

INDO – GERMAN ENERGY PROGRAMME

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R&M - Thermal sets



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Renovation & Modernisation Scenario in India – Thermal sets

- Life line of R&M business in the years to come in India would be 200/210/250/500 MW ageing thermal sets.
- BHEL is the OEM of 80% of the thermal installed capacity in India (about 66000 MW) hence better placed to take-up R&M of these machines in expeditious manner.
- BHEL has accomplished R&M of 10 sets of 110 MW/120 MW and other 17 sets of 110 MW/200 MW are under execution
- BHEL has formed an exclusive group (Spares and Services Business Group) for single point customer contact. The marketing is located at New Delhi and post ordering coordination is accomplished by 12 centres located in the country.

Renovation & Modernisation Scenario in India – Thermal sets

- BHEL has developed package for comprehensive R&M & up-rating of 200/210 MW, 130 ata cycle sets.
- BHEL is consolidating comprehensive R&M and up-rating proposal of 200/210 MW 150 ata cycle sets.
- BHEL has made presentations to all major utilities, highlighting the merits of R&M and up-rating proposals for efficient generation, reliability in operation, prolonged life of the equipment etc
- BHEL is fully geared-up to handle R&M and up-rating on turn-key basis including BoP items.

BHEL R&M and RLA Experience

- BHEL was actively involved in formulation and execution of CEA/Govt of India sponsored Rs 500 cr R&M Phase I scheme in 1984-85
- BHEL actively participated in the Phase II of the R&M programme resulting in substantial increase in Plant Availability
- BHEL has completed RLA studies on more than 240 units
- More than 25 number of overseas units in Malaysia, Libya, Bangladesh (BHEL & non-BHEL make) have been renovated by BHEL
 - Rehabilitation of BTG packages
 - Fuel Conversion
 - Up-gradation of C&I

BHEL's experience in R&M

- Projects executed

Sl	Utility	Project	Remarks
1	NLC, Neyveli	Life Extension of 50 MW Units 2 to 6 & 100 MW Unit-8	Completed
2	SAIL, Bhillai	Renovation of 2x150 t/h, Russian Boilers	Completed & Boilers operating at full load
3	SAIL, Bokaro	Renovation of 3x220t/h, Russian Boilers	Completed & Boilers operating at full load

BHEL's experience in R&M

- Projects executed

SI	Utility	Project	Status
4	KOTHAGUDEM (APGENCO)	R & M & up-rating (4X 110MW –4X120MW)	Units are running at up-rated capacity with more than 80% PLF at improved Heat rate.
5	KORBA (E) (CSEB)	R & M (2X120 MW)	Units are running at rated capacity with more than 80% PLF.
6	PANIPAT-II (HPGCL)	R&M (110 MW)	Unit is running at rated output with more than 80% PLF.
7	PANIPAT-I (HPGCL)	R&M & up-rating (110 MW to 117.8 MW)	Unit is running at up-rated capacity with more than 80% PLF.
8	UKAI (GSECL)	R & M (2x120 MW)	Unit 1 completed, under stabilization. Unit 2 under execution.

BHEL's experience in R&M

Projects under execution

SNo	Utility	Project	Status
1	GANDHINAGAR (GSECL)	R & M (2 x 120 MW)	Pre shut down activities are in progress
2	BATHINDA (PSEB)	R&M & up-rating (2x110 MW – 2X 120MW)	Manufacturing & pre shut down activities are in progress.
3	OBRA UPRVUNL	R&M and up-rating of 5x200 MW Units - 5x216 MW	R&M of Unit-9 under progress.
4	BARAUANI (BSEB)	R &M of 2 x 110 MW Unit 6 & 7	Manufacturing under progress

BHEL's experience in R&M

Projects under execution

S No	Utility	Project	Status
5	MUZAFFARPUR KBUNL,	R & M (2x110MW)	Manufacturing under process
6	PATRATU JSEB,	Restoration (2 x 110 MW)	Under execution
7	HARDWAGUNJ (UPRVUNL)	R&M & up-rating (110MW-120 MW)	Engineering activities in process

Expectations of Utilities from R&M

- State-of-the-art equipment with up-rating, improved heat rate, reduced emissions and extended life of equipment.
- Addressing all the issue of deteriorated quality of inputs like coal, water etc and meet stringent environment norms.
- Project completion schedule: 18-24 months.
- Unit Shut Down period: 4-5 months.
- Execution on turn–key basis, i.e. including BoP equipment, associated civil works, assessment of the suitability of existing civil structures and other equipment.
- Performance Guarantees of individual equipment in line with that of new installations.

BHEL Experience in execution of R&M projects (techno-commercial issues)

- Decision to take R&M to be on pay back period.
- The variation from original RLA based envisaged/contractual scope (due to further deterioration) and actual scope during execution creating delays in bringing back the unit to service.
- Increased scope of large replacements with best specifications increasing cost of R&M.
- Variations in the post R&M guarantees stipulation
- Addition of non-essential scope like administrative building, training centre, township etc
- Unclear/vague specifications, for example, “as required” , “set of spares” etc

BHEL Experience in execution of R&M projects (techno-commercial issues)

- Non-availability of engineering information of existing equipment and civil area (originally not engineered by BHEL).
- Contractually linking R&M of BoP Packages to main unit. The job can be independently executed and handed over to customer for regular O&M.
- Customer expectation to replace the ESPs in the existing location during 6-7 months time where the job involves dismantling of old ESP, build new foundations and install new ESP

Important issues

- Absence of any statutory norms to under take R&M of ageing & even poor performing sets.
- Absence of statutory norms for regular energy audits.
- Around 70% of 110 MW/210MW 130 /150 ata cycle, old thermal sets are operating with more then 80% PLF
- Shut down time of 5-6 months for comprehensive R&M under the present situation of peak power shortage of 12-13%.
- Addressing the issue of poor quality coal & stringent emission norms-increasing the cost of R&M.
- Cost of RM&U in comparison to cost of new installations discourages the utilities.

A presentation by BHEL, New Delhi

