1.0 INTRODUCTION

A study was conducted by CPRI for MERC in the years 2008-09 and 2009-10 to assess the level of achievable technical performance parameters for all stations of MSPGCL except the newly installed 250 MW units. CPRI has recommended schemes into three broad categories (based on the time required to implement and the cost involved) to meet the targeted performance parameters:

- Immediate : below 12 months
- Medium term: 2-3 years
- Long Term : over 3 years

The objective of the study is to assess the implementations of various measures for improvements in achievable performance parameters at Maharashtra State Power Generating Company Ltd (MSPGCL) thermal power stations.

The stations are included in the following order:

This report pertains to the study of Parli TPS (Units 3-5).

1.1 Design unit heat rates (UHR) & station heat rates (SHR)

Table 1 (see Annex 2) gives the design UHRs and SHRs of the station for the units under study. Table 2 (see Annex 2) gives the capacity and age of units.

1.2 Performance against targets

Table 3 gives the petitioned, approved and achieved key performance indices (KPI) including SHR for FY 2009-2010, FY 2010-2011 and FY 2011-2012 (till date) for the station under study.

2. STUDY & FIELD VISITS

The study of the MSPGCL is taken up in Parli TPS during January 3rd-4th week 2012.

3. STUDY & FINDINGS

3.1 Assessment of the overall action plans for implementation of measures and benefits projected and accrued

The measures are classified as:

i. Immediate measures without financial implication (See Annex 3)
ii. Immediate measures with financial implication (See Annex 4)
iii. Medium term measures (See Annex 5)
iv. Long term measures (See Annex 6)

The schemes have been classified into 14 areas for better project management as given in Table 4 (Annex 2).

The summary of the implementation for TPS is given as follows:

	FI	**Implemented with FI**	**In Process with FI**	**To be implemented FI**
Total Immediate Term	174	40	45	89
Total Medium Term	69	12	21	36
Total Long Term	19	4	2	13
Total FI	262	56	68	138

	NFI	**Implemented with NFI**	**In Process with NFI**	**To be implemented NFI**
Total Immediate Term	143	75	0	68
Total Medium Term	10	10	0	0
Total Long Term	1	1	0	0
Total NFI	154	86	0	68

	FI + NFI	**Implemented with FI +NFI**	**In Process with FI+NFI**	**To be implemented FI+NFI**
Total Immediate Term	317	115	45	157
Total Medium Term	79	22	21	36
Total Long Term	20	5	2	13
Total FI	416	142	68	206

The percentage implementation is 34 %.

The benefits accrued by the station are as follows:

- **Efforts must be made to ensure that the drop in monthly GCV between the receiving end and bunker is within 100 kcal/kg-** Efforts are taken to bunker fresh coal or first come first serve basis. Difference in monthly GCV between the receiving end and bunker is reduced.

- **The time constant for online repair of steam leaks must be restricted to a few hours and not wait for the next shut down clearance**- Online steam leakage attending work is carried out within few hours of the leakage & shut down of the Unit is avoided for these works. Hence, heat rate improved & DM water consumption reduced.
- **Video conference facilities of MSPGCL to be put to effective usage for HO-station and Station to station meetings/discussions. Video conference facilities of MSPGCL to be put to effective usage for HO-station and Station to station meetings/discussions**- Video conference facilities of MSPGCL are effectively used for discussions/meetings at TPS level to HO level & TPS to TPS level. With this facility OCM meetings, NTPC coordination committee meetings, SAP meetings, etc. are conducted effectively.
- **Arresting leakages in Mills-** leakages in Coal Mills are reduced by implementing zero coal leakage policy. Temporarily it is attended by salicoat coating & then by patch welding. Most of the worn-out coal pipes & bends are replaced in AOH/COH. This improved working environment of the employees & better house-keeping.
- **Reducing air leakages in compressed air line-** Air leakages in compressor air line are attended immediately which reduced the overloading of the compressors & availability of compressors increased.
- **Cleaning of lube oil coolers of all HT equipments-** Cleaning of lube oil coolers is carried out during AOH/COH which resulted in maintaining lube oil temp. of HT equipment.
- **Arresting air leakages and flue gas leakages in ducts**- Leakages in flue gas ducts are arrested /minimized by duct patching. This resulted in reduction in ID loading & loadability of the Unit improved.
- **Improving the BFP,CEP, ID Fan, PA Fan, FD Fan efficiency by overhauling of pump & motors-** Efficiency & availability of the auxiliary improved, failure of the auxiliary reduced.
- **Increasing dry fly ash evacuation system-** This resulted in fulfillment of Ministry of environment's (MOE) requirement & Dry Ash utilization increased to 67%. This also reduced Raw water consumption & Auxiliary power consumption.
- **'Zero steam leak tolerance' declaration-** Steam leakages are attended on priority resulting in reduction in DM water consumption & improvement in heat rate.
- **Safety door on L & R sides of boiler at entrance of 2nd pass to prevent boiler over pressurization Unit-3, 4-** Furnace explosion & minor pressurization of Boiler provided making safe working environment.
- **Re-design of reject gates of mills U-3, 4**- Existing system of M/s Macawber is replaced by pyrite hopper, due to which clinker formation & reject mouth choke up is reduced upto 5% resulting increase in mill availability.
- **Burner mouth panels may be inspected during each outage and surface replenished periodic intervals U-3, 4 & 5-** L&T TAFA Arc coating done, due to which BTL at these zones have come to zero & availability of the Unit improved.

- **During overhaul all the gas flow guide vanes, direction vanes, diversion baffles are to be inspected. Materials of diversion baffles must use alloy steel with overlay of hard materials like silicon carbide or tungsten carbide for U-3, 4 & 5-** Guide vanes, direction vanes & direction baffles were inspected during overhaul, whatever the damages are replaced by new one. After replacement equal flue gas flow through four ducts is established. Due to this SPM levels through chimney are controlled.
- **100 % availability of boiler lifts for round the clock monitoring of the boiler elevations especially drum and pent house levels are to be immediately repaired.(Unit 5)-** Due to availability of the lifts transportation of heavy materials/Gas cylinders has become easier. This also reduced valuable time, avoided fatal accidents & damages to the structure. This also helped operation staff to take round of the Boiler regularly.
- **Transformer management-** During AOH/COH preventive maintenance of the Transformer is carried out. During this process oil leakage is attended, preventive maintenance is carried out & oil filtration is done. Oil sample is sent to ERDA twice a year for testing. As per the reports corrective action taken. E.g. Unit -5 UAT sent for rewinding as per the ERDA reports.
- **Provision of ultrasonic level indicators for all fuel oil tanks-** Oil level monitoring system by guided wave contact type radar level transmitters commissioned for three FO tanks & two LDO oil tanks on date : 18 Nov 2010.

  Previously mechanical float type level indicators were installed for all FO & LDO tank level measurement. In this type of level measurement there were possibilities of wrong level measurement due to

  1. Sticking of float / its rope at any location.
  2. Breaking of rope.
  3. Jamming of pulley.
  4. Puncturing of float.
  5. Reading error due to low resolution of reading scale.
  6. Manual reading error.

  These factors lead to misleading oil consumption calculations.

  These problems overcome by installing guided wave contact type radar level transmitters. Now online oil consumption for station is available.

- **Knowledge management portal**- Helped to display General circulars, Financial/Technical performance data to the employees. It also provides MAHAGENCO updates, ISO & DOP document details & various web links.
- **CW Pump 5 B**- Shaft sheared off & pump was not available since Oct.2010. Its shaft was not available with the section.OEM required six months delivery period for the supply of the shaft.Therfore, the shaft was developed with the help of Reverse Engineering from M/s Disha Industries, Aurangabad & work was completed in a month. The cost of OEM shaft is about 6 lakhs whereas & developed shaft costed 3.15 lakhs (saving of 2.75 lakhs & 4 months period.)
- **Condenser tube acid cleaning followed by bullet shot cleaning followed by Condenser tube surface painting by brushable ceramic coating; 40 % condenser tube replacement Unit-3, 4 & 5-** Condenser

vacuum improved, LPT exhaust temp. normalized & loadability of the Units improved.

- **Replacement of rear RH coils Unit-3**- Reheater coils replaced in April 2010.No Tube leakages in the Reheater zone since then. Availability of the Unit increased, Better heat transfer & shut down period reduced. Before that there were two tube leakages in Reheater zone during the financial year 2009-10.
- **Replacement of LTSH coils Unit- 3**- LTSH coils replaced in April 2010.No Tube leakages in the LTSH zone since then. Availability of the Unit increased, Better heat transfer & shut down period reduced. Before that there was one tube leakage in LTSH zone during the financial year 2008-09.
- **Partial replacement of ECO coils Unit- 5-** Eco. coils replaced partially in Dec.2010.No Tube leakages in the Eco. zone since then. Availability of the Unit increased, Better heat transfer & shut down period reduced. Before that there were two tube leakages in Eco. zone during the financial year 2008-09.
- **Replacement of platen Water wall and LTSH coils Unit- 4-** LTSH coils replaced in July –Aug. 2009. No Tube leakages in the LTSH zone since then. Availability of the Unit increased, Better heat transfer & shut down period reduced. Before that there was one tube leakage in LTSH zone during the financial year 2008-09.
- **Replacement of electro mechanical relays for generator protection may be replaced by group solid state numerical relays. - Implementation Repot** :

Old electro mechanical relays for generator protection system are replaced by Areva make MICOM P343 Generator Protection Numerical Relays and modifications in generator protection system are done accordingly.

Implementation date for Unit No 3	Oct. 2005
Implementation date for Unit No 4	Dec. 2007
Implementation date for Unit No 5	Dec. 2010

3.2 Assessment of the action plans for implementation of Immediate measures (without financial implication) and benefits accrued

The summary of implementation of the immediate measures (without financial implications) are as follows:

Immediate Term (NFI)				
Functional Group	**Stage-II NFI**	**Implemented with NFI**	**In Process with NFI**	**To be implemented NFI**
P-1	6	2	0	4
P-2	1	1	0	0
P-3	7	6	0	1
P-4	0	0	0	0
P-5	7	4	0	3
P-6	0	0	0	0
P-7	34	15	0	19
P-8	31	12	0	19
P-9	6	3	0	3
P-10	15	13	0	2
P-11	19	5	0	14
P-12	2	1	0	1
P-13	12	10	0	2
P-14	3	3	0	0
Total Immediate Term	**143**	**75**	**0**	**68**

The percentage implementation is 52 %.

Operational changes: Operation in sliding pressure operation in normal operation and use of ATRS during starts has been implemented.

Operational optimization: Operational optimization is being done through monitoring the parameters through GCR. A strong program must be launched for operational optimization (OO) for measure-control through operations-control through maintenance-measure based on the PDCA cycle with close intervals of monitoring and control to 4-6 hours. There should also be close monitoring of DM water make up which reflects on the steam lost through the system.

Leak reduction: Leak reduction is a critical area for the station in improving the performance. Importance must be given to quick response to leaks in steam, water, coal, ash, etc.. A strong leak reduction plan must be in place.

Cleanliness: A cleanliness improvement must be put into place to maintain the cleanliness level from coal dust, ash, etc.

3.3 Assessment of the action plans for implementation of Immediate measures (with financial implication) and benefits accrued

The summaries of implementation of the immediate measures (with financial implications) are as follows:

Immediate Term (FI)				
Functional Group	**Stage-II FI**	**Implemented with FI**	**In Process with FI**	**To be implemented FI**
P-1	19	0	14	5
P-2	3	0	2	1
P-3	5	0	5	0
P-4	4	1	2	1
P-5	4	0	4	0
P-6	5	0	0	5
P-7	2	1	0	1
P-8	26	13	3	10
P-9	1	0	0	1
P-10	40	11	5	24
P-11	8	0	0	8
P-12	21	3	1	17
P-13	32	11	9	12
P-14	4	0	0	4
Total Immediate Term	**174**	**40**	**45**	**89**

The percentage implementation is 23 %.

Hardware changes: many hardware changes like changing of heat exchangers, boiler coils, installation of VFDs, etc., have been successfully implemented.

IEDs: A decision is taken to procure only digital smart and intelligent transmitters and sensors in preference over analog systems. The same is being implemented.

Energy efficient option Vs. maintenance comfort: Whenever there is some maintenance inconvenience on account of installation of energy efficiency measures or reduction of additional redundancy, the same may be viewed critically and a

balanced view of the benefits vis-à-vis the inconvenience may be taken before a decision is taken on deferment of a measure.

3.4 Assessment of the action plans for implementation of medium term measures and benefits accrued

The summary of implementation of the medium term measures is as follows:

Medium Term (FI)				
Functional Group	**Stage-II FI**	**Implemented with FI**	**In Process with FI**	**To be implemented FI**
P-1	0	0	0	0
P-2	0	0	0	0
P-3	0	0	0	0
P-4	0	0	0	0
P-5	3	0	0	3
P-6	0	0	0	0
P-7	0	0	0	0
P-8	3	0	3	0
P-9	0	0	0	0
P-10	0	0	0	0
P-11	1	0	0	1
P-12	10	3	5	2
P-13	51	9	12	30
P-14	1	0	1	0
Total Medium Term	**69**	**12**	**21**	**36**

The percentage implementation is 18 %.

Traditional replacements: Replacements must not be based on traditional replacements but energy efficiency options must be used because over a period of 20-25 years many new energy efficient hardware options have been evolved. Replacement of old and obsolete technology may not give the full benefits.

Coal weighment: The in motion weigh bridges are yet to be installed. Since they are low value items, the same may be given priority. The belt weighers are yet to be installed. Since they are low value items, the same may be given priority. The gravimetric feeders of rotary type or belt type are yet to be installed. Since they are high value items, some delay can be expected. However, the same needs to be expedited.

Steam path audits*:* Steam path audits have not been carried out during COH. The same may be rigorously followed to quantify the losses and restore the steam path to normalcy for getting the benefit of improved UHR.

3.5 Assessment of the action plans for implementation of long term measures and benefits accrued

The summaries of implementation of the long term measures are as follows:

Long Term (FI)				
Functional Group	**Stage-II FI**	**Implemented with FI**	**In Process with FI**	**To be implemented FI**
P-1	0	0	0	0
P-2	0	0	0	0
P-3	0	0	0	0
P-4	0	0	0	0
P-5	0	0	0	0
P-6	0	0	0	0
P-7	0	0	0	0
P-8	0	0	0	0
P-9	0	0	0	0
P-10	0	0	0	0
P-11	0	0	0	0
P-12	3	0	0	3
P-13	15	4	2	9
P-14	1	0	0	1
Total Long Term	**19**	**4**	**2**	**13**

The percentage implementation is 21 %.

3.6 Reasons for delay, root cause of delay in implementation.

Reasons for delay are as follows:

- Many recommendations involve adoption of new technology requiring detail study took considerable time for the TPS:
  - Hard Coating of wear components.
  - DCS of units.
  - Smart Soot Blowing.
  - ESP up gradation.
  - Online Condition Monitoring.
- Detailed study for recommendations involving high capital investment took time for the TPS:
  - LPT retrofit.

  - DCS of units.
- No response / Delay from OEM/Suppliers in spite of follow-ups:
  - Energy efficient cartridges, although order is placed on BHEL delay in receipt of material.
- Clubbing of recommendations/schemes in R&M of Units:
  - Since the R & M for unit 3 is in pipeline, many of the schemes are clubbed in R & M for convenience in implementation.
- Conditions of implementation of Scheme only on success at other TPS.
  - Combustion Optimization.
- Implementation of certain schemes only during COH/AOH.
  - Air Heater Work.
  - DCS of units.
  - ESP Improvement.
  - Boiler Heat Exchanger replacement.
  - Replacement of Hydromotor Valves by Pneumatic Valves for Unit - 3, 4 & 5
- Procedural delays due to strategic decisions involving high payback period.
  - Schemes like VFD.

3.7 Avoidable delays in implementation.

Preparedness for implementation: The station was not initially geared up for implementation of schemes. The gearing up has taken time. Presently, it is considerably improved in the preparedness for implementation of schemes.

Mentoring of the younger engineers by senior engineers: A process of mentoring and guidance to the younger generation of engineers is required from the highly experience senior engineers in the implementation process.

Excessive reliance on OEM: While the views of the OEM are indisputably of primary importance to the operation, maintenance and safety of the plant, lack of commercial interest in many cases has led to the conclusion that the OEM is not favorable to a particular scheme. This has resulted in e avoidable time delay.

Monsoon preparedness: Better monsoon preparedness could have resulted in some time saving.

Manpower management at the station level: Placing persons with aptitude and skill for implementation program or higher rigor of training of the section level engineers in the implementation process in understanding the mechanism of successful implementation of a scheme.

What if ? –apprehension: The fear of things going wrong and individuals not taking responsibility was present for some period. Now, MSPGCL has formed groups/ expert teams, etc. for different schemes rather than laying onus for implementation on individuals. Many more such groups/ expert teams cutting across the stations of MSPGCL need to be formed to collectively involve in implementation

of the schemes in areas of boiler, turbine, C & I, etc., through technology assessment and technology evaluation.

Management model: The management model for implementation involved the traditional procedures which take time. Procedural delays could be minimized by operating in the ***fast track*** or ***mission mode*** for implementation, demonstrating and achieving the objectives of the schemes.

Streamlining of purchase cum authorization processes: Streamlining at the station level by cutting across the hierarchy/proper channel route for movement of papers and approvals (within the MSPGCL framework of rules), could have resulted in reduced process time.

Vendor development program: A strong vendor development program involving a search for prospective vendors, study of the technological options available in the market, preparation of generalized specifications without giving undue advantage to any one vendor, detailed study of costs including POs issued to the vendor from other organizations, etc., needs to be in place for successful procurement and implementation. Haphazard vendor development has resulted in time delay in the actual procurement process in the form of non-responsiveness, non-conformance, re-tendering, etc.. This results in process delay.

Apprehensions of pass through: These have got to be clarified at an early date.

Measures with intangible or tacit benefits: These have suffered the most because of inability to convince the internal controllers. Life cycle approach could be a possible solution.

AOH & COH: These must be done as per schedule at the frequency of annually and once in five years respectively or as per any drawn out schedule. Skipping of overhauls results in degradation.

Uneven inter-station DPR initiating process: Co-ordination of common schemes required at different power stations got delayed because of different times taken by different stations. Some stations have taken almost 6 months more than others. While stations like Chandrapur, Khaperkheda and Nasik have shown a proactive stand to implementation stations like Parli have been slow.

High processing time: In spite of considerable improvement in procurement processing, the processing time is still much on the higher side for which station level process of procurement and authorization need to be re-looked. Higher procurement processing time and limited number of items identified under capex has led to avoidable delays.

Ambiguity created by E-R & M: The decisions to go in for E-R & M has created an ambiguity whether to continue with the medium term and long term measures in the present or to club it with E-R & M. In cases where E-R & M is envisaged, it is clubbed with E-R & M.

Full time central monitoring and time frames: Though central monitoring was being done to some extent, strong HO monitoring is required for control of the implementation processes with time frameworks. The time frames have not been set or time targets have not been given for implementation of the simple, medium term and long term measures. As a result the progress is differential in different stations.

Success solution in one station is not translated to the others: The success solution in one of the stations has not been transferred or translated into best practice for the others.
Co-ordination in implementations between two sections: In the case of technologies which involves implementation between two or more sections and their integration or inter-section co-ordination was not done by any one section, as a result of which the implementation was one sided.

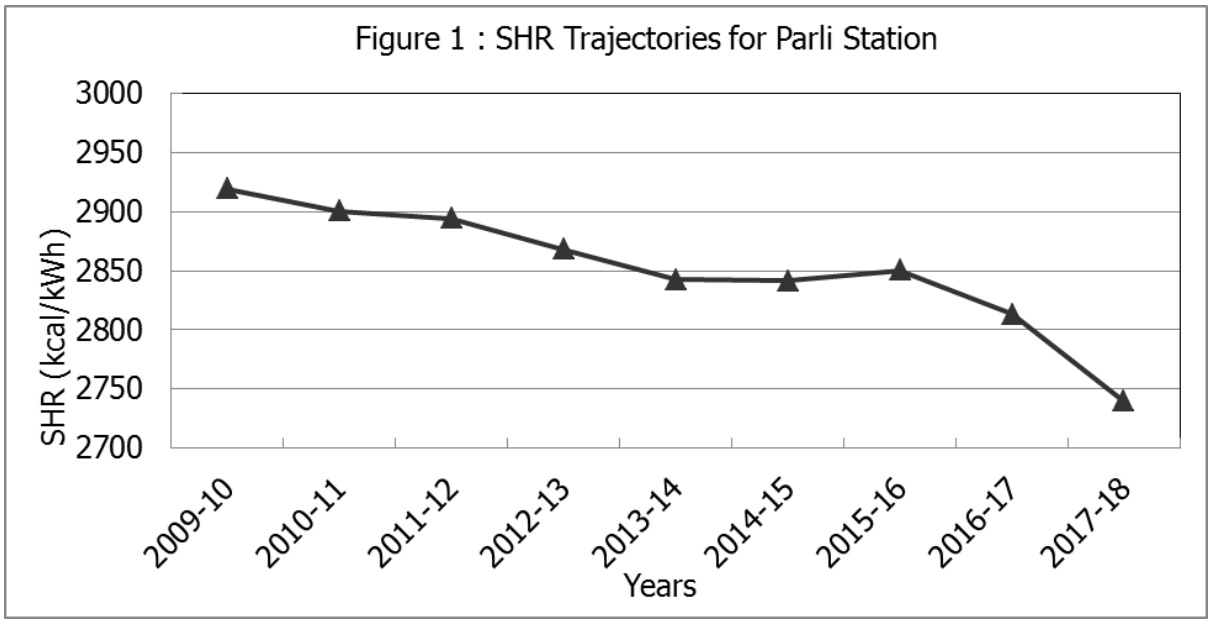
Higher involvement of top management or mentoring by seniors to juniors: Mentoring would have reduced some delay.

4. REVISION OF PERFORMANCE TRAJECTORIES

4.1 Test SHRs and degradation rates measured and revised performance trajectories

Annual overall station heat rate			
Unit No.	**Capacity**	**Annual UHR**	**UHR x C**
	MW	**kcal/kWh**	
1	20	3749.5	74990
2	20	3618.9	72379
3	210	2931.4	615600
4	210	2838.5	596081
5	210	2842.7	596959
Station	SHR	kcal/kWh	**2919.4**
Stage 2			2870.9

Station	Overall Station
Degradation rate as per CPRI test TG HR	
	%/year
Parli	0.31



Year	Previous year heat rate, kcal/kWh	Degradation @ 0.31 % / year	Immediate measures	Medium term measures	Long term measures	EER&M benefit on SHR, kcal/kWh	Annual overall SHR, kcal/kWh	Comments
2009-10	2919						2919	[1]
2010-11	2892	9.1	0.0				2901	[2]
2011-12	2889	9.1	-4.0	0.0			2894	[3]
2012-13	2894	9.1	-35.0				2868	[4]
2013-14	2868	9.1	-35.0	0.0			2842	[5]
2014-15	2842	9.1		-10.0	0.0		2841	[6]
2015-16	2841	9.1			0.0		2850	[7]
2016-17	2850	9.1			0.0	-46.4	2813	[8]
2017-18	2813	9.1				-82.5	2740	[9]

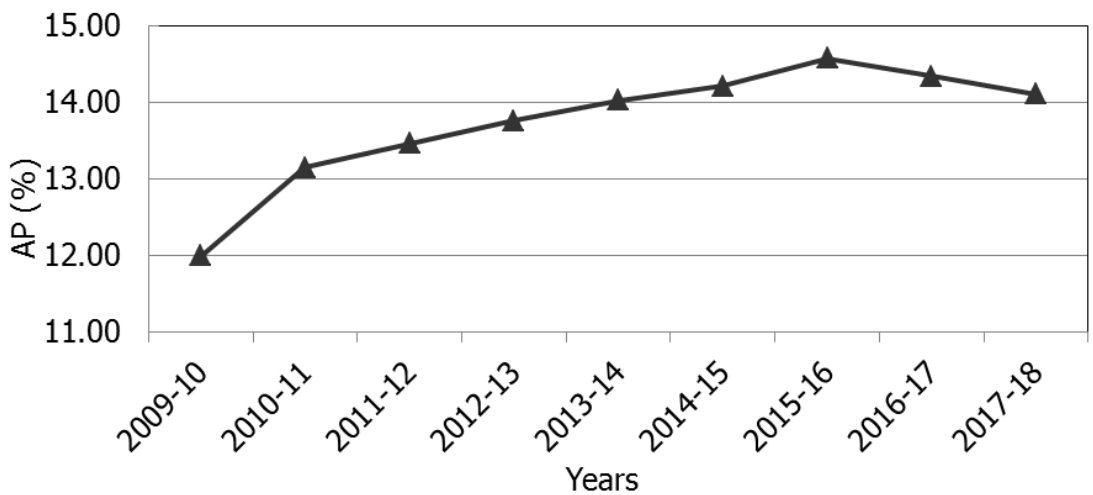
Comments	Comments
[1]	Date of test on 02 - 09 - 2009; Units 1 & 2 still in operation
[2]	Unit 1&2 operated till sep 2010 & aug 2010, Unit 3,4&5 operated for 12 months
[3]	From test dt degrdation for 2 years @ 0.31%
[4]	
[5]	
[6]	
[7]	
[8]	Unit 3 R&M complete by Sept-2016
[9]	Unit-4 R&M completed by Dec-2017

Parli		Projections	
Unit No.	2010-2011		
st 1	2919	9	
st 2	2871	12	
		2891.57	2891.57

Parli	R & M	Projections	
Unit No.	2016-2017		
3	2618	6	
4	2850	12	
5	2850	12	
		2803.60	-46.40
Unit No.	2017-2018		
3	2618.0	12	
4	2618	3	
5	2850	12	
		2721.11	-82.49
Unit No.	2018-2019		
3	2618.0	12	
4	2618.0	12	
5	2850.0	12	
		2695.33	-25.78
Unit No.	2017-2018		
3	2618.0	3	
4	2618.0	12	
5	2618.0	12	
		2618.000	-77.33

4.2 Test auxiliary power measured and revised performance trajectories

Figure 2 : AP Trajectories for Parli Station



Year	Previous year AP, %	Immediate measures	Medium term measures	Long term measures	Miscellaneous factors	EER&M benefit on AP, %	Annual overall AP, %	Comments
2009-10	11.99						11.99	[1]
2010-11	11.99	0			1.15		13.14	[2]
2011-12	13.14	-0.05			0.364		13.46	[3]
2012-13	13.46	-0.06			0.364		13.76	[4]
2013-14	13.76	-0.1			0.364		14.02	[5]
2014-15	14.02	-0.18			0.364	0	14.21	[6]
2015-16	14.21				0.364	0	14.57	[7]
2016-17	14.57				0.364	-0.6	14.34	[8]
2017-18	14.34				0.364	-0.6	14.10	[9]

Comments	Comments
[1]	Present calculations are based on metering at LT end for GTR this does not includes GTR losses which are worked out to be @0.26% of the total auxiliary power. After commissioning of ex-bus ABT meters this is likely to be reflected in the form of higher auxiliary power.
[2]	same as above. Also Common Loads which were approtioned to Two units of 20 MW after decommissioning of these unit has fallen back on station, this load is works out to be 0.024% in AP of station in 2010-11.
[3]	AP loading due to decommissioning of old unit as above. To arrive at actuals GT losses 0.34% is added for Aux. Power.CPRI computed 0.25 %; measured: 0.594 %.
[4]	U3 DVR, BFP- Cartridge, BFP Recirculation valves, transformer managment. GT loss uncontrollable as above
[5]	BFP- Cartridge, BFP RVs, VFDs. GT loss uncontrollable as above
[6]	GT loss uncontrollable as above
[7]	GT loss uncontrollable as above
[8]	Unit 3 R&M complete by Sept-2016. GT loss uncontrollable as above
[9]	Unit-4 R&M completed by Dec-2017. GT loss uncontrollable as above

5. CONCLUDING REMARKS

i. Parli is somewhat slow in implementation because of its location and its distance from the other TPS clusters of MSPGCL.

ii. For many schemes implementation is done in one unit in a station as a pilot or one other pilot station, the benefits are divided by the overall station performance and hence show smaller savings.

iii. Measures of a non-financial nature such as operational optimization, leak reduction, minimizing DM water make up, cleanliness in the power house, etc., need to be taken more seriously and with vigour to achieve and sustain the heat rates.

iv. The installation of in-motion weigh bridges needs to be expedited.

v. Continuous mentoring and monitoring is required from the senior engineers in the plant and HO for implementing the measures and avoiding delays.

vi. The detailed progress and the trajectories are given in the text.

vii. The reasons for delay are due to initial time lost in gearing up for the program and uncertainties regarding the program. Now, the processes of implementation of schemes have been streamlined and progress is expected to be achieved. Strong monitoring would help in reduction of implementing time.

viii. The performance is not as per the original trajectories because the implementation program has been taken up on a pilot basis for one unit or unit station in many cases and afterwards proposed to be taken up in other units. Also, many medium and long term measures have been clubbed with R & M schemes which are going to be taken up in next few years. Hence the trajectories will be linked with these schemes.