HSB

A Munich Re company

Third-party inspection

Levels of service selection guide

HSB's multi-accredited status and global presence enables us to manage your pressure equipment third-party inspection requirements. HSB offers a flexible range of inspection services for pressure equipment. In order to accommodate the varying and changing needs of our clients, HSB offers various levels of third-party inspection services. The general inspection services may be included as listed below or as desired by the client.

	Level 1	Level 2	Level 3	Level 4	Customized
Design	●	●	◔	◔	☐
Material	●	◕	◔	◔	☐
Forming	●	◕			☐
Fabrication Inspection	●	◕	◔		☐
Welding	●	●	◑	◔	☐
Post-Weld Heat Treatment (PWHT)	●	●	◔		☐
Non-Destructive Examination (NDE)	●	◑	◔	◔	☐
NCR	●	◕			☐
Final Visual Inspection	●	●	◔	◔	☐
Pressure Test	●	◑	◔	◔	☐
Marking and Labeling	●	◕			☐
Painting and Coating	●	●			☐
Shipping	●	●			☐

Legend: ● indicates varying degrees of inspection ☐ Customized

Description of services:

Design	Level 1	Level 2	Level 3	Level 4	Customized
Pressure equipment design drawings and calculations verified/ approved by an HSB Design Review Engineer.	X				
Pressure equipment design drawings and calculations reviewed by an HSB Inspector.		X			
HSB Design Certificate issued.	X				
Design review documented on Source Inspection Report.		X			

Verify that the Pressure Equipment (PE) manufacturer is using client-approved drawings during fabrication at the correct revision levels noted in the controlling contractual documents.	X	X	X	X	
Review design drawings, bill of material, and fabrication schedule to establish mandatory hold points, including client-specified hold points.	X	X			

Material	Level 1	Level 2	Level 3	Level 4	Customized
Verify that material receiving inspection was completed and traceable to the material specification and documentation.	X	X			
Verify that the material (including dimensions) used for construction conforms to the approved drawings.	X	X	X		
Inspect materials for visible damage or defects.	X	X			
Perform random inspections during the receipt of material and verify calibration of measuring equipment used to accept material.	X	X			
When material documentation is required, review the Material Test Report (MTR) or Certificate of Compliance (CoC) for compliance with the material specification and Purchase Order requirements.	X	X	X	X	
Where additional testing of materials is required, identify and maintain traceability of the test specimens prior to witnessing the tests and reviewing test results.	X				

Toughness	Level 1	Level 2	Level 3	Level 4	Customized
Verify that the applicable toughness rules are applied during fabrication.	X	X			
Verify any additional tests and values.	X	X			

Forming	Level 1	Level 2	Level 3	Level 4	Customized
Verify that forming procedures and inspection templates are available.	X	X			
Review approved drawings for forming dimensions and verify the dimensions and tolerances.	X	X			
Inspect for weld peaking at adjoining edges of longitudinal joints of cylindrical vessels.	X	X			
Verify thickness after forming comply with the approved drawings.	X	X			
If the vessel shell section, heads, or other pressure boundary parts are cold formed by anyone other than the manufacturer, review the required certification of the part to determine if the part has been heat-treated.	X				
Perform direct visible inspection after forming. Identify and document any damage or defects.	X	X			

Fabrication Inspections	Level 1	Level 2	Level 3	Level 4	Customized
Verify that identification markings on materials correspond with the indicated materials on the fabrication drawings.	X	X	X		
Perform weld fit-up inspections of all main seams, nozzles, fittings, and attachments.	X				
Perform weld fit-up inspections of all main seams, and random fit-up inspections of nozzles and fittings.		X			
Perform random fit-up inspections of main seam, nozzles, fittings, and attachments.			X		
Verify nozzle and fitting location and orientation complies with fabrication drawing.	X	X			
Perform random direct and indirect visual inspection for damage, defects, and out of roundness during fabrication.	X	X			
Verify that NDE is applied as specified in the fabrication drawings.	X	X			
Monitor all base material repair activity and make Client aware of the repairs.	X	X			
Verify that the applicable toughness rules are applied during fabrication.	X				
Before PE manufacturer attaches nozzles, manhole frames, nozzle reinforcements, and other appurtenances to the inside or outside of the vessel, HSB will inspect dimensions for proper fit to vessel curvature.	X				

Welding	Level 1	Level 2	Level 3	Level 4	Customized
Review the applicable Welding Procedure Specifications (WPS), Procedure Qualification Records (PQR), and Welder/Operator Performance Qualification Records (WPQ).	X	X	X	X	
Verify the correct WPS as specified in the controlling fabrication drawing is applied to weld joint.	X	X	X		
Verify the welders/operators are qualified for the welding being performed within the ranges qualified, and verify that the welders/operators have valid continuity.	X	X	X		
Verify welding consumables are controlled and that use of ovens for flux and electrodes are utilized.	X	X			
Verify that welder/operator identification for completed weld joints exists.	X	X			

Welding Supplement	Level 1	Level 2	Level 3	Level 4	Customized
Weld Procedure and Performance Qualification.	X				
Stamp the manufacturer's welding documents (i.e., WPSs, PQRs, WPQs, and Continuity List) with the HSB logo.	X				

Non-Destructive Examination (NDE)	Level 1	Level 2	Level 3	Level 4	Customized
Verify that NDE was performed using an approved procedure and that records generated are approved by the manufacturer.	X	X	X	X	
Verify NDE examiner's qualifications to manufacturer's or subcontractor's written practice.	X	X			
Verify proper approvals provided for subcontractor's procedure and personnel, if subcontracted.	X	X			
Review all NDE reports and radiographs to ensure they contain the minimum required information.	X	X			
Verify that NDE equipment is calibrated.	X	X			
Witness the calibration of the equipment where UT examination is performed.	X				
Verify that annual eye examinations have been performed for NDE examiners.	X				
Select the spot(s) to be examined by the manufacturer's or subcontractor's NDE examiners, where spot volumetric examination is required.	X				

Non-Conformance Reports (NCR)	Level 1	Level 2	Level 3	Level 4	Customized
Review all NCRs generated, and verify that disposition has been completed, including approvals from the Client, prior to shipment.	X	X			
Assign additional hold points based on any non-conforming condition prior to dispositioning the non-conformance.	X	X			
Visit subcontractors to resolve non-conforming condition, as deemed necessary, and with Client notification and approval.	X				

Final Visual Inspection	Level 1	Level 2	Level 3	Level 4	Customized
Review manufacturer's final inspection report. Perform random inspection of completed pressure equipment.	X	X	X	X	
Perform dimensional inspection, including nozzle orientation, and weld size verification to drawing requirements.	X	X			
Perform external, and where accessible, internal inspections.	X	X			
Verify cleanliness.	X	X			
Verify that all required PWHT and NDE has been performed.	X	X			

Pressure Test	Level 1	Level 2	Level 3	Level 4	Customized
Verify that approved hydrostatic or pneumatic test procedure is used during the pressure test.	X	X			
Verify that test gauges have been calibrated and are within the acceptable ranges for precision for the required test pressures.	X	X			
Witness the final pressure test and provide an HSB pressure test report.	X	X	X	X	
Witness filling and discharge of equipment, and verify that there is no visible damage or defects resulting from the pressure test both externally and internally when accessible.	X	X			
Verify the pressure test holding time, testing medium, temperature, and purity.	X				
Where primary fittings, covers, and bolting are used, verify that the correct torque is applied.	X				
Verify correct marking of removable pressure components.	X				
Verify any priming or painting prior to pressure testing is approved by the Client.	X				

Marking and Labeling	Level 1	Level 2	Level 3	Level 4	Customized
Verify that the nameplate is attached to the correct item of pressure equipment in the proper manner.	X	X			
Verify the required markings are either stamped directly on the vessel or applied to the nameplate.	X	X			
Provide evidence of the nameplate marking via photograph or rubbing and provide to the Client in the final documentation package.	X				

Painting and Coating	Level 1	Level 2	Level 3	Level 4	Customized
Verify that painting or coatings exist on all required surfaces.	X	X			
Review the Painting Inspection Report.	X	X			

Shipping	Level 1	Level 2	Level 3	Level 4	Customized
Verify packaging of pressure equipment.	X	X			

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