

(Information regarding Quality Assurance Program)

Dear Sirs,

We hereby provide the necessary information on Quality Assurance Program containing the overall Quality Management and procedures, which we propose to follow during various phases of execution of the Contract.

Refer Attachment 6-1

Note : Continuation sheets of like size and format, may be used as per Bidder's requirement and shall be annexed to this Attachment.

BID DOCUMENT NO. CS-3100-702-9	Carbonated Fly Ash Brick (C-Brick) Plant of 2 Lakh per Day Capacity at NTPC Ramagundam
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<div> BULK HANDLING & INFRASTRUCTURE GROUP</div>		HAMTeK TECHNOLOGIES INDIA PVT. LTD.,				MANUFACTURING QUALITY PLAN		PROJECT :			
						ITEM : Manufacturing Quality Plan	MQP NO:	Customer : NTPC Limited			
							DATE:				
							Rev No:				
SR. NO	ACTIVITY & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	FORMAT OF RECORD	AGENCY		REMARKS	Comment
								M	N		
1.STRUCTURAL FABRICATION											
1.1	Raw Material (Plates, Pipes, Flanges, Chequered plates,ISMC, ISMB, Angles, Tubes, Rods)	Heat No/Batch No/ Dimensions, Profiles	B	Visual , Measurement Test	100%	As per Approved Drawings/MTC/P.O/ Applicable Codes and standards/ Project Specifications	MTC	P	V		
1.2	Bought out items (Consumables,Fasteners, Clips)	Review of Packing list/dimension	C	Review of Packing list/dimension	100%	Applicable Codes and standards/ Project Specifications	P.O,Packing list	P	V		
1.3	Marking & Cutting of Raw Material	Visual , Measurement Test	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection Report	P	V		
1.4	Fit up alignment & Edge Preparation	Fit up examination	A	Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
1.5	Finished weld joints	Smoothness,proper toe blending	B	Smoothness,proper toe blending	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports/ Weld Visual	P	V		
1.6	Final Dimensions	Dimension, length, Dia & thickness, profile,orientation	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
1.7	Sand Blasting	Visual,solvent cleaning, rust free, blast cleaning methods as applicable	B	Visual	100%	Project Specs/ Applicable codes & Standards- ISO 8501 St1, St 2, St3, Sa 2.5 (Sand blasting/ Shot blasting/ Grit blasting),	Surface Preparation report	P	V		
1.8	Final paint application	Visual checks, DFT	B	Visual, DFT checks, Each Coat Paint DFT check report	100%	Project Specs/ Applicable codes & Standards- IS 2932, if any specified by Customer/ Approved Painting Procedure	DFT Report (Painting reports)	P	V		
2.SILO											
2.1	Raw Material (Plates, Pipes, Flanges, Chequered plates,ISMC, ISMB, Angles, Tubes, Rods)	Heat No/Batch No/ Dimensions, Profiles	B	Visual , Measurement Test	100%	As per Approved Drawings/MTC/P.O/ Applicable Codes and standards/ Project Specifications	MTC	P	V		
2.2	Plate bending, curvature check, stacking/ Cone Radii/Development, Stiffeners/Ribs/Legs, etc	Lay out templates checking, Visual, dimensional checks,	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Fabrication Report	P	V		
2.3	Shell to Bottom Fit-Up	Fit up examination	A	Measurement check	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection Report	P	V		
2.4	Finished weld joints	Smoothness,proper toe blending	B	Smoothness,proper toe blending	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports/ Weld Visual	P	V		
2.5	Final Dimensions	Dimension, length, Dia & thickness, profile,orientation	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
2.6	Final Assembly	Bought out items,Pipings & Motors	B	Bought out items,Pipings & Motors	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection Report	P	V		
2.7	Sand Blasting	Visual,solvent cleaning, rust free, blast cleaning methods as applicable	B	Visual	100%	Project Specs/ Applicable codes & Standards- ISO 8501 S11, St 2, St3, Sa 2.5 (Sand blasting/ Shot blasting/ Grit blasting),	Surface Preparation report	P	V		
2.8	Finish paint application	Visual checks, DFT	B	Visual, DFT checks, Each Coat Paint DFT check report	100%	Project Specs/ Applicable codes & Standards- IS 2932, if any specified by Customer/ Approved Painting Procedure	DFT Report (Painting reports)	P	V		
3.WEIGHBIN											
3.1	Raw Material (Plates, Pipes, Flanges, Chequered plates,ISMC, ISMB, Angles, Tubes, Rods)	Heat No/Batch No/ Dimensions, Profiles	B	Visual , Measurement Test	100%	As per Approved Drawings/MTC/P.O/ Applicable Codes and standards/ Project Specifications	MTC	P	V		
3.2	Plate bending, curvature check, stacking/ Cone Radii/Development, Stiffeners/Ribs/Legs, etc	Lay out templates checking, Visual, dimensional checks,	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Fabrication Report	P	V		
3.3	Shell to Bottom Fit-Up	Fit up examination	A	Measurement check	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection Report	P	V		
3.4	Finished weld joints	Smoothness,proper toe blending	B	Smoothness,proper toe blending	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports/ Weld Visual	P	V		
3.5	Final Dimensions	Dimension, length, Dia & thickness, profile,orientation	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection Report	P	V		
3.6	Final Assembly	Bought out items,Pipings & Motors	B	Bought out items,Pipings & Motors	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection Report	P	V		
3.7	Sand Blasting	Visual,solvent cleaning, rust free, blast cleaning methods as applicable	B	Visual	100%	Project Specs/ Applicable codes & Standards- ISO 8501 St1, St 2, St3, Sa 2.5 (Sand blasting/ Shot blasting/ Grit blasting),	Surface Preparation report	P	V		
3.8	Finish paint application	Visual checks, DFT	B	Visual, DFT checks, Each Coat Paint DFT check report	100%	Project Specs/ Applicable codes & Standards- IS 2932, if any specified by Customer/ Approved Painting Procedure	DFT Report (Painting reports)	P	V		
4.SUN & PLANETRY MIXER											

SR. NO	ACTIVITY & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	FORMAT OF RECORD	AGENCY		REMARKS	Comment
								M	N		
4.1	Raw Material (Plates, Pipes, Flanges, Chequered plates, ISMC, ISMB, Angles, Tubes, Rods)	Heat No/Batch No/ Dimensions, Profiles	B	Visual , Measurement Test	100%	As per Approved Drawings/MTC/P.O/ Applicable Codes and standards/ Project Specifications	MTC	P	V		
4.2	Tank rolling and Fit up of Shell Courses as per approved drawings.	Dimensions like Length, wall thickness, OCF, Ovality	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
4.3	Finished weld joints	Smoothness, proper toe blending	B	Smoothness, proper toe blending	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports/ Weld Visual	P	V		
4.4	Fit up & alignment of Mixing Arms & Scraper	Fit up examination	A	Measurement check	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
4.5	Final Dimensions	Dimension, length, Dia & thickness, profile, orientation	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
4.6	Final Assembly	Bought out items, Pipings & Motors	B	Bought out items, Pipings & Motors	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection Report	P	V		
4.7	Sand Blasting	Visual, solvent cleaning, rust free, blast cleaning methods as applicable	B	Visual	100%	Project Specs/ Applicable codes & Standards- ISO 8501 St1, St 2, St3, Sa 2.5 (Sand blasting/ Shot blasting/ Grit blasting),	Surface Preparation report	P	V		
4.8	Finish paint application	Visual checks, DFT	B	Visual, DFT checks, Each Coat Paint DFT check report	100%	Project Specs/ Applicable codes & Standards- IS 2932, if any specified by Customer/ Approved Painting Procedure	DFT Report (Painting reports)	P	V		
5. ATTRITION MIXER											
5.1	Raw Material (Plates, Pipes, Flanges, Chequered plates, ISMC, ISMB, Angles, Tubes, Rods)	Heat No/Batch No/ Dimensions, Profiles	B	Visual , Measurement Test	100%	As per Approved Drawings/MTC/P.O/ Applicable Codes and standards/ Project Specifications	MTC, Inspection reports	P	V		
5.2	Tank rolling and Fit up of Shell Courses as per approved drawings.	Dimensions like Length, wall thickness, OCF, Ovality	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
5.3	Finished weld joints	Smoothness, proper toe blending	B	Smoothness, proper toe blending	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports/ Weld Visual	P	V		
5.4	Fit up & alignment of Mixing Arms & Scraper	Fit up examination	A	Measurement check	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
5.5	Final Dimensions	Dimension, length, Dia & thickness, profile, orientation	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
5.6	Final Assembly	Bought out items, Pipings & Motors	B	Bought out items, Pipings & Motors	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection Report	P	V		
5.7	Sand Blasting	Visual, solvent cleaning, rust free, blast cleaning methods as applicable	B	Visual	100%	Project Specs/ Applicable codes & Standards- ISO 8501 St1, St 2, St3, Sa 2.5 (Sand blasting/ Shot blasting/ Grit blasting)	Surface Preparation report	P	V		
5.8	Finish paint application	Visual checks, DFT	B	Visual, DFT checks, Each Coat Paint DFT check report	100%	Project Specs/ Applicable codes & Standards- IS 2932, if any specified by Customer/ Approved Painting Procedure	DFT Report (Painting reports)	P	V		
6. Handling Equipment (Stacker, Lift & shift conveying system, Grab & shift, Destacker, Demoulding)											
7.1	Raw Material (Plates, Pipes, Flanges, Chequered plates, ISMC, ISMB, Angles, Tubes, Rods)	Heat No/Batch No/ Dimensions, Profiles	B	Visual , Measurement Test	100%	As per Approved Drawings/MTC/P.O/ Applicable Codes and standards/ Project Specifications	MTC	P	V		
7.2	Bearing housing Assembly	Alignment, Measurement Check	B	Measurement check	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
7.3	Handling Equipment (Alignment Check)	Alignment, Measurement Check	A	Measurement check	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
7.4	Finished weld joints	Smoothness, proper toe blending	B	Smoothness, proper toe blending	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports/ Weld Visual	P	V		
7.5	Fit up alignment	Fit up examination	A	Measurement check	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
7.6	Final Dimensions	Dimension, length, Dia & thickness, profile, orientation	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
7.7	Final Assembly	Bought out items, Pipings & Motors	B	Bought out items, Pipings & Motors	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
7.8	Sand Blasting	Visual, solvent cleaning, rust free, blast cleaning methods as applicable	B	Visual	100%	Project Specs/ Applicable codes & Standards- ISO 8501 St1, St 2, St3, Sa 2.5 (Sand blasting/ Shot blasting/ Grit blasting)	Surface Preparation report	P	V		
7.9	Finish paint application	Visual checks, DFT	B	Visual, DFT checks, Each Coat Paint DFT check report	100%	Project Specs/ Applicable codes & Standards- IS 2932, if any specified by Customer/ Approved Painting Procedure	DFT Report (Painting reports)	P	V		
7. Mould Frames, Bottom Frames											
8.1	Raw Material (Plates, Pipes, Flanges, Chequered plates, ISMC, ISMB, Angles, Tubes, Rods)	Heat No/Batch No/ Dimensions, Profiles	B	Visual , Measurement Test	100%	As per Approved Drawings/MTC/P.O/ Applicable Codes and standards/ Project Specifications	MTC	P	V		
8.2	Bought out items (Hardware)	Review of Packing list/dimensions	c	Review of Packing list/dimensions	100%	P.O, Packing list	P.O, Packing list	P	V		
8.3	Channels & Plate Size, marking, Visual and dimensional checks & cutting	Visual, dimensional check	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		

SR. NO	ACTIVITY & OPERATIONS	CHARACTERISTICS	CLASS	TYPE OF CHECK	QUANTUM OF CHECK	REFERENCE DOCUMENT	FORMAT OF RECORD	AGENCY		REMARKS	Comment
								M	N		
8.4	Fit up alignment	Fit up examination	A	Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
8.5	Finished weld joints	Smoothness,proper toe blending	B	Smoothness,proper toe blending	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports/ Weld Visual	P	V		
8.6	Final Dimensions	Dimension, length, Dia & thickness, profile,orientation	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
8.7	Sand Blasting	Visual,solvent cleaning, rust free, blast cleaning methods as applicable	B	Visual	100%	Project Specs/ Applicable codes & Standards- ISO 8501 St1, St 2, St3, Sa 2.5 (Sand blasting/ Shot blasting/ Grit blasting)	Surface Preparation report	P	V		
8.8	Primer application	Jotun Jotatemp250(Primer of 2 coats with 65-70 microns in thickness)/ Dry Film thickness	B	Visual, DFT checks, Each Coat Paint DFT check report	100%	Project Specs/ Applicable codes & Standards- IS 1477, if any specified by Customer/ Approved Painting Procedure/ Reference Test specimens	DFT Report (Painting reports)	P	V		
8. LIFT,SHIFT & PLACE											
9.1	Raw Material (Plates, Pipes, Flanges, Chequered plates,ISMC, ISMB, Angles, Tubes, Rods)	Heat No/Batch No/ Dimensions, Profiles	B	Visual , Measurement Test	100%	As per Approved Drawings/MTC/P.O/ Applicable Codes and standards/ Project Specifications	MTC	P	V		
9.2	Drive wheel to wheel centre distance	Visual , Measurement Test	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
9.3	Surface finish of lifting bar	Visual , Measurement Test	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
9.4	Lifting shaft keyway alignment	Measurement check with '0' Tolerance	A	Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
9.5	Fit up alignment	Fit up examination	A	Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
9.6	Finished weld joints	Smoothness,proper toe blending	B	Smoothness,proper toe blending	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports/ Weld Visual	P	V		
9.7	Final Dimensions	Dimension, length, Dia & thickness, profile,orientation	B	Visual , Measurement Test	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
9.8	Final Assembly	Bought out items,Pipings & Motors	B	Bought out items,Pipings & Motors	100%	As per Approved Drawings/ Applicable Codes and standards/ Project Specifications	Inspection Report	P	V		
9.9	Sand Blasting	Visual,solvent cleaning, rust free, blast cleaning methods as applicable	B	Visual	100%	Project Specs/ Applicable codes & Standards- ISO 8501 St1, St 2, St3, Sa 2.5 (Sand blasting/ Shot blasting/ Grit blasting)	Surface Preparation report	P	V		
	Finish paint application	Visual checks, DFT	B	Visual, DFT checks, Each Coat Paint DFT check report	100%	Project Specs/ Applicable codes & Standards- IS 2932, if any specified by Customer/ Approved Painting Procedure	DFT Report (Painting reports)	P	V		
9. BELT CONVEYORS											
11.1	Raw Material (Plates, Pipes, Flanges, Chequered plates,ISMC, ISMB, Angles, Tubes, Rods)	Heat No/Batch No/ Dimensions, Profiles	B	Visual , Measurement Test	100%	As per Approved Drawings/MTC/P.O/ Applicable Codes and standards/ Project Specifications	MTC	P	V		
11.2	Bought out items (Pulleys,Rollers,Belt type,Hardware)	Review of Packing list/dimensions	C	Review of Packing list/dimensions	100%	P.O,Packing list	P.O,Packing list	P	V		
11.3	Channels & Plate Size (Marking,Cutting & dimensional check)	Visual, dimensional check	B	Visual , Measurement Test	100%	As per Approved Drawings Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
11.4	Pulleys, Idlers (Alignment Check)	Alignment,Measurement Check	B	Visual , Measurement Test	100%	As per Approved Drawings Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
11.5	Conveyor angle (Angle check & Dimensional check)	Visual, dimensional check	B	Visual , Measurement Test	100%	As per Approved Drawings Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
11.6	Finished weld joints	Smoothness,proper toe blending	B	Smoothness,proper toe blending	100%	As per Approved Drawings Applicable Codes and standards/ Project Specifications	Inspection reports/ Weld Visual	P	V		
11.7	Fit up alignment	Fit up examination	A	Measurement Test	100%	As per Approved Drawings Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
11.8	Final Dimensions	Dimension, length, Dia & thickness, profile,orientation	B	Visual , Measurement Test	100%	As per Approved Drawings Applicable Codes and standards/ Project Specifications	Inspection reports	P	V		
11.9	Final Assembly	Bought out items,Pipings & Motors	B	Bought out items,Pipings & Motors	100%	As per Approved Drawings Applicable Codes and standards/ Project Specifications	Inspection Report	P	V		
	Sand Blasting	Visual,solvent cleaning, rust free, blast cleaning methods as applicable	B	Visual	100%	Project Specs/ Applicable codes & Standards- ISO 8501 St1, St 2, St3, Sa 2.5 (Sand blasting/ Shot blasting/ Grit blasting)	Surface Preparation report	P	V		
	Finish paint application	Visual checks, DFT	B	Visual, DFT checks, Each Coat Paint DFT check report	100%	Project Specs/ Applicable codes & Standards- IS 2932, if any specified by Customer/ Approved Painting Procedure	DFT Report (Painting reports)	P	V		
<p>Legends : - Records identified with "tick" (✓) shall be essentially included by supplier in QA documentation. D:DOCUMENTATION</p> <p>Type of Class -A: Critical, B: Major, C: Minor</p> <p>M**-MANUFACTURER/SUB-SUPPLIER</p> <p>C:MAIN SUPPLIER</p> <p>N: NTPC Ltd.</p> <p>P:PERFORM W: WITNESS V:VERIFICATION. IR: Inspection report, MTC: Material testing certificate TC: Test certificate</p>											
PREPARED BY (.....)							APPROVED BY (NTPC)				