achieved/Day = Rs 2898/Day



Waste Heat Recovery

Exhaust Gas

Fluid Bed Furnace



Heat exchanger



Hot air Drier Tank

Hot air coming thro' Heat Exchanger

Savings Achieved/Day = 104 Units/Day

Wind Ventilators

8 Nos of Exhaust Fans
Running Continuously

$$= 8 * 1.2 * 24$$

$$= 192 \text{ Units/Day}$$

SAVINGS ACHIEVED

$$= 192 \text{ Units/Day}$$



FUME EXTRACTION SYSTEM

Before



**INDIVIDUAL FUME
EXTRACTION UNITS**

After



**A COMMON DUCT CONNECTING
INDIVIDUAL FUME EXTRACTION UNITS**



eLAN - Energy Management System for Delphi -TVS - C:\ENERCON\ELAN

Special



DELPHI - TVS DIESEL SYSTEMS LIMITED

25/07/05



12:53:17

Mimics - Select the node below

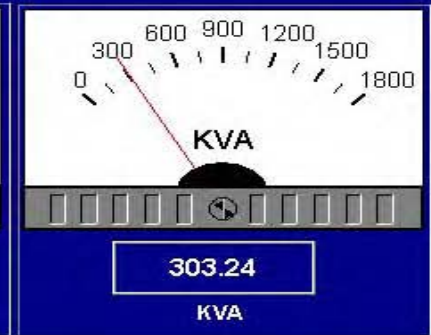
Transformer I

O.K.

SELECTED NODE: S1N2_
Transformer I

PARAMETER	TOTAL (Avg)	R-PH (R-Y)	Y-PH (Y-B)	B-PH (B-R)
VLL	412.71	411.99	409.81	415.83
AMPS	423.57	458.33	434.14	441.21
KVA	303.24	109.82	102.99	104.34
KW	299.18	109.11	101.92	103.17
KVAR	-45.56	-11.21	-13.81	-13.79
P.F.	-0.987	-0.994	-0.990	-0.989

Hz	49.99
KWh	417353.00



THD (Voltage) in %	0.10	0.10	0.40
THD (Amps) in %	0.80	0.70	0.10

Run Hours 1242.11

PF_avg	-1.000	Power Intr.	104
--------	--------	-------------	-----

- Help
- Mimics
- Real Time Trends
- Historical Trends
- Alarms
- Reports
- Print



- Rain Water Collection & Storage at Three Ponds at the Factory Site to Recharge the Aquifer



- Plants and Fish Create a Mini-ecosystem in Each Pond to Reduce Insects and to Improve Water Quality





- Sequestration of Carbon Dioxide Is a Process by Which CO₂ Is Removed From the Atmosphere and Stored Indefinitely in Plants
- More Than 3,400 Trees and 40 Varieties of Trees and Saplings Have Been Planted in and Around the Site and Nearby Schools in the Village of Mannur.
- Local Communities Are Encouraged to Participate in the Planting
- To Date, This Effort Has Resulted in an Equivalent Carbon Dioxide Sequestration of About 15 Tones.



A thriving eco system marching along with Manufacturing



Installation of coil coolers(where air is the heat removal medium) to save water replacing conventional cooling towers at diesel generators.



Reverse osmosis plant for Effluent recycling – Water Conservation



Installation of Coolant treatment plant for reduction of waste disposal.



Installation of Solar heaters as a Preheater to Boiler, Aqueous washing machines, etc

Total installed capacity = 6600 LPD



Installation of Wind ventilators (Motor less fans) to adequate more ventilation

Total No of Installation = 220 Nos



- Awareness Among Employees and Communities on Water Conservation and Benefits of Rain Water Harvesting and Collection
- Increase in Ground Water Table and Its Improved Availability
- Decrease in Total Dissolved Solids Value in the Ground Water
- Landscape and Greenery Developed Provides a Pleasant Work Place
- Treated Sewage Is Recycled to Provide Fertilizer to Grow Trees
- Contribution to a Reduction in Global Warming, Through Carbon Sequestration



1. Flux Max Guard for Generators

Savings achieved:

Before Introducing Flux Max Guard

Average units Generated/Liter = 3.65

After Introducing Flux Max Guard

Average Units Generated/Liter = 3.81

Fuel Savings/Day = $([11000/3.65] - [11000/3.81]) = 126$ Liters
(11000 is average units generated by 750 kVA Generator)

Savings/Day = Rs 2898/-

Investment made = Rs 55,000/-

Payback period = Less than 1 Month

Principle of Flux Max Guard:

A strong magnetic field is developed by the Flux Max Guard, which will change the Hydrocarbon molecules of the fuel from its Para state to higher energized ortho state. Combustion of the molecule energized as such will give a better fuel combustion efficiency for the same quantum of fuel used.

1. Increasing the Combustion Efficiency of the Fuel by introducing Flux Max Guard and thereby increasing the Units generated Per Liter



2.Waste Heat Recovery System

Savings Achieved =104 Units/Day

[Annual savings Expected = Rs 1.31 lakhs]

Investment made = Rs 1.45 Lakhs

Implemented on = 15/03/2004

Previous System:

For drying the components at surface treatment hot air through Electric heater [7 kW] was used to maintain the Temperature at 60'C

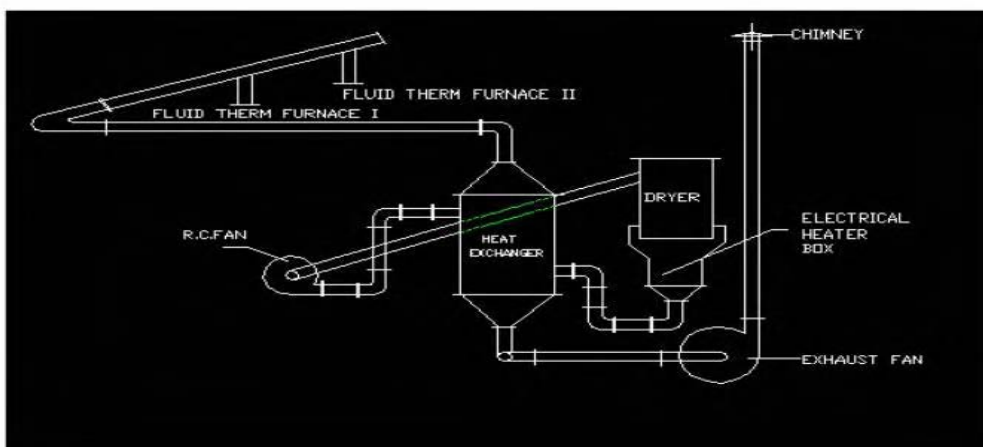
Idea:

To eliminate Electric heater by using waste heat generated from Fluid bed Furnaces exhaust through recuperate.

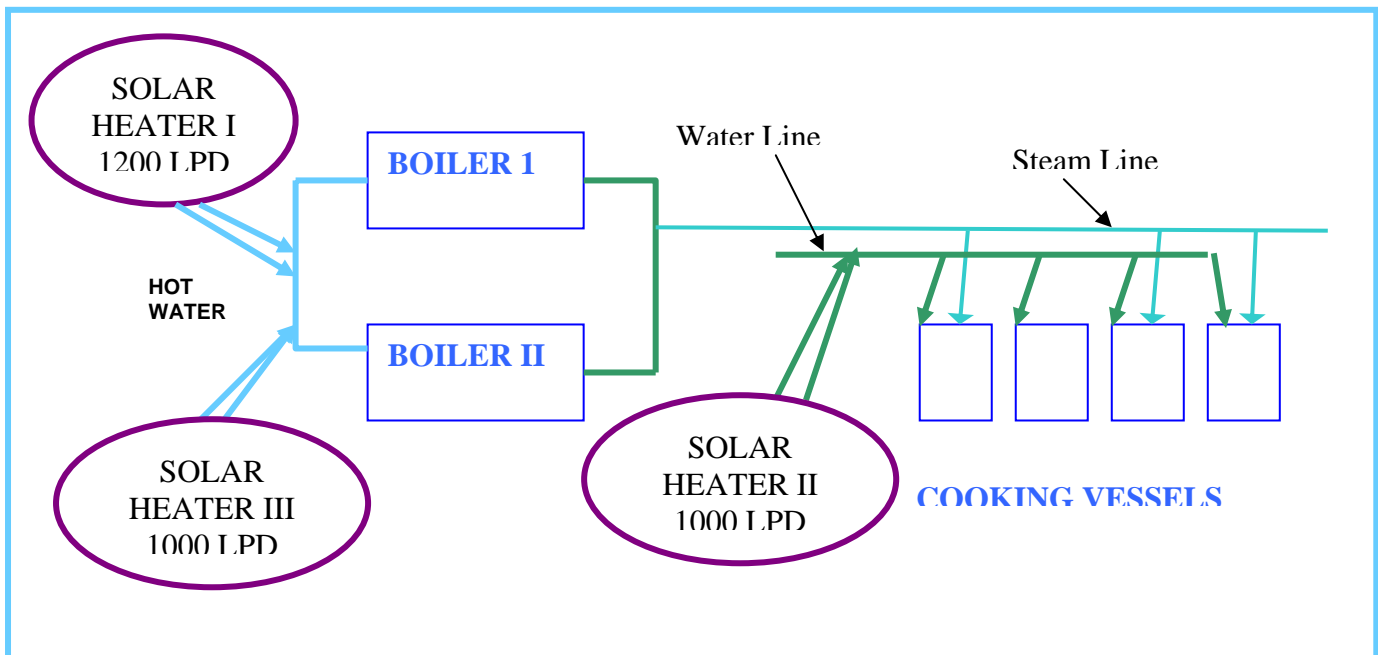
Implemented System:

Exhaust gas from the FBF furnaces have fed through a Heat Exchanger to the Atmosphere. Air in the Drier tank is fed through the Heat Exchanger in which it observes the heat of Exhaust Gas. Thus minimizing the use of Electric heater.

The system is insulated to give a better temperature output at the drier tank.



4. Solar Water Heaters Installed in DTVS :



DELPHI TVS believes in use of Renewable Energy sources

DETAILS OF SOLAR HEATING SYSTEMS INSTALLED:

SI NO	INSTALLED CAPACITY	PURPOSE	IMPLEMENTED IN	SAVINGS/ANNUM
1	1200 LPD	Preheater to Boiler	2002	1.1 Lakhs
2	200 LPD	Warm water for hand wash	2003	0.15 Lakhs
3	1000 LPD	Hot water supply for cooking Vessels	2004	0.78 Lakhs
4	3000 LPD	Preheater for Aqueous washing	2004	1.4 lakhs
5	1000 LPD	Preheater to Boiler	2004	0.56 lakhs
6	200 LPD	Warm water for hand wash	2004	0.78 Lakhs

3.CENTRALIZED FUME EXTRACTION SYSTEM

Savings Achieved

Before introducing a centralized system

Units Consumed = $24 \times 11 \times 1 = 264$ Units/Day

After introducing a centralized system

Units Consumed = $24 \times 1 \times 7 = 168$ Units/Day

Savings/Day = 96 Units

Previous System:

11 Nos of individual fume extraction unit(1.5 HP) was used in the Nozzle area for collecting the Mist from the Machine.

Idea:

To eliminate the individual mist collector units (Each of 1.5 HP) by providing a centralized Fume extraction unit with a capacity of 7.5 HP.

Implemented System:

A centralized duct has connected with the existing units and a Blower of Capacity 7.5 HP is connected for collecting the Mist from the common duct. Individual units are removed one by one.

5.WIND VENTILATORS

Savings Achieved

Total no. of Roof exhaust fan – 8 Nos (2 HP Each)

Consumption/Day = $8 \times 24 = 192$ Units

Wind ventilators require no power for its operation.

Savings/Day = 192 Units

Previous System:

8 Nos of Exhaust fans (2 HP Each) are running for 24 hours in the Power house.

Idea:

To eliminate the energy consuming exhaust fans by introducing Motor less fans that requires zero power for its operation.

Implemented System:

Wind ventilators of eight numbers are fixed in the roof and the exhaust fan supply was disconnected.

Wind Ventilators

**8 Nos of Exhaust Fans
Running Continuously**

= $8 \times 1.2 \times 24$

= 192 Units/Day

**SAVINGS ACHIEVED
= 192 Units/Day**

