

INSPECTION AND TEST PLAN (ITP) FOR ANALYZER PACKAGES									
Item	Stage/Activity		Reference	Acceptance Criteria	Record / Documentation / Generated	Activity By			Remarks
						M./I./S./I	CL.I	TP.I	
A	PRE-MANUFACTURING / PRE-PROCUREMENT STAGE								
A.1	PIM (PRE-Inspection Meeting)		Common Practice	MOM/ Report	Approved ITP, MOM	H	H	-	Meeting to finalize inspection procedures and other inspection details
A.2	Complete Datasheet, All Documents and Certificates(Issued by the manufacturer, for analyzers by ABB)		Original Request	Original Request	Technical Approval	H	R	-	
B	PROCUREMENT (ANALYZERS, ACCESSORIES & INCOMING MATERIAL) INSPECTION (at Supplier's Works)								
B.1	Procurement of ABB Analyzers (2x CO, 2x H2 - Model EL3060), Accessories, Calibration Gas Cylinders & Regulators		Project Specs/Available Standard/ Manufacturer Procedure	_ Analyzers procured as per approved model, specifications, and quantity. _ Coolers, fittings, tubing, sample conditioning components, etc., procured as per approved specifications and quantities. _ Gas cylinders (CO, H2, N2 balance), regulators procured as per specifications, quantities, and certification requirements.	_ Purchase Orders to ABB, ABB Confirmation _ Purchase Orders for Accessories, Supplier Confirmations _ Purchase Orders for Gas Cylinders & Regulators	H	R	R	Delivery Soft Copies Of Documents
B.2	ABB Routine Test report for Analyzer			ABB Confirmation	Test Report	H	R	R	
B.3	Other Documentation Check(Data sheets with options and accessories, test reports, certificates, etc)			All Required Documentation Is Provided	Report	H	R	R	
B.4	Certificate Of Origin			Provide CO Certificates	CO Certificate	H	R	R	Provide Certificate of Origin for ABB Analyzer and Other Equipment
B.5	Calibration Certificates Check			Provide Calibration Certificates	Calibration Certificate	H	R	R	
B.6	Packing List Check			Provide Packing List	Packing List of Procurement Stage	H	R	H	
C	MANUFACTURING / ASSEMBLY & IN-HOUSE TESTING (at Supplier's Works)								
C.1	Material Compatibility		Project Specs/Available Standard/ Manufacturer Procedure	Verify Material Compatibility	Material Test Certificates	H	R	R	
C.2	Dimensional Inspection		Ref. to Spec & Standard & data sheet	_ Completeness, workmanship (tubing, wiring), dimensions, model numbers, materials, tagging checked against specs. _ Examine panel for defects, damage and Ensuring proper installation of the analyzer and gas sample conditioning system in the panel.	Visual Inspection Checklist	H	R	R	
C.3	Visual Inspection		Project Specs/Available Standard/ Manufacturer Procedure	_ Assembly check of analyzer, sample conditioning system		H	H	H	
C.4	Factory Acceptance Test (FAT)	Leakage Testing (Tubing & Piping)	Project Specs/Available Standard/ Manufacturer Procedure	No leaks detected in sample conditioning and internal piping/tubing at specified test pressure.	Leak Test Report/Certificate	H	R	W	
C.5		Functional Tests & Performance Verification	Project Specs/Available Standard/ Manufacturer Procedure	Analyzers demonstrate required functions, accuracy (±2% FS), repeatability (±0.5% FS), response time (≤10s or ≤5s), stability. Output signals (4-20mA) verified. Multi-stream ops verified (if applicable).	Functional Test Records, Performance Data, Calibration Gas Certificates, Strip Charts/Trend Data	H	R	W	
C.6		FAT Documentation Review	Project Specs/Available Standard/ Manufacturer Procedure	All specified pre-FAT and FAT documentation reviewed and found complete and correct.	FAT documentation package	H	R	W	

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C.7	Factory Acceptance Test (FAT)	Post-FAT Punch List Clearance	FAT Report (Punch List section)	All punch list items (if any) from FAT are acceptably rectified and verified.	Closed Punch List, Evidence of Rectification	H	R	W	
C.8		Calibration of Analyzers (Final)	Manufacturer's Manual, Project Specs, Datasheets	Analyzers calibrated using certified span gases. Calibration certificates generated. Accuracy and drift within specified limits.	Calibration Certificates for each Analyzer, Calibration Gas Certificates	H	R	W	
C.9		Other manufacturer acceptance tests and routine tests	Project Specs/Available Standard/ Manufacturer Procedure	Project Specs/Available Standard/ Manufacturer Procedure	FAT Report	H	R	W	
C.10	Manufacturing Record Book (MRB) Draft		Project Specs/Available Standard/ Manufacturer Procedure	Draft MRB containing all required FAT reports, certs, drawings, hookup document, analyzer panel wiring, dimension map, panel layout diagram, manuals reviewed and found substantially complete.	Draft MRB	H	R	R	__ The Hook up must comply with the requirements and include a parts list. __ Contains all test reports, certificates, datasheets, calibration records.
D	PACKING & DISPATCH								
D.1	Pre-Packing Inspection		Project Specs/Available Standard/ Manufacturer Procedure	Project Specs/Available Standard/ Manufacturer Procedure	Pre-Packing Inspection Report, Photos	H	R	H	
D.2	Packing		Project Specs/Available Standard/ Manufacturer Procedure	Project Specs/Available Standard/ Manufacturer Procedure	Signed Packing List, Photos	H	R	R	
E	DOCUMENTATION								
E.1	Final Book Check (Including Final Datasheet with Options and Accessories, Dimension Map, Electrical Drawings, Test Reports, P&ID, Hook up, QCP, Part List, Operations and Maintenance Manual, etc.)		Project Specs/Available Standard/ Manufacturer Procedure	Project Specs/Available Standard/ Manufacturer Procedure	FINALBOOK	H	R	R	__ The supplier must provide all application documents to the customer in both soft and hard copy. __ All technical documents and test reports must include the correct serial number.
F	SITE ACTIVITIES - INFRASTRUCTURE PREPARATION (at Client's Site - Direct Reduction Plant I & II)								
F.1	Site Survey and Confirmation of Readiness		Best Practices	__ Verify site meets installation specifications. __ Verify availability of necessary equipment and components.	Site Readiness Report/Checklist	H	R	-	As per the client's plan and timeline
F.2	Installation of Support Structures, Cable Laying(Power, Signal, Communication), Sample Line Tubing Installation, Pressure Testing & Utility Connections		Best Practices	Completion of infrastructure works	Installation Check Report	H	R	-	
G	SITE ACTIVITIES - INSTALLATION, PRE-COMMISSIONING & COMMISSIONING								
G.1	Installation of Analyzer Packages & Accessories		Project Specs/Available Standard/ Manufacturer Procedure	Project Specs/Available Standard/ Manufacturer Procedure	Installation Check Report, Photos	H	R	-	
G.2	Interconnection Piping and Tubing (Package to sample lines/utilities)		Project Specs/Available Standard/ Manufacturer Procedure	All external connections (sample inlet/outlet, vent, utilities, calibration gas) correctly made as per P&ID and hook-up drawings. Leak checks performed.	Connection Checklists, Leak Test Reports	H	R	-	
G.3	Electrical and Signal Wiring Terminations		Project Specs/Available Standard/ Manufacturer Procedure	Power, control, signal, and communication wiring terminated correctly at both package and field/control system ends. Tagging verified	Termination Check Reports	H	R	-	

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G.4	Pre-commissioning Checks	Project Specs/Available Standard/ Manufacturer Procedure	Power-on checks, instrument configuration, loop checks (to DCS/PLC), I/O checks, alarms, interlocks, communication links verified. System integrity confirmed.	Pre-commissioning Checklists (signed), Loop Test Records, Configuration Printouts	H	R	-	As per the client's plan and timeline
G.5	Commissioning & Start-up of Analyzers	Project Specs/Available Standard/ Manufacturer Procedure	System started up safely. Analyzers commissioned with calibration gases, then process gas. Performance verified (accuracy, stability). Fine-tuning done.	Commissioning Report, Start-up Records, Calibration Verification Data, Performance Test Data (initial)	H	R	-	
G.6	Integration with Automation System (DCS/PLC) & Industrial Network	Project Specs/Available Standard/ Manufacturer Procedure	Analyzer data (measurements, alarms, status) correctly transmitted to and displayed on DCS/PLC. Commands from DCS/PLC (if any) function correctly.	Test Report	H	R	-	
G.7	Site Acceptance Test (SAT) / Performance Test	Project Specs/Available Standard/ Manufacturer Procedure	Analyzers perform reliably under site operating conditions, meeting all specified performance criteria (accuracy, repeatability, response time, drift) over an agreed period.	SAT Report (signed), Performance Test Records, Trend Data	H	R	-	
H	POST-COMMISSIONING & FINAL ACCEPTANCE							
H.1	Training	Project Specs/Available Standard/ Manufacturer Procedure	Training for engineers, operators, and maintenance technicians conducted as per agreed scope and schedule. Attendees confirm understanding.	Training Material Handouts, Training Completion Certificate (if applicable)	H	H	-	
H.2	Operational Monitoring (Reliability Run)	Project Specs/Available Standard/ Manufacturer Procedure	Analyzers operate correctly and reliably for a continuous period of 1 month without significant issues or failures, meeting performance specs.	Daily Log Sheets / Performance Monitoring Records (1 month), Issue/Resolution Log	H	H	-	Quality control is conducted after the analyzers have functioned correctly for one month.
H.3	Final Punch List Clearance (Site)	Project Specs/Available Standard/ Manufacturer Procedure	All outstanding punch list items from SAT and any issues identified during operational monitoring are acceptably rectified and verified.	Closed Final Punch List, Evidence of Rectification	H	R	-	
H.4	Submission of Final As-Built Documentation & MRB	Project Specs/Available Standard/ Manufacturer Procedure	Final As-Built drawings and complete Manufacturing Record Book (MRB)/Final Dossier submitted and approved by Client.	Approved As-Built Drawings, Approved Final MRB/Dossier (including operation & maintenance manuals)	H	RA	-	In both soft and hard copy.
<div>M.I: MANUFACTURER INSPECTOR S.I: SUPPLIER INSPECTOR CL.I: CLIENT INSPECTOR TP.I: THIRD-PARTY INSPECTOR H: HOLD POINT R: DOCUMENT REVIEW RA: DOCUMENT REVIEW AND APPROVE W: WITNESS SW: SPOT WITNESS</div>		<div>NOTE:</div> <div>1) This ITP indicates minimum extent of inspection to be performed by vendor and client and is to be incorporated in to vendor's own inspection procedure and acceptance tests. 2) The supplier is required to inform client and third-party inspector about hold and witness items at least one month prior. 3) Serial numbers must be mentioned in test reports and certificates, as they are essential for the QC procedure.</div>						