

## INTRODUCTION

**“ A result of enormous intellectual effort by various power sector utilities, the document on the ‘Best Practices and Bench Marks’ in hydro power generation is so far the most outstanding and valuable document of its kind in this field. This chapter enlists the names of individuals and organizations, who have made tremendous contribution to this gigantic task. ”**

1. With a view to bring out a detailed document on the best practices and bench marking covering various aspects of hydro power generation, the Central Electricity Authority (CEA) constituted a committee under the Chairmanship of Member (Hydro).
2. The composition of the committee at the time of inception is given below:

i)	Member (Hydro), CEA	Chairman
ii)	Representative of NHPC	Member
iii)	Representative of KPCL	Member
iv)	Representative of MSEB	Member
v)	Representative of HPSEB	Member
vi)	Chief Engineer (HMD), CEA	Member
vii)	Chief Engineer (HP&I), CEA	Member
viii)	Chief Engineer (HAD), CEA	Member
ix)	Chief Engineer (HE&RM), CEA	Member
x)	Chief Engineer (HE&TD), CEA	Member-Secretary
3. The broad frame work of the document envisaged is as under:
  - i) Design and Engineering philosophy – Best Practices & Bench Marking
  - ii) Bench Marking of Generation Technologies

- iii) Project Construction & Monitoring and Bench Marks of Project Completion.
- iv) Investigation of Hydro Projects – Best Practices & Bench Marking
- v) Appraisal of Hydro Projects – Best Practices & Bench Marking
- vi) Renovation & Modernisation of Hydro Projects – Best Practices & Bench Marking

4. First meeting of the committee was held on 4<sup>th</sup> Oct. 2002 in the office of Sh. B.K. Aggarwal, Member (Hydro), CEA at New Delhi wherein it was decided to co-opt members from Central Water Commission, Irrigation Department, Govt. of Maharashtra & Andhra Pradesh Generation Power Corporation Ltd. also. The frame work of the document was also discussed in detail and it was decided that a chapter on Best Practices in Operation & Maintenance of Hydro Power Stations shall also be included. Views / suggestions / supplementary information was desired from all the members of the committee on the following chapters prepared by HE&TD / HE&RM Divisions of CEA:-

- (a) Best Practices in Design & Engineering of Hydro Power Stations.
- (b) R&M and Uprating of Hydro Power Stations.
- (c) Monitoring of R&M Schemes.

5. After co-opting the members from various state entities, the composition of the committee became as under:-

- |      |   |                  |
|------|---|------------------|
| i)   | Member (Hydro), CEA   | Chairman         |
| ii)  | Sh. R.S. Chadha, Chief Engineer (HE&TD) & (HE&RM),CEA         | Member-Secretary |
| iii) | Sh. V.K. Kanjlia, Executive Director (O&M & Comm), NHPC       | Member           |
| iv)  | Sh. P. Vishwapala Gowd, Chief Engineer (Elect. Designs), KPCL | Member           |
| v)   | Sh. Vatsal Chopra, Chief Engineer (Designs), HPSEB            | Member           |

vi)	Sh. A.S. Gupta, Chief Engineer(Generation), HPSEB	Member
vii)	Sh. S. M. Phadke, Chief Engineer (Hydro), MSEB	Member
viii)	Sh. S.N. Huddar, Chief Engineer(WR) & Joint Secretary, GOMID	Member(Co-opted)
ix)	Sh. P.K. Gokhale, Chief Engineer(Elect), GOMID	Member(Co-opted)
x)	Sh. G. Adishesu, Supdt. Engineer (Hydel Designs), APGENCO	Member (Co-opted)
xi)	Sh. A.K. Bajaj, Chief Engineer (Dams Safety Orgn), CWC	Member(Co-opted)
xii)	Sh. S.M. Dhiman, Chief Engineer (HP&I), CEA	Member
xiii)	Sh. Ashok Kumar, Chief Engineer (HMD), CEA	Member
xiv)	Sh. M. Subramaniam, Chief Engineer (HAD), CEA	Member

6. Second meeting of the Committee was held on 24<sup>th</sup> Oct, 2002 in CEA, New Delhi wherein inputs received from NHPC, MSEB & KPCL were circulated to all members of the committee for observations / views. Draft document prepared on the basis of the material received from the members was discussed in the third meeting of the committee held on 17<sup>th</sup> March, 2003 in the office of Sh. V. S. Verma, Member (Hydro) CEA,

7. Based on the material / comments received so far from various members of the committee, the document has been prepared which consists of following topics:-

- i) Best Practices on Survey & Investigation of Hydro Electric Projects
- ii) Best Practices in Planning & Appraisal of Hydro Electric Projects
- iii) Best Practices in Planning, Designs & Construction of Civil works of Hydro Power Projects

- iv) Design & Engineering Philosophy for Electro- Mechanical Works of Hydro Power Projects – Best Practices & Bench Marking
- v) Best Practices in Construction Monitoring of Hydro Electric Projects
- vi) Best Practices in Operation & Maintenance of Hydro Power Stations
- vii) R&M and Uprating of Hydro Power Stations
- viii) Monitoring of R&M Schemes.

**8.** The book was released by the erstwhile Hon'ble Minister of Power in March' 2004 and circulated to all Government power departments, Electricity Boards, generation utilities & other organizations dealing with hydro power sector in the country. The book has been widely received and suggestions for modifications & enlargement of the scope were received from many quarters. Sh. G. K. Pharlia, Member (Hydro), CEA also held a meeting with the Committee members on 5<sup>th</sup> May, 2004 and suggested to bring out the latest edition incorporating all the suggestions. Accordingly, an updated version of the publication having revisions in the following chapters has been brought out.

- Best Practices on Survey & Investigation of Hydro Electric Projects.
- Best Practices in Planning & Appraisal of Hydro Electric Project.
- Best Practices in Planning, Designs & Construction of Civil Works of Hydro Power Projects
- Design & Engineering Philosophy for Electro-Mechanical Works of Hydro Power Projects - Best Practices & Bench Marking
- Best Practices in Operation & Maintenance of Hydro Power Stations.

**9.** It is hoped that the latest edition of the book will provide valuable guidance to all persons working in various power utilities /organizations dealing with hydro power sector in the country. Comments / suggestions to further improve the book are welcome.