SUCCESS STORY OF BHUSAWAL T.P.S

BHUSAWAL THERMAL POWER STATION" is established near the Bhusawal Railway Junction of Central Railways. It is situated on the left bank of auspicious River "Tapi" in the Jalgaon Dist. of Khandesh Region of MAHARASHTRA State.

Khandesh has given many great Sants and dignitaries to our Nation. Hon. President of India, Smt. Pratibhatai Patil, being from Jalgaon District, her Excellency is popularly known as "Khandesh Kanya".

Bhusawal Thermal Power Station is one of such gems, of Khandesh, which is playing a significant role in the overall development of our country by producing electricity, since inception of its first unit in the year 1968. It had a glorious record of excellence for many years but it started declining subsequently. Year 2007 was the worst period in the history faced by BTPS and the glory of excellent performance was turning into the event of past, when every thing changed in the month of May 2007. Bhusawal Thermal Power Station snatched the "Best Performance Award" continuously during June 2008 and June 2009 respectively.

THE CHANGE HAS NOT COME BY SHEAR FACTOR OF LUCK OR CHANCE, MAJOR MODIFICATIONS OR INTRODUCTION OF NEW TECHNIQUES, CHANGE OF WORK FORCE OR ITS RIGOROUS TRAINING, BUT IT IS THE RESULT OF "CHANGE IN THE WAY OF WORKING" of the same staff with the same machineries.

"**THOUGHTFUL PLANNING**", **TAKING, DECISIONS** in consultation with all the concerned upto the grass root level, **TRANSFER OF IDEAS** by the Top Management **UPTO THE GRASS ROOT LEVEL** in correct and proper perspective, **INSPIRING** the complete chain to proceed forwards to achieve the goals backed by the **TEAM SPIRIT AND DEVOTED EFFORTS** of all employees of Operation and Maintenance, Contractors and their Labours, Section Heads, Top and Middle Management officials, whole hearted support by the Corporate Office and excellent working of General Administration and Accounts, Security, Safety, Welfare Section and positive support from all Unions at BTPS etc. is **THE ONLY SECRETE**, **IN THE ROOTS OF THIS SUCCESS STORY OF** Bhusawal Thermal Power Station, which has turned the **Dark Phase of 2007**, of history into the **PRESENT GOLDEN PHASE OF 2008 AND 2009.**

i) HISTORY OF BHUSAWAL THERMAL POWER STATION

Unit-I 62.5 MW; 41 years back.
Siemens Germany Make
Commissioned in 1968

Unit-II- 210 MW; 30 Years back
BHEL Make Commissioned in 1979

Unit-III- 210 MW; 29 Years back
BHEL Make Commissioned in 1981

Thus All the Present Units of BTPS Have Completed Their Designed Life By Now.

The construction work of 2X500 MW Thermal Power Stations at Bhusawal is in full swing and are planned for commissioning in the years 2010-2011.

The path to this change was not covered with any red carpet. Usual problems associated with prolonged used of the machineries and becoming the old machineries of obsolete due to advancement in technology are associated with every unit of BTPS but they are maintained and kept under operation by the good planning and timely action etc.

Some of the major problems faced by BTPS and the methodology adopted are detailed below for example.

Due to advancement of technology during recent year the Unit-1 became obsolete and the manufacturers have stopped the manufacturing of spares etc. long back. This has resulted in difficulties in procuring the desired spares and also proper personnel to carry out the repairs modifications and alterations etc. even than this unit is performing excellently under the guidance of BTPS management and interest taken by the working staff.

- **FREQUENT CONDENSER TUBE LEAKAGES OF UNIT # 1**: -

  There was a chronic problem of frequent leakages of condenser tubes on the turbine side upto the year 2005. M/s Siemens Germany, the original Manufacturers were reluctant to carry out the required since the technology has became obsolete and the manufacturers have stopped the manufacturing of spares etc. long back. This has resulted in difficulties in procuring the desired spares and also

proper personnel to carry out the repairs modifications and alterations etc. and they have quoted exorbitant cost for repairing. M/s BHEL did not respond to our requests, being Non-BHEL Unit. Under such circumstances, the tubes were replaced by new tubes of **Admirably Brass** in the month of July 2006.

❖ **FREQUENT FAILURES OF THRUST PADS AND AXIAL SHIFT**: -

There were frequent failures of thrust pads and axial shift. M/s E. M. Services, Nagpur tried to rectify the problem during 2006 Capital Over Haul, but the efforts were of no success and the thrust pad failed due to load variation and T.A. set tripped on axial shift parameters during May-07. **LOCAL STAFF OF UNIT-I**, **TURBINE MAINTENANCE** took the challenge to repair the thrust pad on the basis of knowledge gained by observing the working of previous agencies, and under the guidance of BTPS Management, completed the highly skilled job of putting the T.A. set into service within 5 days. The problem of thrust pad failure and axial shift has not surfaced since **May-07** till to day even after passing of nearly two years.

❖ **FREQUENT FAILURE CRUSHING RINGS: -**

Frequent failure of crushing rings was another chronic problem faced by Unit#1 of B.T.P.S. M/s. ABB Germany the manufacturer of Boiler, had cut off the supply of coal mill spares since 1997. Hence the required spares were got developed by BTPS through M/s ATA Baroda. At present there is no problem of the spares and the availability of coal mill has been increased.

❖ **DEVELOPMENT OF COAL MILL LUGS:** -

According to the guidelines issued by Hon. Director (Op) BTPS has developed the coal mill lugs by hard facing. This has increased the life of the crusher rings and ultimately availability of coal mills together with savings in the maintenance cost.

❖ **AOH OF UNIT # 1 IN SCHEDULE TIME:** -

The AOH of both the Boilers, including attending the tube leakages internally was carried out by BTPS within scheduled time.

THUS OVER COMING ALL THE ODDS SUCCESSFULLY, UNIT-I OF BTPS HAS ACHIEVED 88.38% PLF DURING JUNE-09.

❖ **LPT ROTOR BLADE FAILURE OF UNIT # 3, DURING AUG 08: -**

In the month of Aug 08, there was failure of LPT rotor blade of Unit # 3. Spare rotor in working condition was not available at any Thermal Power Station or BHEL. Hence the scrapped rotor available at Nashik Thermal Power Station was procured and the works of replacing all the missing / damaged satellite strips, all the internals were removal and checking of clearances of complete LPT rotor, was carried out and put in position after aligning / reaming and honing of coupling holes etc. during synchronizing of the T.A. set the vibrations of bearing no. 6 were observed to raise upto 130 Microns at 600 rpm. M/s E. M. Services, suggested reopening the generator of inspection, but with the help of TIC staff of Nagpur, the machine was rolled and successfully synchronized by the Turbine Maintenance Team of BTPS on 5th Sep 2008.

Even after all best efforts, 7 days were required for the bringing the rotor from Nashik. This first time Task has been completed within a record time of 17 days.

Perfect planning from selection of proper agency to obtaining approvals from various authorities at corporate offices, taking correct decisions by the Chief General Manager BTPS backed by the whole hearted support extended by officers at corporate office, and all the officers and workers, Contractors and their workers working at BTPS have lead to this path of success.

❖ **REPAIRING OF DAMAGED ROTOR: -**

The time require for the replacement of LPT rotor could have been reduced if, a spare rotor in working condition would have been available. Learning this lesson, BTPS did not stopped just by completing the immediate work but thought of repairing the damaged rotor for immediate use in case of failure at any other Power Station. Though there work many hurdles in procuring 31st stage blades. The blades were required to be procured from Chandrapur, Koradi and Nashik Power Stations in addition to the blades made available by M/s. BHEL, Haridwar. The

cooperation extended by various Thermal Power Stations as well as M/s BHEL, Haridwar has also helped in achieving this goal.

❖ **HIGH MAINLINE OIL TEMPERATURE (LUB) OF UNIT # 3: -**

Unit # 3 of BTPS had the problem of high mainline oil temperature (lub) during Feb-08 forcing in withdrawal of the Unit. The problem was analyzed as due to deposition of hard scale inside the tube nest. The cooler cleaning has been done in stages and as a precautionary measure and special attention was given towards the lub oil cleaning during Feb- March 09. This has resulted in smooth working of this Unit this year.

❖ **LESS FLOW OF BFP- 3A DURING MARCH -09:**

During March -09, BTPS faced the problems of less flow of BFP 3 A and very high vibration at main pump at DE and CE sides. The first stage impeller vanes were also damaged due to stacking of foreign material.

PROBLEM OBSERVED: -

i) High vibrations
ii) Balancing leak of pressure on higher side.
iii) Feed flow less than 350 T/Hr.
iv) Abnormal sound from duct side
v) Coupled end seal leakage

All the above defects were rectified departmentally by spending just Rs. 3.75 Lakhs within a short period of 30 days and the current requirement, which was 276 Amp on 1/3/09 for BFP flow of 360 t/hr has been reduced to 262 Amp on 2/4/09 for 360 t/hr BFP flow, **thus savings 5.07% in current consumption has been achieved.**

❖ **COLLAPSE OF OUTLET CANAL ON 25/11/2008 :-**

Apart from the routine problems of less coal supply and that too of poor quality, wet coal during monsoon etc. BTPS received shock of sudden collapse of outlet canal on 25/11/08. Which could result into withdrawal of all the three units but by taking correct and timely action, the generation of 2 X 210 MW units was retained interrupt and possible damages to the inlet canals which are located very close to the outlet canal in the affected region, was avoided. Also the rectification of outlet canal involving @ 7050 Cum of earth work and RCC lining of 28 M of canal bed etc. was carried out within a record period of 11 days and the generation of Unit-1 has been restored on 5/12/2008. This was achieved with the help of agencies working for 2X500 MW BTPS Expansion Project.

❖ **RAW WATER LEAKAGE NEAR G.S; C.T. FAN UNIT# 3: -**

There was heavy leakage of underground pipe line near G. S; C. T. Fan Unit # 3. The lines being underground, the location of leakage was not traceable without opening of the pipes by excavation about 100 M^3 of raw water/hour was getting wasted due to this leakage. The location of leakage was traced after proper planning and by spending less than Rs. 5000/- the leakage was rectified.

Also as per the terms of agreement with Irrigation Department BTPS is required to be pay the water charges for 90% of reserved quantity or actual consumption of water, which ever is more. By proper monitoring of reserved quantity of water, and attending such other leakages, the water charges which were of the order of 90-100 lakhs / month have been reduced to 60-65 lakhs per month and an amount of Rs. 29504600/- has been saved during 2008-09 against water charges in addition to the savings in the auxiliary consumption of power, by one pump at RWP and its maintenance cost, since instead of running two pumps to meet the requirement of BTPS only one pump became sufficient to fulfill it.

There has been no boiler tube leakage in Unit # 3, since 25/05/2008 till today, and 100% availability of all the Units during April 09. The Unit # 2 was also available continuously for 155 days from 27/02/2009 upto 31/07/09, when due to non availability of the proper work force during strike of all the major unions this set has tripped and could not be brought on load immediately. These are some of the shining records set by BTPS recently.

The management at BTPS is not satisfied just with the glory of above achievements, and is committed to set new records by further improvement in the working of the

existing units, and ensuring better reliability of uninterrupted power generation at reduced cost of generation by further improving in the working procedures etc.

PRO, Bhusawal TPS

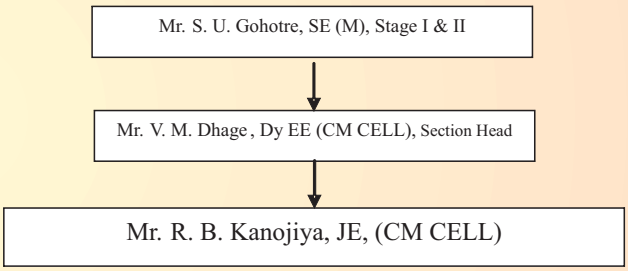
BEST PRACTICES

NAME OF SECTION: CONDITION MONITORING CELL, STAGE-I&II

- **Brief working:** Measure vibration of all critical auxiliary using SKF CMXA 70 FFT vibration analyzer using system analyst software from unit-1 to 7 CSTPS, MSPGCL, Chandrapur. We measure and analyses vibration of auxiliaries in different Power Station of Mahagenco in coordination with TI & C, Nagpur. The Power Station are
  - Koradi Thermal Power Station, Koradi,
  - Bhusawal Thermal Power Station, Bhusawal,
  - Nashik Thermal Power Station, Nashik.

  We also extend our services to M/s Bharat Heavy Electrical Limited & M/s Maharashtra Electrosmelt Limited.

- **Working Staff Structure:**



- Scope of work: To carry out vibration measurement and analysis activities for unit-1 to 7, CSTPS, MSPGCL, Chandrapur as listed below