Heavy Water Board

Eight Heavy Water Plants are installed in the country to meet the heavy water requirements of Indian nuclear power and research reactors. The Heavy Water Board (HWB) manages operation and maintenance of seven of these plants. Production capacity of heavy water in the country is sufficient to meet the present and projected domestic demand up to end of XI Five Year Plan.

The performance and safety record of all the operating heavy water plants during 2001-02 was excellent. As a result of stable operation and continuous run of the plants, during the year 2001-02, production is expected to exceed the targeted production. This will be well within the allocated budget due to major efforts in energy conservation. It will further bring down the cost of production. The continuous monitoring and excellent awareness of the plant personnel with respect to energy conservation resulted in further overall reduction in specific energy consumption for the third consecutive year.

Awards

Heavy Water Plants have won national level "Excellent Performance Awards" and the most coveted ones are :

- Golden Peacock Environmental Management Award 2001 instituted by the World Environmental Foundation.
- Indo-German Greentech Environmental Excellence award for the year 2000-2001 from Greentech Foundation, New Delhi for HWP, Manuguru.
- HWP, Kota won the National Energy Conservation Award - 2001 in chemical sector instituted by the Energy Management Centre, Ministry of Power, Government of India.
- Sarvashreshtha Suraksha Award-1999 by HWP, Tuticorin. This is the topmost award instituted by the National Safety Council.
- HWP, Kota won AERB's Industrial Safety Award for the year 2000 while HWP, Manuguru has won AERB'S Fire Safety Award. The Heavy Water Plant, Thal was selected for AERB Green Site Award for the second year in succession.

The plants at Tuticorin, Talcher, Hazira and Thal completed more than 3300, 3190, 1415 and 680 days of continuous run without any reportable injury as of end December 2001.

Plant-wise performance is given below:

Performance of HWP, Manuguru was excellent during the period of the report and the plant exceeded the targeted production with significant reduction in specific energy consumption over the previous best achieved annual figure. The plant had taken major turn around of the exchange Unit -1 during September - November 2001.

HWP, Kota also exceeded the targeted production. The plant had taken major turn around during July-September 2001.

HWP, Hazira exceeded the targeted production with significant reduction in specific energy consumption over the previous best achieved annual figure.

HWP, Thal was affected due to power failures from Maharashtra State Electricity Board (MSEB) and non-availability of feed gas from the ammonia plants of Rashtriya Chemicals & Fertilizers (RCF), however the overall annual performance was good and the plant won jointly with HWP, Kota the Best Plant Performance Award for the year 2000-01.

HWP, Tuticorin was also affected due to delayed start up after the annual turn around on account of SPIC's Ammonia plant start up delays. However it is expected that the plant will achieve the annual targeted production for the year 2001-02.

Operation of the Heavy Water Plant at Talcher remained suspended due to closure of operation of the connected fertilizer plant of the Fertilizer Corporation of India on which the plant depends for feed stock and other inputs.

Revival of HWP, Baroda which is under shut down due to closure of old ammonia plants belonging to Gujarat State Fertilizer Corporation (GSFC) was taken up. The project is being executed in two distinct phases viz Modification to the existing Main Plant under Baroda Revival Project (BRP) Phase I and addition of Ammonia Water Front-end under BRP Phase II. Commencement of construction activities for the Ammonia Water Front end was inaugurated by Chairman, AEC in September 2001. Environmental clearance was received from the Gujarat State Pollution Control Board (GSPCB) for Ammonia Water Front-end technology demonstration. Construction activities for Phase I and Phase II are proceeding concurrently and overall physical progress with respect to Phase I is around 80% and that of Phase II is 35%. The project is expected to be operational by end of 2002.

Industrial relations in all the plants also remained very cordial.

Other Activities and Modifications

Diversification

As part of diversification activity, an R & D Pilot Plant facility for production of Di-2Ethyl Hexyl Phosphoric Acid (D2EHPA) was commissioned at HWP, Talcher. The facility is operational since July 99 and upto Dec 2001, 19.84 MT of D2EHPA was produced. The quality of D2EHPA meets the international standards and market acceptability for the product is now well established with the cumulative sale of 14.79 MT of D2EHPA under the brand name 'TOPS-99'. HWB has also taken up activity for development of another solvent viz Tri-Butyl Phosphate (TBP) which has important application in nuclear and wide application in non-nuclear fields. In view of this, HWB has already commenced work on setting up 60 MT/year capacity high purity TBP plant at HWP, Talcher. The plant would cater to the requirement of high purity TBP required by BARC. The plant is expected to be commissioned by August 2002. Meanwhile glassware facility for producing TBP on lab scale was commissioned at HWP, Talcher in May 2001 and so for 24 batches of TBP were synthesized, producing 103 kg of TBP. This exercise has provided important input for finalizing the process flow diagrams for 60 MT plant. Foundation stone for the TBP plant was laid by Chairman, AEC in July 2001 and the work on implementation of the scheme is progressing well.

Laying of Foundation stone for Tri-Butyl Phosphate(TBP) at Heavy Water Plant, Talcher

HWP, Manuguru has got a Captive Power Plant (CPP) which generates ash of the order of 800 MT/day. For disposal of the ash, ash pond capacities are to be augmented for continued operation of the CPP. Hence, extension of the ash pond at HWP, Manuguru for the second stage was taken

up for Pond-1 & 2. Extension to ash Pond-1 was completed and that of Pond-2 would be taken up during the X Plan.

ISO Quality system

HWP, Manuguru received ISO 9001 quality management system and ISO 14001 environmental management system certificates.

Work on implementation of ISO 9001 and 14001 in respect of HWP, Kota is progressing well and the certificates of accreditation are expected to be received shortly.

HWP, Tuticorin has started providing consultancy services for implementation of ISO quality management systems. This service is being provided to M/s.Hindustan Teleprinters.

Energy conservation

Motivation and awareness of the plant personnel with respect to energy conservation resulted in a further reduction of about 4.5% in specific energy consumption during the year. The Board has won the National Energy Conservation Award - 2000 (Certificate of Merit in Chemical sector) by the Ministry of Power. HWP, Kota was selected for National Energy Conservation Award - 2001 by the Energy Management Centre, Ministry of Power.

The motors of two hot tower transfer pumps have been made to function as Variable Speed Drive by employing frequency modulator which has helped in saving of power

The Heavy Water Board is giving a major thrust on energy conservation measures in all its operating heavy water plants for further reduction in the specific energy consumption in the plant. One of the schemes for recovery of waste heat from the effluent for pre-heating boiler feed make-up water required for the steam generators of captive power plant at HWP, Manuguru would be taken up during the first phase. In the second phase, it is proposed to use available surplus low pressure steam for generating refrigeration which would reduce refrigeration load on vapour compression machines. A similar scheme to utilize surplus steam at HWP, Tuticorin for reduction of refrigeration load on the existing Vapour Compression Machines is also being taken up. Both the schemes are expected to be completed during 2002-03.

Technology Transfer

The flue gas conditioning technology developed by Heavy Water Board and transferred to a private party, is being put to commercial use. A contract was received from the Gujarat State Electricity Board for providing this facility in one of their plants. Heavy Water Board will receive 10% of the contract value as royalty-cum-engineering fees.

A Memorandum of Understanding was signed with a private party for carrying out R&D work in the field of ammonia absorption refrigeration system with a view to improve the coefficient of performance of the system. The Pilot Plant set up for the same was commissioned and the data at the various parametric conditions were collected. The same is under evaluation. Further experiments were also planned for different mode of operation.

Automation

Computerisation of Heavy Water Board and plants was taken up for speedy transaction, creating data base, planning stores inventory, speedy transmission of information etc.. The computerisation project is operational now at Board's Central office and is in advanced stages at other heavy water plant sites.

Inauguration of Computerisation at Heavy Water Board

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