Cladding Technology Shanxi Co., Ltd

HSE Lifting Management Procedure (Revised Version)

Document No.: CLADDING-HSE-PD-30

1 General Provisions

1.1 Purpose

To standardize the Health, Safety and Environment (HSE) management of the Company's lifting operations, prevent lifting-related injuries, safeguard personnel life safety, company property safety and operation environment safety, and ensure the smooth progress of material procurement and supply, equipment transportation and installation businesses. This procedure is formulated in accordance with the *Work Safety Law of the People's Republic of China*, *Safety Code for Lifting Appliances* (GB 6067.1/GB/T 6067), PIPING SYSTEM PTE LTD's *Lifting Operation Safety Management Measures*, *Lifting and Hoisting Operation Safety Management Standard*, and relevant HSE management systems of PipeChina.

1.2 Scope of Application

This procedure applies to all lifting operations and relevant personnel in the Company's production and business activities, specifically including:

1. Operation Types: Lifting machinery operations, temporary lifting operations, large-scale equipment lifting operations, and lifting operations in hazardous areas;
2. Application Scenarios: Equipment/component lifting during material warehousing and transfer, loading/unloading lifting after equipment procurement and acceptance, temporary lifting operations assisting at construction sites, and management of outsourced third-party lifting services;
3. Applicable Personnel: Personnel of lifting operation units, lifting commanders, lifting machinery operators, rigging personnel, supervisors, and relevant management personnel;
4. Exclusions: Emergency lifting operations in special scenarios such as military operations and disaster relief (implemented in accordance with national special regulations).

1.3 Terminology and Definitions

1.3.1 HSE: Refers to an integrated management system covering Health, Safety, and Environment, aiming to protect personnel health, prevent safety risks, and minimize environmental impacts during operations.

1.3.2 Lifting Operation: The process of lifting, moving, and placing heavy objects from the ground or a certain position to a designated location using lifting machinery (such as truck cranes, crawler cranes, gantry cranes, etc.), including the entire process of lifting tool selection, equipment inspection, on-site operation, and heavy object positioning.

1.3.3 Lifting Machinery: Mechanical and electrical equipment used for vertical lifting or vertical lifting combined with horizontal movement of heavy objects, including elevators with a rated lifting capacity ≥ 0.5t, cranes with a rated lifting capacity ≥ 3t and lifting height ≥ 2m, and fixed-load electric hoists (requiring special equipment registration certificates).

1.3.4 Lifting Operation Classification:

• Risk-based Classification: Level 1 Lifting (heavy object weight ≥ 100t), Level 2 Lifting (40t ≤ heavy object weight ＜ 100t), Level 3 Lifting (heavy object weight ＜ 40t);

• Management-based Classification: General Lifting Operation (heavy object weight ＜ 10t, simple operation environment, conventional equipment), Important Lifting Operation (10t ≤ heavy object weight ≤ 50t, relatively complex operation environment, requiring special plans), Major Lifting Operation (heavy object weight ＞ 50t, complex operation environment, requiring expert demonstration).

2 Responsibility Assignment

2.1 Quality, Health, Safety and Environmental (QHSE) Department (Former HSE Management Department)

1. Responsible for formulating, revising, and supervising the implementation of this procedure; organizing regular HSE training and assessment for lifting operations;
2. Reviewing major lifting operation plans; conducting on-site supervision for Level 1/Level 2/Major Lifting Operations; verifying approval documents, personnel qualifications, and equipment compliance;
3. Organizing investigation and analysis of lifting accidents; formulating corrective measures and tracking their implementation;
4. Supervising the implementation of this procedure; establishing a major hazard source management ledger (in accordance with the *Major Hazard Source Management System*).

2.2 Material Procurement and Warehousing Department

1. Initiating lifting operation applications; clarifying the operation object (pipeline components/equipment), weight, location, time, and management level;
2. Ensuring lifting machinery and lifting tools meet procurement standards; retaining equipment certificates of conformity and regular inspection reports;

3. Organizing pre-operation safety technical disclosure and retaining disclosure records;
4. Approving Level 3/General Lifting Operations; conducting preliminary review of Level 1/Level 2/Important Lifting Operation plans.

2.3 Lifting Operation Units (Including Outsourced Units)

1. Equipping certified personnel: Lifting commanders (holding valid command certificates), lifting machinery operators (holding valid special operation certificates), rigging personnel (qualified through professional training);
2. Responsible for the specific implementation of lifting operations; implementing the lifting operation permit system and fulfilling safety measures;
3. Inspecting lifting machinery, lifting tools, and riggings before operations; filling out the *Lifting Equipment Inspection Record* and eliminating potential faults;
4. Setting up operation warning zones; prohibiting unauthorized personnel from entering; cooperating with the QHSE Department in emergency response;
5. Establishing equipment technical archives; conducting regular maintenance; promptly eliminating and scrapping unqualified equipment.

2.4 Responsibilities of Key Positions

2.4.1 Lifting Commanders:

• Working with valid command certificates; responsible for unified on-site command and confirming operation conditions;

• Using unified command signals (hand gestures/flag signals/walkie-talkies); supervising standardized operation of personnel; refusing illegal commands.

2.4.2 Lifting Machinery Operators:

• Working with valid special operation certificates; strictly operating in accordance with operating procedures; refusing illegal commands;

• Responsible for daily inspection and maintenance of equipment; recording the *Lifting Operation Handover Record*; immediately stopping the machine if faults are found.

2.4.3 Rigging Personnel:

• Qualified through professional training; responsible for inspecting and confirming lifting tools and riggings (marking, integrity, inspection validity period);

• Correctly binding and hanging goods; supervising lifting operation safety; prohibiting personnel from standing under suspended loads.

2.5 Supervision Units (If Applicable)

1. Reviewing the compliance and feasibility of lifting operation plans; focusing on verifying technical calculations (force bearing/stability/lifting tool selection);

2. Supervising the implementation of safety measures during operations; promptly stopping illegal acts and requiring rectification;
3. Verifying pre-operation safety inspection results (warning zones/communication links).

3 HSE Management Requirements for Lifting Operations

3.1 Pre-Operation Preparation

3.1.1 Plan Formulation and Approval (In Accordance with the *HSE Emergency Preparedness and Response Management Procedure*)

Operation Level	Plan Requirements	Approval Process
General/Level 3	Simplified Operation Records	Self-inspection by operation unit → Approval by Material Procurement Department
Important/Level 2	Special HSE Plan (including project overview, lifting process, safety measures, emergency response)	Formulation by operation unit → Preliminary review by Material Procurement Department → Review by QHSE Department → Approval by Department Head
Major/Level 1	Special Plan + Expert Demonstration (including force calculation, stability analysis)	Formulation by operation unit → Expert demonstration → Preliminary review by Material Procurement Department → Review by QHSE Department → Approval by Company Leadership

3.1.2 Personnel and Equipment Preparation

3.1.2.1 Personnel Qualification Verification:

• Verifying the validity period of commanders'/operators' certificates and rigging personnel's training certificates;

• Operation personnel shall correctly wear personal protective equipment (safety helmets, safety belts, anti-slip shoes, reflective vests; rigging personnel shall additionally wear gloves).

3.1.2.2 Equipment and Lifting Tool Inspection:

• Lifting Machinery Inspection: Safety devices (load moment limiters, brakes) are complete and effective; no deformation or cracks in structures; no leakage in hydraulic systems; steel wire ropes meet usage requirements;

• Lifting Tool and Rigging Inspection: Rated load matches the operation; no defects/damage; clear marking; within inspection validity period (in accordance with Appendix D Scrap Standards);

• Filling out the *Lifting Equipment Inspection Record*; prohibited use of unqualified equipment.

3.1.3 Operation Environment Confirmation

1. The bearing capacity of the operation area foundation meets requirements; soft ground shall be padded with steel plates/gravel;
2. Detecting the location of underground facilities (pipelines/cables), providing protection, and confirming the safety distance from overhead pipelines;
3. Monitoring weather forecasts: Prohibiting outdoor lifting operations in severe weather such as heavy rain, wind speed ≥ Level 6, and heavy fog;
4. For lifting operations in hazardous areas (e.g., anti-corrosion pipeline areas), hazardous operation permits shall be obtained; additional safety supervision shall be arranged; and protective equipment such as gas masks shall be equipped.

3.2 In-Operation Control

3.2.1 Operation Permit and Safety Disclosure

• Obtaining the *Lifting Operation Permit* before operations; verifying the completeness of permit procedures;

• Organizing safety disclosure for all personnel, covering content such as plan procedures, emergency measures, command signals, and risk points (overturning/falling/electric shock);

• Setting up warning zones (warning tapes/guardrails); assigning dedicated personnel for supervision; prohibiting unauthorized personnel from entering.

3.2.2 Lifting Operation Specifications

3.2.2.1 Trial Lifting Requirements:

• Lifting the load 10-20cm (or 200-300mm) off the ground; staying for ≥ 5 minutes;

• Inspecting the stability of the crane, force bearing of lifting tools, and balance of the load; proceeding only if no abnormalities are found.

3.2.2.2 Normal Lifting Operation:

• Lifting and moving smoothly; avoiding sudden starts/stops and large swings;

• Strictly prohibiting overloading (single-machine load shall not exceed 80% of rated load for dual-machine lifting);

• Prohibiting loads from passing over personnel; strictly prohibiting personnel from standing or passing under loads;

• Operators shall strictly follow command signals (in accordance with Appendix C Command Signal Specifications); ensuring walkie-talkies maintain unobstructed communication.

3.2.3 Special Lifting Operation Control

3.2.3.1 Dual-Machine Lifting:

• Using cranes of the same type; formulating special plans;

• Implementing unified command; coordinating movements; monitoring the load of each machine in real time.

3.2.3.2 Large-Scale Equipment Lifting:

• Conducting lifting stability calculations; setting up traction ropes to control swinging;

• Lifting slowly; monitoring the load status throughout the process; avoiding collisions with surrounding facilities.

3.2.3.3 Lifting in Hazardous Areas:

• Adding on-site safety supervisors; equipping emergency handling equipment (first-aid kits, oil-absorbent pads);

• Controlling noise and vibration impacts (in accordance with environmental safety requirements); cleaning the site after operations.

3.2.4 Risk, Health and Environmental Monitoring

• Operation personnel shall rest for 15 minutes after every 2 consecutive hours of operation to avoid fatigued operation;

• HSE supervisors (must be assigned for Level 1/Level 2/Major Operations) shall be present throughout the process; immediately stopping operations if abnormalities such as abnormal noise or brake failure are found;

• Setting up temporary trash bins on-site; recycling waste steel wire ropes and packaging materials; using oil-absorbent pads to clean oil leakage from lifting tools to prevent soil pollution.

3.3 Post-Operation Management

1. Equipment Handling: Parking cranes in designated locations; retracting outriggers/booms; cutting off power; cleaning and storing lifting tools and riggings by category; marking damaged parts as "Forbidden" and scrapping them in accordance with Appendix D;

2. Site Cleaning: Removing warning signs; cleaning debris; restoring the site to its original state;
3. Record Archiving: Organizing the *Lifting Operation Permit*, *Equipment Inspection Record*, *Handover Record*, and *Safety Disclosure Record*; archiving them in the Material Procurement Department with a retention period ≥ 3 years.

4 Emergency Response (In Accordance with the *HSE Emergency Preparedness and Response Management Procedure*)

4.1 Emergency Preparedness

1. The QHSE Department formulates special emergency plans for lifting operations; clarifying emergency organizations, responsibilities, and response procedures;
2. Equipping emergency materials: First-aid kits, jacks, traction ropes, oil-absorbent pads, fire extinguishers;
3. Organizing 1 emergency drill every 6 months; recording the *Emergency Plan Drill Record*; improving personnel response capabilities.

4.2 Emergency Response

4.2.1 Lifting Machinery Overturning/Load Falling:

• On-site personnel immediately evacuate to safe areas; commanders call the Company emergency hotline (0316-2073723) and 119 (if a fire occurs);

• After the emergency team arrives, set up a warning zone; stabilize the overturned machinery with traction equipment; prohibiting blind rescue;

• Simultaneously initiating equipment repair and environmental cleaning procedures (e.g., stopping leaks if loads damage pipelines).

4.2.2 Personnel Injuries:

• Stopping operations; personnel with first-aid qualifications provide preliminary treatment such as hemostasis and immobilization; calling 120;

• Protecting the accident scene; collecting operation records and equipment inspection reports; cooperating with accident investigation;

• Filling out the *Lifting Accident Report* and submitting it to the QHSE Department.

4.3 Post-Incident Handling

1. Holding an analysis meeting after the accident; clarifying the cause and responsible personnel; formulating preventive measures;
2. Tracking the recovery of injured personnel; assisting in handling medical compensation;

3. Revising emergency plans or this procedure to avoid recurrence of similar accidents.

5 Inspection and Assessment

5.1 Inspection Mechanism

1. Daily Inspection: Operation units conduct self-inspection (personnel/equipment/site) before daily operations; filling out the *Lifting Operation Safety Checklist* (Appendix A); immediately rectifying problems found;
2. Special Inspection: The QHSE Department conducts special inspections quarterly; focusing on verifying approval procedures, qualification compliance, and emergency preparedness; forming the *HSE Inspection Report*;
3. Unannounced Inspection: The QHSE Department conducts on-site unannounced inspections for Level 1/Major Lifting Operations to ensure compliance.

5.2 Assessment Standards

1. Rewards: Units/personnel that strictly implement this procedure and have no safety accidents shall receive bonus points in the annual HSE evaluation or material rewards;
2. Penalties:

• Unauthorized lifting without obtaining permits: Fine of RMB 5,000;

• Personnel working without certificates or with expired certificates: Fine of RMB 10,000 on the operation unit and RMB 2,000 on the responsible person;

• Equipment without inspection or operating with faults: Ordering work suspension for rectification; fine of RMB 20,000;

• Occurrence of general or more serious accidents: Disqualifying the operation unit from annual evaluation; holding relevant responsible persons accountable.

6 Supplementary Provisions

6.1 Relevant Documents

• *Safety Code for Lifting Appliances* (GB 6067.1/GB/T 6067)

• *Lifting and Hoisting Operation Safety Management Standard*

• *Major Hazard Source Management System*

• *HSE Emergency Preparedness and Response Management Procedure*

6.2 Record Forms

• *Lifting Operation Permit*

• *Lifting Equipment Inspection Record*

• *Lifting Operation Handover Record*

• *Lifting Accident Report*

• *Emergency Plan Drill Record*

• *Lifting Operation Safety Checklist* (see Appendix A)

6.3 This procedure is interpreted by the Company's QHSE Department and shall take effect from the date of issuance. The former *Lifting Operation Safety Management Regulations of Pipeline Materials and Equipment Co., Ltd. (20XX Version)* shall be repealed simultaneously.

6.4 Matters not covered herein shall be implemented in accordance with national laws and regulations, , and management systems.

Pipeline Materials and Equipment Co., Ltd.

November 20, 2026

Appendices

Appendix A: Lifting Operation Safety Checklist

Inspection Item	Inspection Content	Inspection Standard	Inspection Result
Personnel Qualifications	Commanders'/operators' certificates, rigging personnel's training certificates	All personnel hold valid certificates/are qualified through training; certificates within validity period	□Qualified □Unqualified
Equipment Condition	Safety devices of lifting machinery, integrity of lifting tools and riggings	Safety devices complete and effective; lifting tools without defects and within validity period	□Qualified □Unqualified

Operation Environment	Foundation bearing capacity, underground facility protection, weather	Foundation meets standards; facilities protected; no severe weather	□Qualified □Unqualified
Safety Measures	Warning zones, protective equipment, communication equipment	Warning measures in place; protective equipment correctly worn; communication unobstructed	□Qualified □Unqualified
Operation Documents	Operation permits, plans, disclosure records	Documents complete; approval process compliant	□Qualified □Unqualified
Inspector:	Inspection Date:	Rectification Status:	

Appendix B: Lifting Operation Prohibitions

B1 Personnel Prohibitions

• Prohibiting operating lifting machinery or commanding without certificates;

• Prohibiting engaging in lifting operations under the influence of alcohol or when fatigued;

• Prohibiting staying or passing under suspended loads;

• Prohibiting illegal command or risky operations.

B2 Equipment Prohibitions

• Prohibiting using unqualified lifting tools and riggings (in accordance with Appendix D Scrap Standards);

• Prohibiting overloading or operating with faults of lifting machinery;

• Prohibiting modifying or removing safety devices without authorization;

• Prohibiting using unregistered or uninspected lifting machinery.

B3 Operation Prohibitions

• Prohibiting overloading, slanting pulling, or side lifting;

• Prohibiting sudden braking or sudden starts/stops;

• Prohibiting operations when lighting is insufficient at night;

• Prohibiting outdoor operations in severe weather (heavy rain/strong wind/heavy fog).

Appendix C: Lifting Command Signal Specifications

C1 Hand Signals

• Lifting: Forearm extended upward, fingers together, palm forward;

• Lowering: Forearm extended downward, fingers together, palm forward;

• Stopping: Palm flat, fingers together, palm downward;

• Emergency Stopping: Hands crossed in front of the chest, fingers together.

C2 Flag Signals

• Lifting: Green flag raised, red flag hanging naturally;

• Lowering: Green flag lowered, red flag hanging naturally;

• Stopping: Red flag held horizontally, green flag hanging naturally;

• Emergency Stopping: Both flags crossed above the head.

C3 Communication Requirements

• When using walkie-talkies, a dedicated channel shall be set; testing communication unobstructed before operations;

• Command signals shall be clear, accurate, and timely; operators shall not act without confirming signals.

Appendix D: Scrap Standards for Lifting Tools and Riggings

D1 Steel Wire Rope Scrap Standards

• Number of broken wires reaches the specified value (e.g., ≥12 broken wires for 6×19 steel wire ropes);

• Diameter wear exceeds 7% of the original diameter;

• Permanent deformation such as kinking, flattening, or bending occurs;

• Severe corrosion (reddish-brown rust on the surface that cannot be removed);

• Service life exceeds the specified period (≤5 years in conventional environments).

D2 Hook Scrap Standards

• Opening exceeds 15% of the original size;

• Torsional deformation exceeds 10°;

• Wear at dangerous sections reaches 10% of the original size;

• Cracks appear on the surface (regardless of size);

• Shank deformation exceeds 5% of the original size.

D3 Scrap Standards for Other Lifting Tools

• Shackles: Cracks or deformation occur; pin wear reaches 10% of the original size;

• Slings: Damage, aging, or broken load-bearing core wires occur; surface oil contamination cannot be removed.

Appendix E: Lifting Operation Flowchart

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flowchart TD
    A[Operation Application (clarify management level)] --> B[Plan Formulation (based on level)]
    B --> C[Plan Approval (signature per process)]
    C --> D[On-site Preparation (personnel/equipment/environment)]
    D --> E[Safety Disclosure (full participation, retain records)]
    E --> F[Operation Permit (obtain Lifting Operation Permit)]
    F --> G[Implement Lifting (trial lifting → normal lifting, full supervision)]
    G --> H[Operation Completion (equipment handling → site cleaning)]
    H --> I[Record Archiving (retention ≥ 3 years)]
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