

4-6 焼却炉建設に係る日本側・ブラジル側の作業分担

LIST OF SCOPE OF WORKS

Materials and works	Scope of Works		Remarks
	Japanese side	CETESB	
1. Design & Engineering			
1.1 General			
1) Process Flow Diagram	○		
2) Material & Heat Balance	○		
3) P & I Diagram	○		
4) General Arrangement & Elevation	○		
5) Utilities & Chemical list	○		
6) Loading Data & Anchor Plan	○		
7) Manuals & Procedure			
• Operation Manual	○		
• Maintenance Manual	○		
• Installation Procedure	○		
• Inspection Procedure	○		
• Interlock Sequence	○		
8) Process Description	○		
9) Reports			
• Inspection Reports	○		
• Mill-Sheets	○		For stainless
10) Spare Parts List			
• For Precommissioning	○		
• For Construction	○		
• For Operation	○		
11) Special Tool List	○		
12) Lubricant List	○		
1.2 Equipment			
1) Assembly Drawing	○		
2) Sectional Drawing	○		
3) Refractory Drawing	○		
4) Material List for Equipment	○		
5) Performance Data	○		
6) Equipment Data Sheet	○		
7) Insulation Support Drawing	○		
8) Earth lug Drawing	○		
1.3 Civil			
1) Civil Design Informations	○		
1.4 Building Design Information			
1) Industrial Waste storage, Electrical and Control	○		
2) Pneumatic Equipment Room	○		
3) Heat load from equipment	○		
1.5 Detailed Engineering Works for Civil, Building and Building Service.			
1) Foundation & Piling		○	
2) Equipment Foundation		○	
3) Concrete Structure of Building		○	
4) Finishing for Building		○	
5) Lighting System for Indoor and Outdoor		○	
6) Air Conditioning and Ventilation		○	
7) Fire Fighting System		○	

Materials and works	Scope of Works		Remarks
	Japanese side	CETESB	
8) Lightning Protection System 9) Water Supply system 10) Detailed Engineering Works (1) Structural Analyses (2) Structural Calculation (3) General Layout (4) Detailed Design Drawings (5) Equipment Foundations (6) Structural Drawings (7) Re-bar Arrangement Drawings		<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	
1.6 Steel Structure 1) Job Specification 2) Structure Design Drawing <ul style="list-style-type: none"> <li>• Structure</li> <li>• Pipe Rack</li> <li>• Platform</li> <li>• Stairway</li> <li>• Ladder</li> <li>• Support for Piping, Equipment, &amp; etc.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/>		
1.7 Electrical 1) Motor List 2) Motor Drawing <ul style="list-style-type: none"> <li>• Assembly DWG.</li> <li>• Junction Box DWG.</li> </ul> 3) Motor Performance Data 4) The Other Electrical Documents <ul style="list-style-type: none"> <li>• Job Specification</li> <li>• Single Line Diagram</li> <li>• Cabling, Lightning Grounding DWG.</li> </ul>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		
1.8 Instrument 1) Instrument List <ul style="list-style-type: none"> <li>• Set Point Data</li> <li>• Range Data</li> <li>• Instrument Type</li> <li>• Alarm Data</li> <li>• Signal Information</li> </ul> 2) Instrument Panel Drawing 3) Instrument Drawing 4) CCR Instrument Configuration DWG. 5) Construction DWG.	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>		

Materials and works	Scope of Works		Remarks
	Japanese side	CETESB	
1.9 Piping			
1) Job Specification	○		
2) Layout Drawing	○		
ISBL *1	○		
OSBL *2		○	
3) Isometric Drawing			
ISBL *1	○		
OSBL *2		○	
4) Material Take Off	○		
5) Piping Support Drawings	○		
6) Standard Drawing	○		
7) Major Piping Element Drawing	○		
• Valves			
• Flange & Fittings			
• Special Elements			
1.10 Insulation & Painting			
1) Job Specification	○		
2) Insulation Material & Thickness List	○		
3) Painting List			
at Shop	○		
at Field	○		

\*1 : Inside Battery Limit

\*2 : Outside Battery Limit

Materials and works	Scope of Works		Remarks
	Japanese side	CETESB	
2. Scope of Supply and Work			
2.1 Equipment			
1) ALL Equipment in ISBL	○		
2) Anchor Bolt and Set Bolts & Nuts	○		
3) Supports for			
· Piping	○		
· Instrument *1		○	
· Electrical *1		○	
4) Earth lugs	○		
5) Platforms & Ladders	○		
6) Template if any	○		
7) Refractory Work (at shop)	○		
2.2 Preparation of Material, Fabrication and Construction Works for Civil, Building and Building Service			
1) Piling		○	
2) Concrete Foundations for Building, Structure and Equipment		○	Including anchor boxes
3) Steel Structure		○	
4) Roofing		○	
5) Cladding		○	
6) Internal and External Finishing for Building		○	
7) Building Service		○	
(1) Lighting System for Indoor and Outdoor			
(2) Air Conditioning and Ventilation			
(3) Fire Fighting System			
(4) Lightning Protection System			
(5) Water Supply System			
(6) Drainage System			
(7) Power Supply System for Building Service			
8) Paving and Rain Water Drainage System		○	
2.3 Steel Structure for Incinerator			
1) Material & Prefabrication			
· Steel Structure	○		
· Stage, Platform, Stair, Ladder, Lug, etc.	○		
2) Field Erection		○	
3) Set Bolts & Nuts	○		
4) Anchor Bolts & Nuts	○		
5) Earth Lug	○		
6) Welding Rod		○	

\*1 : In general, these supports for Instruments and Electrical equipment are prepared and adjusted by CETESB. Therefore these parts is out of scope of supply from Japanese side.

Materials and works	Scope of Works		Remarks
	Japanese side	CETESB	
2.4 Cladding Work for Pneumatic Equipment Room. (1st floor of steel structure for incinerator) 1) All Material for Cladding Work 2) Field Work		○ ○	
2.5 Piping 1) Raw Material . Pipes . Fittings . Flanges . Bolts & Nuts . Valves . Gasket & Packing . Welding Rods 2) Supports 3) Field Erection	○ ○ ○ ○ ○ ○ ○ ○ ○	○ ○	
2.6 Electrical Power Supply 1) Preparation of 440V, 550KVA Power Source	○		
2.7 Electrical 1) Motor or Driver 2) Lighting Fixtures 3) Cables 4) Local P.B.S. & M.C.P. 5) Lugs for Grounding . Equipment . Motor . Steel Structure . Vessel & Tanks 6) Bulk Material Such As Cable tray, Conduit Tube. 7) Field Erection & Construction	○ ○ ○ ○ ○	○ ○ ○ ○ ○	
2.8 Instrument 1) Local Panel 2) CCR Instrument 3) All Local Instruments 4) Wiring & Piping & Bulk Materials . Local Panels to Local Instruments . Local Panels to CCR . Local Instrument to JB . JB to CCR 5) Support for Instrument	○ ○ ○	○ ○ ○ ○ ○ ○	

Materials and works	Scope of Works		Remarks
	Japanese side	CETESB	
2.9 Insulation & Refractory			
1) Insulation Material and Field Work		○	
2) Refractory Materials	○	○	
3) Refractory Work at Field			
2.10 Painting			
1) Rotating Equipment up to Finish Coat with touch-up paint material	○		
2) Vessel & Tank			
• Prime Coat	○		
• Finish Coat for Un-insulated Vessel & Tank		○	
3) Steel Structure			
• Prime Coat at Shop	○		
• Finish Coat at Field		○	
4) Piping		○	
5) Electrical & Instrument	○	○	
• Finish Coat for Panels, Equipment and Instruments			
6) Building		○	
2.11 Spare Parts & Special Tools			
1) Spare Parts for One Year Operation	○		
2) Spare Parts for Pre-commissioning	○		
3) Spare Parts for Construction	○		
4) Special Tool	○		
2.12 Supply of Consumables for one year operation	○		
2.13 Shipping & Transportation			
1) Inland Transportation to Specified Warehouse in Japan	○		With export package
2) Inland Transportation to Specified Warehouse in Brazil	○		without export package
3) Custom Clearance & Insurance		○	
4) Transportation to Site		○	
2.14 Supervision			
1) Field Erection	○		By Separate Quotation
2) Commissioning Operation	○		



No.	ITEM	MHI	CETESB	REMARKS
2.	<p>DESIGN WORKS FOR CIVIL, BUILDING AND BUILDING SERVICE.</p> <p>1) Design for foundation and piling</p> <p>2) Design for equipment foundations</p> <p>3) Design for steel structure for building</p> <p>4) Design for finishing for building</p> <p>5) Design for lighting system for indoor and outdoor</p> <p>6) Design for air conditioning system</p> <p>7) Design for ventilation system</p> <p>8) Design for fire fighting system</p> <p>9) Design for lightning protection system</p> <p>10) Design for water supply system etc.</p> <p>Design work including following works.</p> <p>① Structural analysis</p> <p>② Structural calculation</p> <p>③ General layout drawing</p> <p>④ Detail design drawing</p> <p>⑤ Equipment foundation drawing</p> <p>⑥ Structural drawings</p> <p>⑦ Re-bar arrangement drawing</p>		<p>○</p>	

No.	ITEM	MHI	CETESB	REMARKS
3.	<b>CONSTRUCTION</b>			
1)	Piling		○	
2)	Concrete foundation for building, structure and equipment		○	including anchor box
3)	Steel structure including material fabrication and erection		○	
4)	Roofing & wall cladding including material and installation		○	
5)	Internal and external finishing for building		○	
6)	Building service for following works including material fabrication and installation <ul style="list-style-type: none"> <li>• Lighting system indoor and outdoor</li> <li>• Air conditioning system</li> <li>• Ventilation system</li> <li>• Fire fighting system</li> <li>• Lightning protection system</li> <li>• Water supply system</li> <li>• Drain system</li> <li>• Power supply system for building service</li> </ul>		○	
7)	Paving and rain water drainage system		○	









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