Cladding Technology Shanxi Co., Ltd

HSE Equipment and Facility Safety Inspection and Maintenance Record

Document No.: CLADDING-HSE-PD-53

I. Basic Equipment Information (Integrating Core Elements of New Format, Clarifying Equipment Identity)

Item	Content to Be Filled (Associating with Business Scenarios, Accurately Locating Equipment)
Record No.	CPPMEC-HSE-PD-53
Basic Equipment Information	Equipment No.: (e.g., SB-TC-001 - Forklift, SB-QZ-001 - Crane) Equipment Name: (e.g., 3t Internal Combustion Forklift, 5t Overhead Crane) User Department: (Warehousing Department / Transportation Department / Equipment Department / Installation Department) Equipment Model: (e.g., CPD30 Forklift, LD5t Crane) Specification Parameters: _____ (e.g., Rated Load 3t, Lifting Height 4.5m)
Equipment Traceability Information	Factory Serial No.: _____ Manufacturer: _____ Commissioning Date: ____ Year ____ Month ____ Day Installation Location: ____ (e.g., Loading and Unloading Operation Area A, Hazardous Chemical Area in Warehousing) Recent Overhaul Date: ____ Year ____ Month ____ Day
Personnel Management Information	Manager: (Position: Equipment Administrator, Contact Information:) Operator: (Name + Certificate No., e.g., Forklift Driver's License No.:) Maintenance Responsible Person: (Position: Maintenance Technician, Contact Information:)
Management Basis	① Company HSE Equipment Management System, Special Equipment Safety Management Specifications ② Equipment

	Manufacturer's Maintenance Manual ③ Special Equipment Periodic Inspection Rules, Electrical Equipment Preventive Test Procedures

II. Hierarchical Inspection Records (Divided by Cycles in New Format, Retaining Original Business Quantitative Standards)

(I) Daily Inspection Records (Filled by Operators Daily, Covering All Equipment Types)

Inspection Date	Operating Time (h)	Inspection Item	Inspection Standards (Adapting to Equipment Characteristics, Quantitative Indicators)	Inspection Result (□Normal □Abnormal)	Abnormal Situation Record (Including Location + Phenomenon)	Inspector (Operator)
		1. Appearance Condition	① Forklift: No deformation of vehicle body, no cracks on forks (deformation ≤3mm); ② Crane: No cracks on hook, no broken wires on steel rope (≤3 wires / lay length); ③ Shelf: No bending of columns (verticality deviation ≤1mm/m)		(e.g., "Tread depth of right front tire of forklift is 2mm, exceeding wear limit; Verticality deviation of Shelf No.2 column is 2mm/m")	
		2. Lubrication	① Forklift / Crane: Engine		(e.g., "Engine oil level of	

		System	oil level between 1/2-2/3 of dipstick, no leakage; ② Electric Tools: Sufficient grease in gearbox, no dry friction		forklift is below lower limit, oil stain at oil pipe joint")	
		3. Fastening Components	① Equipment connectors (bolts, nuts) without looseness, torque value meeting requirements (e.g., fork bolt of forklift ≥25N·m); ② Tightening torque of scaffold couplers: 40-65N·m		(e.g., "Bolt of crane cart rail is loose, torque is 20N·m")	
		4. Safety Devices	① Forklift: Sensitive brake (braking distance ≤1.5m), effective reversing buzzer; ② Crane: Sensitive load moment limiter and height limiter; ③ Electrical Equipment: Emergency stop switch		(e.g., "Braking distance of forklift is 2.0m, deviating to right; Height limiter of crane fails")	

			shuts down immediately when pressed			
		5. Electrical System	① No damage to insulation layer of power cord, intact grounding pin of plug; ② Normal indicator lights of distribution box (power light on, fault light off); ③ Normal sound and light alarm of electroscope during self-inspection		(e.g., "Insulation of power cord of electric hoist is damaged, exposing copper wires; No sound from electroscope during self-inspection")	
		6. Operating Parameters	① Forklift: Idle speed 600-800r/min, water temperature ≤90℃; ② Pressure Vessel: Pressure ≤90% of nominal pressure, temperature 10-30℃; ③ Generator: Output voltage 380V±5%		(e.g., "Idle speed of forklift is 950r/min, water temperature is 95℃; Pressure of acetylene cylinder exceeds 10% of nominal pressure")	

(II) Periodic Inspection Records (Filled by Maintenance Personnel Weekly, Focusing on Core Functions)

Inspection Date	Inspection Item	Inspection Content and Standards (Customized by Equipment Category)	Inspection Result (□Qualified □Unqualified)	Abnormal Situation Record (Including Preliminary Cause Analysis)	Inspector (Maintenance Personnel)	Handling Situation (Immediate Rectification / Scheduled Arrangement)
	1. Transmission System	① Forklift: Smooth clutch shifting without jamming; No abnormal noise from drive axle; ② Crane: No rail gnawing during cart/trolley operation, wheel flange wear ≤15%; ③ Machine Tool: Spindle speed meets rated value, no vibration		(e.g., "Forklift shifting is jammed, preliminary judgment is clutch plate wear; Wheel flange wear of crane is 20%")		① Forklift: Schedule clutch plate replacement, to be completed within 3 days; ② Crane: Stop use immediately, replace wheels
	2. Brake System	① Forklift: Effective parking brake (no sliding on 30° slope); ② Crane: Braking sliding distance ≤0.5m, brake lining thickness ≥5mm; ③ Electric Tools: Sensitive switch on-off, no adhesion		(e.g., "Parking brake of forklift slides on 30° slope; Brake lining thickness of crane is 3mm")		① Forklift: Adjust parking brake cable; ② Crane: Replace brake linings

	3. Hydraulic System	① Forklift: Hydraulic oil cleanliness up to standard (no impurities), stable cylinder lifting without jamming; ② Crane: Normal pressure of hydraulic pump station (e.g., 16MPa±0.5MPa), no leakage; ③ Hydraulic Jack: Effective pressure relief valve		(e.g., "Hydraulic oil of forklift is turbid, cylinder lifting is jammed; Pressure of crane hydraulic pump station is 14MPa, lower than standard")		① Forklift: Replace hydraulic oil, clean cylinder; ② Crane: Overhaul hydraulic pump
	4. Control System	① Forklift: Accurate instrument panel display (no deviation of speed, oil volume); ② Crane: Effective remote control (distance ≤50m), no delay; ③ CNC Machine Tool: No error in program operation		(e.g., "Oil volume display deviation of forklift is 10%; Remote control delay of crane is 2s")		① Forklift: Calibrate oil volume sensor; ② Crane: Replace remote control battery
	5. Grounding Protection	① All Electrical Equipment: Grounding resistance ≤4Ω (measured by grounding resistance		(e.g., "Grounding resistance of forklift is 6Ω; Anti-		① Forklift: Add grounding electrode, re-test to 3Ω; ② Hazardous

		tester); ② Special Equipment: Lightning protection grounding resistance ≤10Ω, anti-static grounding ≤100Ω		static grounding resistance of hazardous chemical area is 120Ω")		Chemical Area: Reconnect grounding main line
	6. Insulation Resistance	① Electric Tools: Insulation resistance ≥1MΩ (250V insulation tester); ② Distribution Box: Phase-to-phase / phase-to-ground insulation resistance ≥1MΩ; ③ Cable: Insulation resistance ≥10MΩ/km		(e.g., "Insulation resistance of angle grinder is 0.5MΩ; Phase-to-ground insulation resistance of distribution box is 0.8MΩ")		① Angle Grinder: Stop use, repair winding insulation; ② Distribution Box: Power off and clean, re-test

(III) Monthly Professional Inspection Records (Filled by Technical Personnel Monthly, In-Depth Evaluation)

Inspection Date	Inspection Item	Inspection Content and Standards (Professional Equipment Testing)	Inspection Result (□Qualified □Unqualified)	Existing Problems (Technical Analysis)	Maintenance Suggestions (Specific Plan + Spare Part Requirements)	Inspector (Professional Technical Personnel)

	1. Structural Integrity	① Forklift: No fatigue cracks on frame (magnetic particle inspection), fork deformation after loading ≤L/1000 (L is fork length); ② Crane: Main beam deflection ≤L/1000, no permanent deformation; ③ Shelf: Beam deflection after loading ≤L/200		(e.g., "Surface cracks found on forklift fork during inspection; Main beam deflection of crane is L/800, exceeding standard")	① Forklift: Replace fork, spare part model: _____; ② Crane: Reinforce main beam, require support from external cooperation manufacturer	
	2. Precision Testing	① CNC Machine Tool: Positioning accuracy ≤±0.01mm, repeat positioning accuracy ≤±0.005mm; ② Forklift: Fork levelness deviation ≤0.5mm/m; ③ Pressure Gauge:		(e.g., "Positioning accuracy of CNC machine tool is ±0.02mm; Fork levelness deviation of forklift is 1mm/m")	① CNC Machine Tool: Calibrate ball screw, require precision calibrator; ② Forklift: Adjust fork tilt cylinder	

		Accuracy class ≤1.6, indication error ≤±1%				
	3. Performance Testing	① Forklift: Full-load climbing capacity ≥15°, maximum speed ≥18km/h; ② Crane: Rated load lifting height up to standard, stable luffing; ③ Generator: Fuel consumption ≤230g/kW·h at rated power output		(e.g., "Full-load climbing capacity of forklift is only 12%, insufficient power; Rated load lifting height deviation of crane is 0.5m")	① Forklift: Check engine power, require replacement of air filter + fuel injector; ② Crane: Adjust luffing cylinder	
	4. Safety Device Verification	① Special Equipment: Interlock protection (e.g., power-off of door interlock) response time ≤0.5s; Overload protection (shutdown at 110% rated load); ② Electrical		(e.g., "Door interlock response time of crane is 1s; Leakage protector tripping current is 40mA")	① Crane: Replace interlock switch, model: _____; ② Leakage Protector: Replace with 30mA specification	

		Equipment: Leakage protector tripping current ≤30mA, tripping time ≤0.1s				
	5. Noise and Temperature Rise	① Equipment Operating Noise: Forklift ≤85dB, Crane ≤82dB, Machine Tool ≤80dB (measured by sound level meter); ② Motor Temperature Rise: Stator winding temperature rise ≤80K (measured by resistance method), bearing temperature rise ≤40K		(e.g., "Operating noise of forklift is 88dB; Stator winding temperature rise of motor is 85K")	① Forklift: Check exhaust system, install muffler; ② Motor: Clean heat dissipation air duct, add lubricating grease	

III. Full-Cycle Maintenance Records (Integrating "Daily + Periodic" Logic of New Format)

(I) Daily Maintenance Records (Daily/Weekly, Cooperation Between Operators/Maintenance Personnel)

Maintenance Date	Maintenance Item	Maintenance Content (Standardized Operation)	Replaced Spare Parts (Model + Quantity)	Maintenance Personnel (Operator / Maintenance)	Confirmation Personnel (Manager)	Remarks (e.g., Environmental Impact)
	1. Cleaning Maintenance	① Equipment Surface: Wipe oil stains with rag, no debris in forklift/crane cab; ② Heat Dissipation Components: Clean dust from motor fan and water tank filter; ③ Electrical Cabinet: Purge dust, no accumulation	-	Operator		(e.g., "Avoid coolant splashing on electrical cabinet when cleaning machine tools in maintenance workshop")
	2. Lubrication Maintenance	① Forklift: Check levels of engine oil (model: CF-4 15W-40) and hydraulic oil (model: L-HM46), replenish if insufficient; ② Crane:	-	Maintenance Personnel		(e.g., "Replace hydraulic oil with L-HM32 in winter to adapt to low temperature")

		Apply graphite grease to steel ropes, inject lithium-based grease (model: 3#) to bearings; ③ Tools: Inject calcium-based grease to electric drill gearbox				
	3. Fastening Inspection	① Forklift: Retighten fork bolts and tire nuts (torque: 30N·m and 80N·m respectively); ② Crane: Retighten rail pressing plate bolts and hook nuts; ③ Shelf: Retighten layer plate connecting bolts (torque: 25N·m)	-	Maintenance Personnel		(e.g., "For equipment with high vibration, increase fastening inspection frequency to once a week")
	4. Adjustment Inspection	① Forklift: Adjust brake pedal free travel (10-	Carbon brush (model:	Maintenance Personnel		(e.g., "For forklifts with frequent brake use,

		15mm); ② Crane: Adjust limit switch position to ensure accurate triggering stroke; ③ Electric Tools: Check carbon brush wear, replace if exceeding 2/3	_____, 1 pair)			check travel daily")

(II) Periodic Maintenance Records (Minor/Medium/Major Overhaul, Executed by Professional Team)

Maintenance Date	Maintenance Category	Maintenance Content (Disassembly / Repair)	Replaced Spare Parts (Model + Quantity + Manufacturer)	Maintenance Personnel (Maintenance Team)	Confirmation Personnel (Technical Supervisor)	Next Maintenance Date	Maintenance Cost (RMB)
	Minor Overhaul	① Forklift: Replace oil filter (model: JX0818) and air filter (model: K2032); Clean fuel filter; ②	1 oil filter, 1 air filter (Manufacturer: MANN)			After 1 month	500

		Crane: Replace brake linings (model: _____) and replenish steel rope grease; ③ Machine Tool: Clean spindle box and replace seals					
	Medium Overhaul	① Forklift: Disassemble gearbox, replace synchronizer (model:) and bearings (model: 6205); Calibrate steering system; ② Crane: Disassemble lifting mechanism, replace gears (model:) and drum bearings;	1 set of synchronizer, 2 bearings (Manufacturer: SKF)			After 6 months	8000

		③ Generator: Disassemble cylinder head, replace valve oil seals and piston rings					
	Major Overhaul	① Forklift: Overall disassembly, replace frame wearing parts and engine pistons (model:); Repaint; ② Crane: Reinforce main beam, replace cart traveling mechanism; Re-calibrate safety devices; ③ CNC Machine Tool: Replace ball screws (model:)	4 pistons, 1 ball screw (Manufacturer: THK)			After 2 years	50000

		and guide rail inlays					

IV. Special Equipment Inspection Records (Special Module of New Format, Strengthening High-Risk Control)

(I) Special Inspection Records for Special Equipment (Forklifts / Cranes / Pressure Vessels, Etc.)

Inspection Date	Inspection Item	Inspection Content and Standards (Regulatory Compliance)	Inspection Result (□Qualified □Unqualified)	Existing Problems (Associating with Regulatory Requirements)	Inspector (Special Equipment Administrator)	Remarks (e.g., Inspection Report No.)
	1. Qualification Documents	① Usage Registration Certificate: Within validity period, information consistent with equipment; ② Periodic Inspection Report: Annual inspection for forklifts/cranes, triennial inspection for pressure vessels, qualified report; ③ Operator		(e.g., "Crane usage registration certificate expired for 1 month; 1 forklift driver's certificate not renewed")		Inspection Report No.: (Forklift), (Crane)

		Certificates: Valid forklift/crane driver certificates, no unlicensed operation				
	2. Safety Accessories	① Pressure Vessels: Safety valves (calibrated annually) and pressure gauges (calibrated every 6 months) within calibration period; ② Cranes: Annual calibration of load moment limiters and height limiters, complete reports; ③ Forklifts: Intact reversing alarms and rearview mirrors		(e.g., "Acetylene cylinder safety valve expired for 2 months without calibration; Crane load moment limiter not calibrated")		Safety Valve Calibration Organization: _____
	3. Operation Records	① Special Equipment Operation Log: Daily		(e.g., "3 days of missing crane operation		Supplementary Record Date: _____

		recording of operating time, load and fault conditions, no omissions; ② Maintenance Records: Consistent with actual equipment maintenance, no forgery; ③ Fault Handling Records: Complete closed-loop, no unhandled faults		logs; No maintenance certificates attached to fault handling records")		

(II) Special Inspection Records for Electrical Equipment (Power Distribution / Tools / Lightning Protection, Etc.)

Inspection Date	Inspection Item	Inspection Content and Standards (Electrical Safety Specifications)	Inspection Result (□Qualified □Unqualified)	Existing Problems (Analysis of Electric Shock / Fire Risks)	Inspector (Electrical Engineer)	Handling Situation (Immediate / Scheduled)
	1. Power Distribution Equipment	① Distribution Cabinet: Reliable cabinet grounding, closed cabinet door, clear identification (e.g., "Warehousing Area Main Switch"); ② Circuit Breaker: Rated		(e.g., "Distribution cabinet door not grounded; Cable crushed by forklift,		① Install cabinet door grounding wire; ② Replace cable and

		current matching load, effective tripping test; ③ Cable: Standardized laying, no rolling/immersion, complete identification		insulation damaged")		lay overhead
	2. Insulation Protection	① Electric Tools: No aging of power cord insulation (service life ≤3 years), three-pin plug; ② Insulation Gloves: No damage, no leakage after 5-minute inflation, within calibration period; ③ Electroscope: Qualified power frequency withstand voltage test for 10kV electroscope		(e.g., "Aging and cracking of electric drill power cord; Insulation gloves leaking")		① Scrap electric drill and replace with new tool; ② Replace insulation gloves
	3. Lightning Protection and Grounding	① Building Lightning Protection: No rust on lightning arrester, firm connection of down conductor, grounding resistance ≤10Ω; ② Equipment Lightning Protection: Lightning protection grounding resistance of cranes and storage tanks ≤10Ω; ③ Weak Current System: Install surge protectors for monitoring/communication equipment		(e.g., "Loose down conductor of lightning rod in warehousing area; No surge protector for monitoring equipment")		① Tighten down conductor and re-test grounding resistance; ② Install surge protectors

V. Problem Handling and Maintenance Closed-Loop Records (Integrating "Problem-Handling-Verification" Logic of New Format)

(I) Problem Handling Records (Full-Cycle Problem Tracking)

Discovery Date	Problem Description (Equipment + Phenomenon + Impact)	Problem Level (□Major □General)	Handling Measures (Specific Operation + Responsible Person)	Handler	Completion Date	Verification Result (□Qualified □Unqualified)	Verifier	Reason for Disqualification (If Any)
	Forklift SB-TC-001 has hydraulic oil leakage, unable to lift forks, affecting loading and unloading operations (Leakage Point: Oil Pipe Joint)	□ □	① Replace sealing gasket (model: O-ring 16×2.4); ② Replenish hydraulic oil (L-HM46, 2L); ③ Responsible Person: Zhang XX			□ □		
	Load moment limiter of Crane SB-QZ-001 fails,	□ □	① Replace load moment sensor (model:			□ □		

	no alarm when overloaded by 15%, risk of hanging object falling (Cause: Sensor Fault)		QS-300); ② Calibrate limiter and test overload alarm; ③ Responsible Person: Li XX					
	Column of Shelf SB-HJ-001 tilts, insufficient bearing capacity, risk of material collapse (Tilt Amount: 2mm/m, exceeding standard by 1mm/m)	□ □	① Add column supports; ② Transfer upper-layer materials to reduce load; ③ Responsible Person: Wang XX			□ □		

(II) Equipment Maintenance Records (Planned / Fault Two Types)

Maintenance Date	Maintenance Type (□Planned Maintenance □Fault Maintenance)	Maintenance Content (Disassembly / Repair / Replacement)	Replaced Parts (Model + Quantity + Batch)	Maintenance Personnel (Team / Individual)	Acceptor (Technical Supervisor)	Post-Maintenance Operation Status (Parameters + Stability)	Maintenance Report No.

	□ □	Major engine overhaul of Forklift SB-TC-001: Disassemble cylinder block, replace pistons (model: 1105) and valves (model: _____), clean carbon deposits	4 pistons (Batch: 202405), 2 valves	Maintenance Team		Idle speed 700r/min, power restored, full-load climbing 15°, no abnormality after 10-hour operation	JR-20240601
	□ □	Fault of Crane SB-QZ-001 lifting mechanism: Replace steel rope (model: 6×37+FC-14) and drum bearings (model: 6312)	1 steel rope (Batch: 20240510), 2 bearings	Li XX		Stable lifting of rated load, no abnormal noise, braking sliding distance 0.3m	JR-20240605

VI. Equipment Integrity Statistics and Record Confirmation (Statistics + Signature Module of New Format)

(I) Equipment Integrity Statistics (Monthly Summary)

Statistical Month	Number of Inspections (Times)	Number of Abnormalities (Times)	Number of Faults (Times)	Number of Maintenances (Times)	Integrity Rate (%) = (1 - Number of Abnormalities / Number of Inspections) × 100	Main Problem Types (Top 3)	Statistician (Equipment Administrator)
2024.06	30	3	1	4	90%	1. Forklift hydraulic leakage; 2. Crane limiter failure; 3. Electrical insulation damage	
2024.07	31	2	0	2	93.5%	1. Loose shelf bolts; 2. Carbon brush wear of electric tools	
2024.08	31	1	0	1	96.8%	1. Pressure gauge deviation of pressur	

						e vessel	

(II) Record Confirmation (Multi-Role Responsibility Tracing)

Role	Signature	Date	Confirmation Opinion (Record Authenticity / Compliance)
Equipment Operator			"Daily inspection records are authentic, abnormal situations have been reported in a timely manner, no concealment"
Equipment Manager			"Periodic inspection and maintenance records are complete, problem handling is closed-loop, in line with company HSE equipment management requirements"
Maintenance Supervisor			"Maintenance and overhaul records are standardized, replaced parts models are accurate, maintenance quality meets standards"
Department Head Review			"Equipment inspection and maintenance work of this department is compliant, equipment integrity rate meets standards, approval for archiving"

Quality, Safety and Environmental Protection Department Filing			"Records comply with HSE management specifications, archived, and equipment integrity rate improvement will be tracked subsequently"

VII. Archiving Requirements and Instructions (Storage Requirements of New Format, Strengthening Tracing)

1. Archiving Management: This record shall be kept for the entire service life of the equipment. After equipment scrapping, it shall be organized and archived by the Equipment Management Department, with a retention period of not less than 3 years; when the equipment is transferred, this record shall be handed over to the receiving party together, and a handover list shall be signed.
2. Filling Specifications:
    - All records shall be filled in with black 签字笔, with neat handwriting and no alterations; electronic records shall be stored in an encrypted manner, with traces retained for modifications;
    - Abnormal situation descriptions shall indicate "equipment location + specific phenomenon + quantitative data" (e.g., "Tread depth of right front tire of forklift is 2mm"), and vague expressions are prohibited;
    - For maintenance/replaced parts, models, manufacturers and batches shall be recorded to facilitate tracing of spare part quality.
1. Special Requirements:
    - Records of special equipment shall be compiled separately, with copies of periodic inspection reports and calibration certificates attached;
    - Records of major faults (e.g., crane main beam deformation, forklift engine scrapping) shall be attached with fault analysis reports and photo/video evidence materials.

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