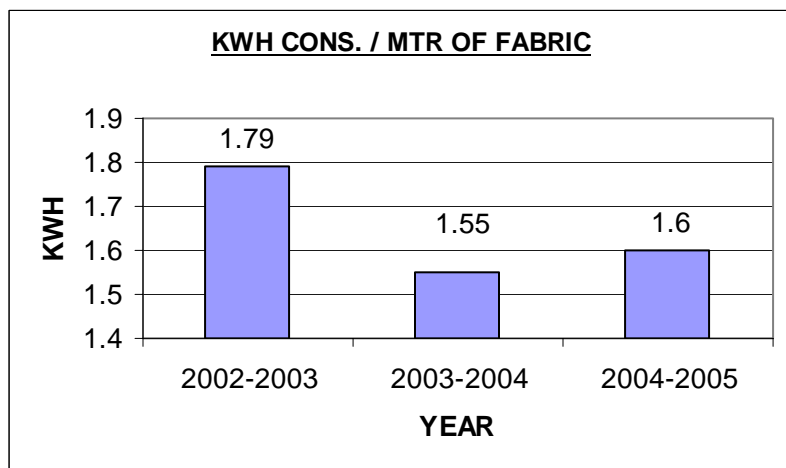


Nahar Industrial Enterprises Ltd Punjab

Unit Profile:

Nahar Fabrics is a leading Textile Processing plant of India with an installed capacity of 27 Lac meters of finished fabric per month. Nahar Fabrics markets its products under the brand name of “MONTE CARLO” & “COTTON COUNTY”. Nahar Fabrics also supplies its fabric to other buying houses as well. The plant is using the latest German technology machinery.

Power Consumption:



ENERGY CONSERVATION COMMITMENT, POLICY AND SET UP:

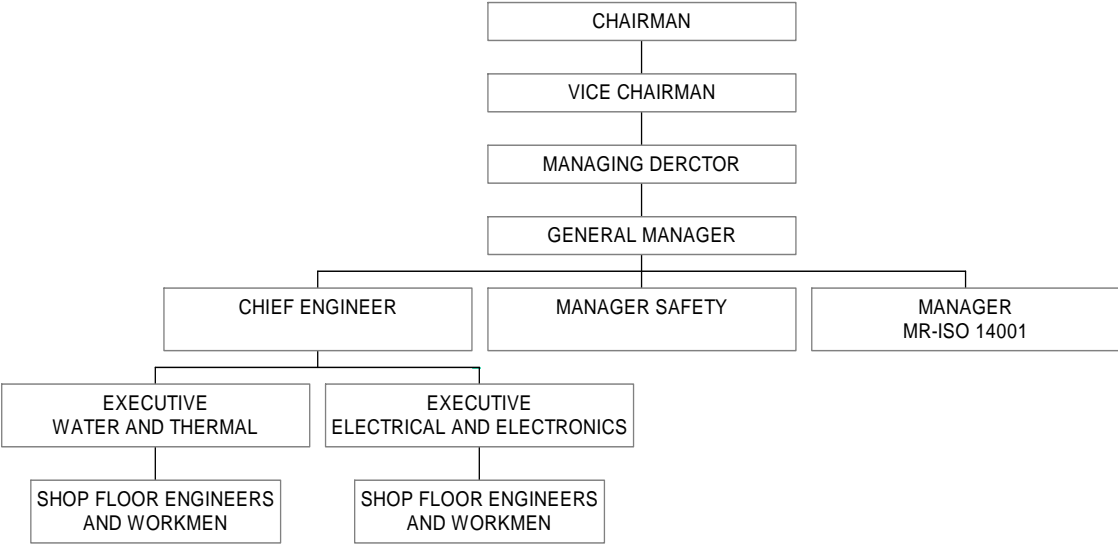
Nahar Fabrics Ltd. considers energy saving as a multi disciplinary approach. The company's energy profile consists of Electricity, Gas, Furnace oil and Water. Nahar being the first organization in Textile Industry in Punjab to adopt co-generation power through Bio-mass renewable energy sources like Rice husk, which is environment friendly and cost of energy as well is drastically reduced from Rs 3.9 to Rs 2.5 per KWH. We are further planning to shift our energy dependence from conventional energy to Bio-mass energy sources.

Budget provisions are made exclusively for Energy projects. Energy conservation plans, policy and structure are reviewed periodically. Energy conservation week is celebrated every year from 14th December to 21st December. A poster and slogan competition on energy saving and in house seminar is conducted. The importance of energy conservation is emphasised through various forums.

ENERGY MANAGEMENT POLICY:

- Promote Energy Saving and conservation of resources.
- Use of non-conventional sources of energy.
- Comply with the energy Legislation and other regulations.
- Promote use of Energy Efficient Alternatives and use of alternate fuels.
- Communicate Energy Management Policy to all employees and encourage their involvement through training and participation.
- Create awareness among all employees for innovative ideas towards conservation of energy.
- Minimise waste generation and promote disposal reuse and recycling in an Environment friendly manner.
- To make an effort to reduce the cost continuously every year by adopting effective Energy Management System.

ENERGY CONSERVATION CELL STRUCTURE



MAJOR PROJECTS IMPLEMENTED DURING THE YEAR 2004-2005

1) Installation Of Ac Variable Frequency Drive On Co. Gen. Plant:

SA fan, ID fan, FD fan and pump are used to operate the Co Gen. Plant. These motors were operated using D.O.L starter & Star Delta starter. We have installed AC drives instead of D.O.L starter & Star Delta starter for operating the motor.

Total Installation investment	: 14 lakhs
Before installation energy consumption	: 18000 KWH/day
After installation energy consumption	: 15000 KWH/day
Per day saving	: 3000 KWH
Per year saving (350 day)	: 1050000 KWH



Per year saving Rs @ 4.0 Rs : 42.0 lakhs Rs/year

2) Chemical dosing on PTR machine via Gravity Flow

Pre Treatment Range (PTR) machine is used to treat the fabric before dyeing. In this machine different types of chemicals are used for treating the fabric. These chemicals are stored in 5 no's of tanks. Earlier the chemicals were fed to the machine using 1.1 KW motor and flow control mechanism. Now we have shifted these tanks to a height using a platform and have removed the motors earlier used for dosing of chemicals. Now the chemical is coming via gravity flow.

Total Installation investment	: 0.5 lakhs
Total load of motors	: 5.5 kW
After installation energy saving	: 5.5 KWH/Hr
Per day saving	: 132 KWH/day
Per year saving	: 48180 KWH



Per year saving Rs @ 4.0 Rs : 192720 Rs

3) Modification of Caustic Dosing System of Mercerize m/c from pumps to Gravity flow

Mercerize machine is used to treat the fabric and give it a soft feel before it could be dyed. Caustic is used in this machine for the treatment of the fabric. Caustic dosing was done in Mercerize machine with help of two 3.7 kW motor. These motors would Transfer caustic from the storage tank to the machine via pipelines. Now we have shifted the tank & modified the pipeline on the tank. Now the caustic is coming in machine with gravity flow.

Installation investment	: 0.1 Lakhs
Total load of motors	: 7.4 kW
After installation energy saving	: 7.4 KWH
Per day saving	: 177.66 KWH
Per year saving	: 64824 KWH



Per year saving Rs @ 4.0 Rs : 259296 Rs

4) Installation of AC variable frequency drives on color tank stirrers in lawer

Lawer system is used for preparation and dosing of colors to the dyeing machines. Stirrers are installed on color tanks of lawer and are used for continuously mixing the colors. All 12 no's of stirrer motors were operated by D.O.L starter. These used to run at full speed. We have installed ac drives to control the speed, as it is not necessary to run the stirrer at full speed.

Total Installation investment	: 1.5 lakhs
Total load of motors	: 18 kW
Avg. Running load without VFD	: 15 kW
After installation energy saving (at 50% efficiency)	: 6 KWH
Per day saving	: 144 KWH
Per year saving	: 52560 KWH



Per year saving Rs @ 4.0 Rs : 210240 Rs

5) Odgen pump modification from Pneumatic pressure to Steam pressure

Drying range cylinders are big metal cylinders with steam supply. These are used to dry the fabric after it has been treated and washed in our machines. Odgen pumps are used to send condensed water from drying range cylinder. Earlier the pumps were using pneumatic air pressure to push the water. We have replaced the pressure supply from pneumatic to steam.



Air consumption of plant before modification	: 3.4 lakh Ltr/ day
Air consumption of plant after modification	: 2.6 lakh Ltr/ day
Saving of air	: 0.8 lakh Ltr/ day
Cost of per Ltr	: 0.024 Rs
Total Saving	: 0.8 Lakh X 0.024 = 1920 Rs/ day
Saving per year	: 1920 x 365 = 700800 Rs
Total water recovery	: 80 Kl/ day
Per Kl steam consumption	: :3 kg
Total stem consumption	: 3 x 80 = 240kg/ day
Per kg steam cost	: 0.5 Rs
Per day cost	: 240 x 0.5 = 120 Rs
Per year cost	: 120 x 365 = 43800rs
Actual saving per year	: (700800 – 43800) = 657000 Rs

6) Installation of 120 Ton steam chiller (VAM) in place of 60 Ton Electric Chiller

Chilled water is used for cooling of fabric. For this purpose we were having one 60-Ton electric Chiller. Due to expansion of our plant new machines were being installed and we required 60 Ton additional chiller capacity. So in place of going for 60 Ton electric chiller we have installed one Steam operated chiller (VAM) with a capacity of 120 Ton. VAM chiller is free from R22 gas and is operated with steam which is available easily in our Plant. This chiller is Eco-friendly as it is free of CFC and does no harm to the ozone layer

The operating cost of 60 Ton R22 gas chiller was

Connected load for 1 Ton	: 1.6 KWH/ton
Connected load for 60 Ton	: 1.6 X 60 = 96 KWH
So total operating cost / month (@ rate of Rs 4 / KWH) is :	
	96 x 24 x 30 x 4 = 276480 Rs



The operational cost of 120 Ton VAM chiller is as under

Steam required per ton	: 3.5 kg
Cost of 3.5 kg steam @ 0.45 Rs / kg of steam	: 1.5 Rs
Cost for 120 Ton / Hr	: 120 x 1.5 = 180 Rs
Total cost / month	: 180 x 24 x 30 = 1,29,600 Rs

Total saving / month : (276480-1,29600)=1,46,880 Rs
Total saving / year : 1,46,880 x 12 =1762560 Rs

Investment of steam 120 ton chiller is 16 lakh*

Note:-

We now have double the chilling capacity at half the operating cost.

7) Chilled water from Steam Chiller in place of cooling water from cooling tower

Power saving due to stoppage of cooling tower:

Power requirement for cooling tower : 15.7 KWH
 Operation cost/ hrs @ Rs 4/kwh : 15.7 x 4 = 62.80 Rs
 Operation cost/ day @ Rs 4/kwh : 62.80 x 24 = 1507 Rs
 Operation cost/year @ Rs 4/kwh : 1507 x 365 = **550055 Rs**



Note:-

***Water evaporates from the cooling tower while operation.
 Total makeup water saved from Cooling tower stoppage: 85 KI / month***

8) Installation of chilled water cooling in offices in place of conventional Air conditioners:

Air conditioning requirement in offices : 9 ton

Operation cost of Electric operated AC

Required power per hrs : 9 x 1.6 KWH = 14.4 KWH
 Power cost @ of Rs 4 / KWH : 4 x 14.4 KWH = 57.60 Rs
 Power cost / month : 30 x 24 x 57.60 = **41472 Rs**



Operation cost of Chilled water AC

Required steam per hrs : 9 x 3.5 kg = 31.5 kg
 Power cost @ of rs 0.45/ kg : 31.5 x 0.45 = 14.00 Rs
 Power cost / month : 30 x 24 x 14 = **10080 Rs**
 Saving per month : **10080 - 41472 = 31392**

Saving per year : 31392 x 12 =376704 Rs

9) Exit Batch Drive modification

We have converted our Dyeing-inspection machine & Sanforise machine exit batching drive from D.O.L starter to ac drive:

Installation investment : 0.35 lakhs
 Total load of motors : 5.9 kW
 After installation energy saving @ 65%load : 2.1 KWH



Per day saving : 50.4kwh
 Per year saving : 18396 KWH
Per year saving @ 4.0 Rs : 68065 Rs.

10) Modification of steam drum internals

In Boiler steam drum there was gap between Baffle plates of upcomer tubes which resulted in high silica level in drum. And because of this high Silica level in steam blow down was opened four times per day. Now steam drum internal has been modified by eliminating the gap between these plates which in turn has resulted in reduced silica level. Due to this the frequency of blow down has been decreased to 2 blow down per day. This has saved the wastage of steam during blow downs.



Average steam generation per day : 750 ton
 Steam used in one blow down : 15 ton
 Steam used per day before modification : 4 x 15 = 60 ton
 After modification steam used per day : 2 x 15 = 30 ton
 Steam saved per day : 30 ton
 Steam saved per year : 10800 ton

Per year saving @ Rs. 0.45/kg : 48,60,000/- Rs

11) Husk boiler APH tube replacement

Before the replacement of APH tubes the steam produced per kg of husk was 3.8 kg. Replacement of all the 660 APH tubes has resulted in proper fluidization of bed Which again results in proper heat distribution. Due to this steam produced per kg of husk was increased to 4.0 kg from earlier 3.8 kg. The annual saving detail is as follow:



Total investment : 7,20,000/- Rs
 Earlier husk consumption per kg of steam: 1/3.8 kg
 Now husk consumption per kg of steam : 1/4kg
 Husk saved per kg of steam : 0.013kg
 Average steam generation per day : 750 ton
 Husk saved per day : 9.75 Mt
 Husk saved per year : 3510 Mt

Saving per year @ Rs. 1800/ Mt : 63,18,000/- Rs

12) Repair Of Steam Traps

The steam traps are repaired and changed wherever required. When data's were collected and compiled following results were gathered:

Average condensate extraction by steam trap in one min. : 20 ml
 Average condensate extraction by defective steam trap in one min : 80 ml
 So loss of steam in one min : 60 ml

Loss of steam in one-hour (60 x 60) : 3.6 ltr
 Loss of steam in one-day (3.6 x 24) : 86.4 ltr
 Loss in one year (86.4 x 365) : 31.536 ton

Total loss in one year @ Rs. 0.51/kg for one trap: Rs.16083/-

Total thirteen traps were repaired and one changed

So total saving (14 x 16083) :Rs. 2,25,162/-

Cost of changing one trap : Rs. 1200/-

Net saving : Rs. 2,23,962/-



13) Plant lighting modification

Replacement of conventional 9w loss copper chokes with electronic ballast's having low watt loss resulting in reduced running load and considerable energy saving. Initially it is being done in one Loom shed where a total of 322 double tube industrial fittings are installed.

Saving in loom shed no-01 lighting	
No of rows	14
No of fitting/row	23
No of total fittings	322
Running load of /row with copper chocks (A)	14.6
Running load of / row with electronic ballast (A)	5.82
Saving in amps/row	8.78
Saving in kW/row	1.85
Units saving/days/row	44
Units saving for all the fitting	616
Units saving/day for 322 fittings @ Rs 4/-(Rs)	2,464/-
Starters saving /row (no's)	46
Total starters saving for 322 fittings	644
Starter saving @ Rs 5.73/-	3690.12
Cost of electronic ballast @ Rs 525.25/-/row	12080.75
Total cost of electronic ballast for 322 fittings	169130.5
Units saving/month for 322 fittings in Rs	60244.8
Pay back period considering only the operating cost	2 months & 24 days



Note:

In addition to the above, the copper chokes & the starters which are Coming out are being reused in other utility areas.

14) Steam heating for F.O. storage system of 4.11 Mw DG in place of electric heating

We have 4.11 MW furnace oil DG set where we were using electric heaters and electric **heat tracings for maintaining the temperature of F.O. in storage & buffer.**

Now we have introduced steam coil in the buffer tank. This has resulted in stoppage of F.O. separator heaters and heaters of heat tracing. Which has in turn resulted in electric savings



Average aux. unit consumption before steam heating	: 3400 units
Average aux. unit consumption after steam heating	: 2900 units
Saving of units/day	: (3400-2900)
	= 500 units
Units saving/day @ Rs 4.0	: 2000/- Rs
Saving/month (Rs)	: 60,000/- Rs
Saving/ year	: 7,20,000/- Rs

Note:-

The steam used is of the stack boiler which is mounted at the stack of the power plant 4.11mw & heater header is made from the scrap materials

15) Use of Treated Water of STP in Co-Gen. cooling tower & horticulture

For our 5mw co-Gen. Plant we require approximately 500 kl of the water every day for cooling the turbine. We have an In house STP plant (used to treat the sewage of our plant and that of colony) having a capacity to treat 200 Kl/day of sewage. We are using 100 kl of this treated water in the cooling tower of the Co-Gen. Plant thereby saving the precious raw water which we get from the various bore-well inside our plant premises & the rest of the treated water is being used for horticulture purpose



Saving calculation: -

Considering 52kl/hrs efficiency of rated bore-well of 22kw

1kl	: 22/52 kW
100kl	: 22/52 x 100
	= 42.30 kW/hrs

We are using 100 Kl water for cooling tower. So our Per day saving is 42.30 Kw/hr

Per year KWH saving	: 42.3 x 360
	= 15228 KWH
Saving @ Rs 4/- per day	: 42.3 x 4 =169.2 Rs

Saving per year =169.2 x 360day =60912 Rs

16) Saving At The Nozzle Temp Control Unit (Ntc) Of Power Plant

The NTC unit was maintaining the temperature at the nozzle jacket of the F.O. based 4.11MW power plant. Now we had replaced the cooled nozzle with un-cooled nozzle which has resulted in complete stoppage of the above said unit which saves a lot of energy.

Total investment cost of 12 no un-cooled nozzle
 @ Rs 6984/- = Rs 83808/-

Nozzle's are replaced twice the year as per
 maintenance schedule
 = Rs 83808 X 2=Rs 167616/-



Unit saving at the NTC

Conn. load of the NTC unit
 = 25.1KW
 Average of the running unit (@65%) = 25.1 X .65 = 16.30 kW
Unit saving /day = 391.68 units
Saving/year (approx. 340days) = 133171 KWH/years
 Saving @Rs 4.00/- = **Rs 532686 /-**
Qty of oil top/year = 210Irs
Saving @Rs 67.42/Itrs = Rs 14158

Total saving/year = Rs 532686+14158 =546844 Rs

17) Replacement Of 60w Spot Lamp by 8w CFL OSRAM Lamp

Spot light lamps of 60 W were installed in the corridor & in the offices of our ADM. block.
 Now we had replaced our above said lamps by 8W CFL lamp. The light intensity remains the same. Which saves a lot of our cost & improvement in the life of the lamps
 Investment Cost @ Rs 121.20/- = 121.20 X 43= Rs 5211.6/-

Total No Of Spot Lamp Installed = 43 Nos.
 Total Wattage Of The Lamp = 43 X 60= 2.58kw
 After replacing them with 8w CFL Lamp saving in wattage is = 2.236kw

Average working Hrs of the Lamp is 10 hrs
 Saving/Day =22.36 KWH
 Saving/Year (360days Working) = 8049 KWH
Saving @ Rs 4 /- = Rs 32198 /-



18) Saving At Our Heat Recovery Centrifugal Air Compressor

We had installed three stages 3625-CFM air compressor of Ingersoll-Rand makes with heat recovery coolers in which we re-circulate our boiler DM water to heat up to 80C, which is reused at of 40TPH Boiler. By raising the temperature of the above said water we reduces the fuel consumption at the boiler as well as save the Cost of the cooling tower. The existing cost of the circulation water set setup is considered equal to the cost of water pump & cooling tower set up. So the cooling fan wattage is our saving



Req. Wattage Of The Cooling Fan Is = 11Kw
 Saving Of Unit/Day = 264 KWH/Day
 Saving/Years (360days Working Hrs) = 95040 Units/Year
Saving @ Rs 4.0/- = Rs 380160 /year

Energy Conservation pending Plans and Targets

ENERGY CONSERVATION MEASURES (PLANNED)	ANTICIPATED SAVINGS IN ENERGY (Rs Lakh/yr.)	APPROX. INVESTMENT (Rs Lakh)	PROJECT STARTING & COMPLETION YEAR
Stenter Machine Heat Re Use	20	15	2006
Soft Water Overhead Tank Construction	10	14	2006
Copper Ballast Change 919 No	20	4.8	2006
Inverter Installation On Thermopac Id And FD Fan Pumps	6.5	3.5	2006