

20 Brief write up about your unit as per format given below along with photographs depicting equipment/locations where energy efficiency activities have been undertaken, may please be attached.

Ans. (i) **Unit Profile :**

Gujarat Narmada Valley Fertilizers Co. Ltd. (GNFC) Bharuch is a Joint Sector Company promoted by the Government of Gujarat (GOG) and Gujarat State Fertilizers Co. Ltd. (GSFC) Vadodara. GNFC is having the world's largest Single Stream Ammonia-Urea fertilizer complex (Ammonia-445,500 MTA and Urea - 636,000 MTA).

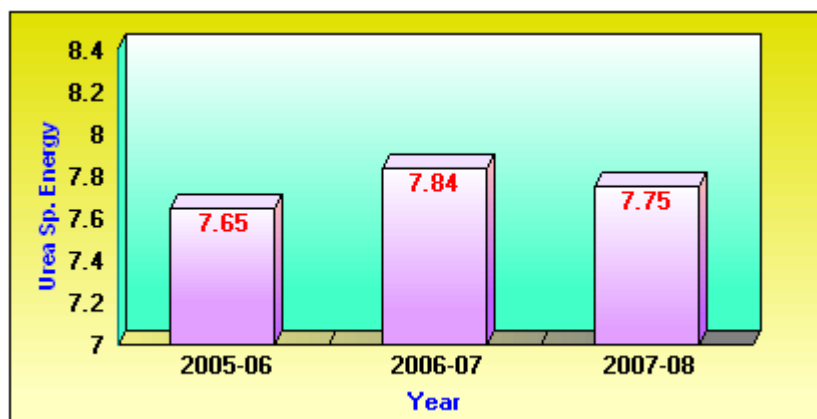
After achieving commercial production in July '82 the Company has diversified into the field of Chemicals, Fertilizers & Information Technology industries during just one decade.

(ii) **Energy Consumption :**

We have 4 nos. of boilers each is having capacity of 180 MT/hr of HPSH steam which operates on coal, lignite, LSHS, natural gas, along with 2X25 MW Steam Turbines . And one Gas Turbine having capacity 7.6 MW which operates on NG. Energy consumption data for last three years are given in table below

<b>Fuel</b>	<b>Unit</b>		<b>FY 2006-07</b>	<b>FY 2007-08</b>
Coal-Indian	MT/Year	250,826	317,988	309,196
Coal-Imported	MT/Year	352,532	281,124	349,329
LSHS	MT/Year	1,186.26	3,604.88	13,089.11
NG	SM <sup>3</sup> /Year	77,943,858	83,117,683	90,466,454
Electricity Generation	Lakhs kWh /year		3,790.61	4,202.21
Cost of Electricity	Rs. Lakhs/ year	12,363	13,439	12,433
Energy Cost as % of manufacturing cost	%	85.44	75.4	71.26

Urea Sp. Energy based on plant battery limit consumptions (MKCal / MT of Product)



Sp. Energy based on plant battery limit consumptions (MKCal / MT of Product)

Product	Year		
	2005-2006	2006-2007	2007-2008
Urea	7.65	7.84	7.75
Ammonium Nitrophosphate (ANP)	3.91	4.02	3.93
Calcium Ammonium Nitrate (CAN)	4.21	4.34	4.28
Methanol-I	8.33	8.76	8.77
Methanol-II	8.76	8.83	8.68
MSU	-	9.35	10.55
Formic Acid		9.67	9.34
Acetic Acid	7.58	7.85	7.85
Weak Nitric Acid (WNA)	2.89	2.98	2.9
Con. Nitric Acid - I (CAN - I)	4.19	4.22	4.14
Con. Nitric Acid - II (CAN - II)	3.98	4.05	4.02
Aniline	-	6.05	6.01
TDI	-	17.46	19.02

(iii) Energy Conservation committment, Policy & Organizational Set up :-

Energy Policy declared by GNFC serves an important guiding tool to focus on the monitoring, control and action planning aspects in order to continually improve energy efficiency and energy conservation. Foray into Reneable Energy like Wind Power Generation, Implementation of Urea Revamp, Incorporation of S-50 Converter, molecular sieves in Ammonia plant and Cogeneration unit are glaring examples of the commitment towards Energy Conservation.

Energy Conservation Schemes are scrutinized for technocommercial feasibility and then for the prospective schemes detailed engineering and HAZOP studies are carried out before imlementation.

(iv) Energy conservation Achievements :-

This portion should include one paragraph write-up on each major energy conservation project implemented during the year 2007-2008.

- 1) **Replacement of Ammonia plant cooling water pumps\_Impellers PI90I A to F :**  
Ammonia plant cooling water pump Impellers replaced with energy efficient ones, after revising the pump specification in order to minimize / eliminate mismatch between operating point and duty point. Also in the pump discharge swing type NRV replaced with low pressure drop NRV. As a combined effect energy saving of 70 kW/pump that is total 350 kW for 5 pumps realized. The scheme became fully operational since 22nd January, 2008.  
Investment : Rs. 28 Lacs  
Annualised Energy saving : 28 LackWh/Year (Scheme operational Since Jan-2008)
- 2) **Replacement of bowl assemblies of PI75I A to F Raw Water Transfer Pumps :**  
4 nos. of new energy efficient pumps bowl assemblies installed in Dec-2007. With 3 pumps running to cater the raw water requirements energy savings realized in the order of 50 kW  
Investment : Rs. 11 Lacs  
Annualised Energy saving: 3.22 Lac kWh/Year (FY 2007-08, Scheme Operational since Dec-2007)
- 3) **Acoustic cleaning system:** Acoustic cleaning system installed in place of steam type soot blowers in two BHEL make coal fired boilers during FY2007-08, in the flue gas path inlet to air pre heaters giving steam saving of 2.25 MT/day per boiler . During the year steam savings work out to be 1359 MT.  
Investment : Rs. 3 Lac Total Energy Saving. 1359 MT HPSH Steam / Year (Annualised)
- 4) **In Hazardous Chemical Plant, MGA510B (Methanol Transfer Pump) Impeller** trimmed from 254 mm to 213.5 mm, which resulted into energy savings of 14 kW. The scheme was commissioned in May-2007.  
Annual Energy Savings : 0.67 Lac kWh/Year
- 5) **Wind Mill Power Project of 9 MW Capacity :** Company has set up Suzlon make 9 MW (6 machines x 1.5 MW) capacity Wind Turbo Generators at Kutchh Gujarat All the machines were commissioned since 28/12/2007. Total 46,55,977 kWh power was generated from Wind Mills and put into the grid.  
Annualised Energy Savings : 166 lac kWh/Year
- 6) **Energy Saving measures were also implemented in Electrical System during FY2007-08 which were:** Maintaining Unity Power Factor, replacement of old inefficient

lighting equipment with energy efficient ones, Replacement of 45 kW motors with 37 kW motors..

Total annual saving on account of the same was 2,24,979 kWh.

(v) Energy conservation plans and targets :-

GNFC is targeting to reduce specific energy consumption by implementing following schemes in the coming years.

- (1) Installation of S-50 Ammonia synthesis converter : by April-2009 annual shut down for reducing the specific energy consumption of Ammonia by 0.21 MKcal/MT which in turn will also reduce specific energy of Urea.
- (2) Installation of Gas based Combined Cycle Co Generation Unit for 33 MW of Power and 60 MTPH of High Pressure steam. This will result in saving of net HPSH generation by 200 MT/h
- (3) Urea revamp with MP Pre decomposer and Urea pre concentrator along with new Bimetallic Stripper (May-2008). for saving of Medium Pressure Saturated Steam in the tune of about 158 kg/MT of Urea , equivalent to 0.10 MKCal/MT of Urea.
- (4) Replacement of obsolete pneumatic control system with DCS system In Urea plant
- (5) Retrofitting of sealing mechanism of air preheater In Synthesis Gas Generation Unit, Saving in terms of fuel NG in order of 2,37,000 SM<sup>3</sup>/Year.

(vi) Environment & Safety :-

Environment :

GNFC complies with GPCB and other statutory requirement Till now, GNFC has invested about Rs. 80.44 Crores in pollution control equipment.

- (1) GNFC is ISO 14001 certified corporate since 31st Jan., 2002
- (2) Environment Audit of the company is carried out with the help of external party namely National Productivity Council, Gandhinagar.

The Environment policy of the company is attached on next page.

- GNFC has successfully implemented OHSAS:18001 certification July-2007 The combined Policy for the Environment, Occupational Health & Safety and Quality is enclosed herewith.

The consent order received from G.P.C.B. for the year 2007-2008 is enclosed for your ready reference.

Safety management:


GNFC has well laid out procedures which includes plant checks, audits, mock drills, Safety work permit system, HAZOP analysis employee training programs on emergency preparedness and First Aid, Use of Fire equipments,, for ensuring safety and protecting health of its personnel and surrounding area . Safety Audit with the help of external auditor is carried every year.

21. Whether any dispute pertaining to statutory requirements of safety and pollution control is pending with any Government agency. If yes, give details.

Ans. There is no dispute pertaining to requirements of safety and pollution control.

## Energy Conservation Measure implemented in 2007-2008



(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Installation of 9 MW (6 machines x 1.5 MW ) Wind Turbo Generators	Sector : Fertilizer			
Year to be filled by BEE		Technology			
GNFC has made a foray in to renewable energy by installing 9 MW (6 machines x 1.5 MW) Wind Turbo Generators at Kutch region of Gujarat State. All the Wind Mills were operational since 28/12/2007. During the year total 46,55,977 kWh were transmitted through the GEB grid. Annualised Renewable Energy Generation works out to be 166 Lacs kWh/ Year					
<b>Picture/ sketch/ drawing before modification</b> (if available)			<b>Picture/ sketch/ drawing after modification</b>		
			 <p style="color: red; font-size: small; text-align: center;">The rotor and hub assembly ready for erection on tower. This mill will be commissioned by 30-09-2007.</p> <p style="text-align: center;">Installation of Wind Turbo Generator</p>		
Agency that executed the project (with complete address and email):M/S SUZLONE					
Total investment, Rs.:5500 Lacs			Year of implementation:Dec-2007		
First year energy cost savings, Rs.:809.78 Lacs					
First year other savings, Rs.:					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Renewable Energy Generation before					
Renewable Energy Generation after	16,560				
Energy tariff :	4.89				
Company complete address: M/S Gujarat Narmada Valley Fertilizers Company Limited Narmada Nagar – P.O. 392015 Dist. Bharuch (Gujarat)				We authorise Bureau to use this information for dissemination	
Contact person who could be contacted for more information: Mr. M. N. Tekchandani – Chief Manager , Energy Cell (Technical Service) Email : <a href="mailto:mntekchandani@gnfc.in">mntekchandani@gnfc.in</a> Tel : 02642-663249 / 393249				Signature	
				Date	

**Note: Please submit this sheet separately for each Energy Conservation Measure implemented in 2007-2008 and a CD containing the above information may be please be enclosed.**

**Energy Conservation Measure implemented in 2007-2008**

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Cooling Water Pumps in Ammonia Plant :Redefining duty point and installing new energy efficient impeller		Sector : Fertilizer		
Year to be filled by BEE			Technology : Centrifugal pump optimization of operating point		
Description of the energy conservation measure: The deviation between operating point and design point in the Cooling Water Supply pumps at Ammonia plant was minimized by revising the pump specification and accordingly old impellers were replaced with new energy efficient impellers. The new impellers were installed in 5 nos. of pumps and total operation with energy efficient impellers started since 22 <sup>nd</sup> Jan-2008. Energy saving resulted in the tune of 70 kW/pump which in 5 pumps operation works out to be 350 kW. Annualised Energy Saving realized in FY2007-08 :28 Lacs kWh.					
<b>Picture/ sketch/ drawing before modification</b> (if available)			<b>Picture/ sketch/ drawing after modification</b>		
					
P1901 D Pump			New Impeller		
Agency that executed the project : M/S Spaky Corporation - Chinchwad					
Total investment, Rs.: 28 Lacs			Year of implementation: Jan.-2008		
First year energy cost savings, Rs.: 71.12 Lacs					
First year other savings, Rs.:					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm <sup>3</sup>	Oil (KL)	Other
Energy consumption before					
Energy consumption after					
Energy tariff, Rs/ kWh	<b>2.54</b>				
Annualised Energy Saving	<b>2800</b>				
Company complete address: M/S Gujarat Narmada Valley Fertilizers Company Limited Narmada Nagar – P.O. 392015 Dist. Bharuch (Gujarat)				We authorise Bureau to use this information for dissemination	
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## Energy Conservation Measure implemented in 2007-2008

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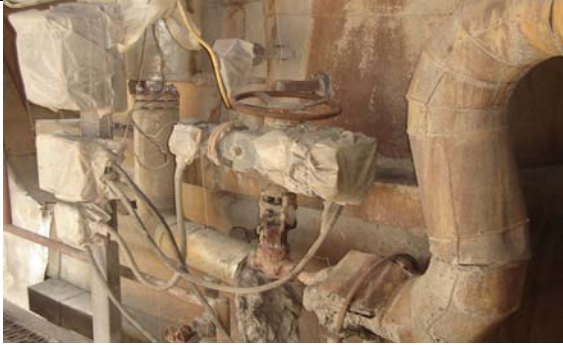

ID to be filled by BEE	Raw Water Supply Pumps bowl assembly replacement with new bowl assembly with higher efficiency	Sector : Fertilizer			
Year to be filled by BEE		Technology : Partial Oxidation of Oil (LSHS)			
Description of the energy conservation measure: 4 nos. of Raw Water Supply pumps at Zanor Water works were replaced with new bowl assembly of higher efficiency in Dec-2007. Normally 3 nos. of pumps are required to operate. In this scenario energy saving resulted in the tune of 50.24 kW.					
<b>Picture/ sketch/ drawing before modification</b> (if available)			<b>Picture/ sketch/ drawing after modification</b>		
					
Old Pump P1751 removed			New Pump P1751 before installation		
Agency that executed the project :					
Total investment, Rs.: 11 Lacs			Year of implementation: Dec.-2007		
First year energy cost savings, Rs.:15.72 Lacs					
First year other savings, Rs.:					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm <sup>3</sup>	Oil (kL)	Other
Energy consumption before					
Energy consumption after					
Energy tariff, Rs/ kWh	<b>4.89</b>				
Annualised Energy Saving	<b>321.54</b>				
Company complete address: M/S Gujarat Narmada Valley Fertilizers Company Limited Narmada Nagar – P.O. 392015 Dist. Bharuch (Gujarat)				We authorise Bureau to use this information for dissemination	
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**Annexure 'B'**

**Energy Conservation Measure implemented in 2007-2008**

(To be filled up separately for each Energy Conservation Measure)

ID to be filled by BEE	Installation of Acoustic Cleaning System in coal fired 3 nos. of BHEL boilers in flue gas path inlet to air pre-heaters		Sector : Fertilizer		
Year to be filled by BEE			Technology : Acoustic Cleaning		
<b>Description of the energy conservation measure: Acoustic cleaning system installed in all 3 coal fired BHEL boilers in flue gas path inlet to air preheaters resulted in 2.25 MT/ of MP-I steam . Total HPSH Steam consumption reduction on account of Acoustic cleaning system installed in Boiler 1 &amp;3 in FY 2007-2008 works out to be 1,359 MT/year.</b>					
<b>Picture/ sketch/ drawing before modification</b> (if available)			<b>Picture/ sketch/ drawing after modification</b>		
 <p align="center">Soot Blower Steam Header &amp; MOV</p>			 <p align="center">Acoustic Cleaning System with Panel</p>		
Agency that executed the project (with complete address and email): F. Harley & Company, 5 <sup>th</sup> Rameshwar Shaw Road, Kolkotta -700 014, West Bengal Tel : 033-22817676 E-mail : gc_marketing@harleygrp.com					
Total investment, Rs.:2.98 Lacs			Year of implementation:Dec-2006/ Nov 2007 / April 2008		
First year energy cost savings, Rs.:6.94 Lacs					
First year other savings, Rs.:					
On annual basis	kWh 000'	Coal (Tons)	Gas Nm <sup>3</sup>	Oil (kL)	Eq, HPSH Steam (MT/Year)
Energy consumption before					1359
Energy consumption after					0
Energy tariff : Rs/ Ton (HPSH Steam)					511

Company complete address:

M/S Gujarat Narmada Valley Fertilizers Company Limited  
Narmada Nagar – P.O. 392015  
Dist. Bharuch (Gujarat)

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