



# Compendium “Best Practices for Coal Based Power Plant in Germany”



Excellence Enhancement Centre for Indian Power Sector

## Table of Contents

<b>1</b>	<b>Introduction</b> .....	<b>13</b>
<b>2</b>	<b>New Build: Contract Management</b> .....	<b>15</b>
2.1	EPC Contract.....	15
2.2	Owner's Engineer Contract.....	19
2.3	O&M Agreement – Scope of Services.....	20
2.4	Organization Charts.....	27
2.5	Grid Connection Agreement.....	30
2.6	Land Use Agreement and Land Lease Agreement.....	30
2.7	Heat Purchase Agreement.....	31
2.8	Fuel Supply Agreement.....	32
2.9	Power Purchase Agreement.....	33
2.10	Financing Procedures and Agreements.....	34
2.11	Insurance Covering.....	35
2.12	Environmental, Construction and Operation Licenses.....	35
2.13	Water Rights.....	37
<b>3</b>	<b>New Build: Project Management</b> .....	<b>38</b>
3.1	Development.....	39
3.2	Execution.....	43
3.3	Processes.....	47
3.4	Project Organization.....	58
3.5	Scheduling.....	63
3.6	Steering the Project.....	66
3.7	Special Topics.....	66
<b>4</b>	<b>New Build: Project Development</b> .....	<b>90</b>
4.1	General.....	90
4.2	Site Selection.....	92
4.3	Fuel.....	94
4.4	Key Assumptions.....	95
4.5	Technical Parameters.....	96
4.6	Standardized or Individual Power Plants.....	99
4.7	Cost Degression Effects.....	101
4.8	Availability and Redundancy of Key Components.....	102
4.9	Efficiency Aspects.....	105
4.10	Footprint.....	110
4.11	Readiness for CCS (Carbon Capture & Storage).....	112
4.12	Coal Delivery, Ash and Gypsum Disposal.....	113
4.13	Level of Automation.....	117
4.14	Key Performance Data and Guarantee Values.....	119
4.15	Capabilities.....	123
4.16	Commercial Evaluation.....	126
4.17	Main Risks.....	129
4.18	Health, Safety & Environment (HSE).....	132

<b>5</b>	<b>New Build: Tendering Procurement Phase .....</b>	<b>139</b>
5.1	Specification .....	140
5.2	Technical Tender Documents .....	164
5.3	Minimum Technical Requirements .....	171
5.4	Boundary Conditions .....	172
5.5	Tendering .....	181
5.6	Contracting .....	190
<b>6</b>	<b>New Build: Project Execution Phase .....</b>	<b>196</b>
6.1	Design Aspects .....	197
6.2	Construction, Erection and Assembly .....	198
6.3	Commissioning .....	198
6.4	Quality Control and Quality Assurance .....	199
6.5	Supervision of Construction and Erection Activities On-Site .....	210
6.6	Supervision During Commissioning .....	211
6.7	Summary of Owner's Key Activities .....	212
6.8	Special Tasks .....	212
6.9	Take-Over Procedure .....	213
<b>7</b>	<b>O&amp;M: Operational Aspects .....</b>	<b>219</b>
7.1	Stationary Operation .....	219
7.2	Load Change .....	220
7.3	Start-up .....	222
7.4	Shutdown and Minimum Load .....	225
7.5	Emergency Shutdown .....	227
7.6	O&M Approach .....	229
7.7	Power Plant Information System KISSY .....	234
7.8	Water-Steam-Cycle .....	237
<b>8</b>	<b>O&amp;M: Maintenance .....</b>	<b>240</b>
8.1	Maintenance Philosophies .....	241
8.2	Maintenance Outsourcing .....	245
8.3	Maintenance Execution .....	248
8.4	Maintenance Planning .....	249
8.5	Maintenance Management .....	253
<b>9</b>	<b>Performance Control Systems .....</b>	<b>257</b>
9.1	Central Data Management .....	257
9.2	Performance Optimization .....	259
9.3	Condition Monitoring .....	261
9.4	Combustion Optimization .....	264
<b>10</b>	<b>Training and Skill Enhancement Measurements .....</b>	<b>268</b>
10.1	Types of Power Plant Personnel .....	268
10.2	Assessment .....	270
10.3	Training Methods .....	272
10.4	Advanced Training .....	275
10.5	Simulator Training .....	279



---

<b>Appendix A: Overview of Relevant VGB Guidelines .....</b>	<b>283</b>
<b>Appendix B: List of References .....</b>	<b>289</b>
<b>Appendix C: Coal-Blending, -Mixing and -Homogenization .....</b>	<b>290</b>
<b>Appendix D: Non-OEM approach in the field of maintenance .....</b>	<b>303</b>



Excellence Enhancement Centre for Indian Power Sector  
West Block-2, First Floor, Wing 5, Sector-1, R.K. Puram, New Delhi-110066  
Ph: 011-26164297 | Fax: 011-26164297  
Email: [mdeecips@gmail.com](mailto:mdeecips@gmail.com); [Contact@eecpowerindia.com](mailto:Contact@eecpowerindia.com) | web: [eecpowerindia.com](http://eecpowerindia.com)