Cladding Technology Shanxi Co., Ltd

HSE Operation Plan

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Chapter 1 General Provisions

Article 1 Purpose and Basis

To standardize the Health, Safety and Environment (HSE) management of the company's operations such as material storage and handling, equipment maintenance, transportation and distribution, and equipment installation and commissioning, prevent work safety accidents, occupational health injuries and environmental pollution incidents, and ensure the safety of employees' lives and the company's property. These Plans are formulated in accordance with the Work Safety Law of the People's Republic of China, the Regulations on the Safety Management of Hazardous Chemicals, the HSE Operation Management Specifications of COMPANY, the HSE Operation Guide for Material and Equipment Business of COMPANY, and the company's HSE management system documents.

Article 2 Scope of Application

These Plans apply to all production and operation activities of the company, with key coverage on the following:

1. Material storage and handling operations: Including stacking of general materials, storage of hazardous materials (anti-corrosion coatings, hydraulic oil, welding gas, etc.), and handling operations using forklifts/cranes;
2. Equipment maintenance operations: Including hot work, work at height, confined space operations (such as tank inner wall maintenance, pipeline cavity cleaning), and mechanical equipment disassembly and maintenance;
3. Material transportation and distribution operations: Including road transportation of general materials, transportation of hazardous materials (including escort), and transportation of oversized equipment (large valves, pump bodies);
4. Equipment installation and commissioning operations: Including on-site installation of purchased equipment, pipeline connection, power-on commissioning, and no-load/load testing.

Article 3 Management Principles

1. Risk Pre-positioning Principle: Risk identification must be completed before all operations. Operations shall not start if risks are not identified or controlled;
2. Permit Control Principle: High-risk operations such as hot work, work at height, confined space operations, and oversized transportation must apply for the HSE Operation Permit. No operation is allowed without a permit;
3. Full Participation Principle: Operation supervisors, guardians, and operators shall clarify their HSE responsibilities and can only take up their posts after passing pre-job training and assessment;
4. Closed-loop Management Principle: The whole process of pre-operation briefing, in-operation supervision, and post-operation evaluation shall be recorded, and problem rectification shall form a closed loop;
5. Emergency Priority Principle: Emergency materials shall be equipped at the operation site, and all participants shall master the emergency disposal process to ensure rapid response to emergencies.

Chapter 2 Operation Scope and Risk Analysis

Article 4 Operation Scenario Classification and Risk Identification

(I) Material Storage and Handling Operations

Operation Link	Risk Description	Possible Consequences	Risk Level	Identification Method
General Material Stacking	Excessive height/width of stacking, center of gravity deviation	Material collapse, object strike	Medium Risk	On-site observation, risk matrix method
Hazardous Material Storage	Mixed storage (e.g., oxidants and flammables), excessive temperature and humidity	Leakage, combustion, explosion	High Risk	Checklist method, MSDS analysis

Forklift Handling	Forklift overloading, blind spots in vision, brake failure	Collision, personnel crushing	High Risk	Equipment inspection, operation observation
Crane Lifting	Wear of lifting tools, overloading, excessive wind speed	Falling of lifted objects, equipment overturning	High Risk	Equipment testing, meteorological monitoring

(II) Equipment Maintenance Operations

Operation Link	Risk Description	Possible Consequences	Risk Level	Identification Method
Hot Work	Failure to clean flammable materials, inadequate gas detection	Fire, explosion	High Risk	On-site inspection, gas detection
Work at Height (≥2m)	Failure to wear safety belt, unstable operation platform	Personnel falling, object strike	High Risk	Protective equipment inspection, on-site observation
Confined Space Operations	Oxygen deficiency (oxygen content <19.5%), accumulation of toxic gases	Poisoning, suffocation	High Risk	Gas detection, space assessment
Equipment Disassembly	Failure to cut off power and lock, falling parts	Mechanical injury, electric shock	Medium Risk	Energy isolation inspection, operation briefing

(III) Material Transportation and Distribution Operations

Operation Link	Risk Description	Possible Consequences	Risk Level	Identification Method
General Material Transportation	Vehicle overloading, fatigued driving, poor road conditions	Traffic accidents, material damage	Medium Risk	Vehicle inspection, driver briefing
Hazardous Material Transportation	Damaged packaging, leakage, absence of escort personnel	Environmental pollution, poisoning, explosion	High Risk	Packaging inspection, route assessment
Oversized Equipment Transportation	Scratching due to excessive height/width, overloading of bridges	Traffic disruption, equipment damage	High Risk	Route survey, load calculation

(IV) Equipment Installation and Commissioning Operations

Operation Link	Risk Description	Possible Consequences	Risk Level	Identification Method
Equipment Lifting and Positioning	Improper lifting points, command errors	Equipment falling, collision	High Risk	Lifting plan review, on-site command inspection
Pipeline Connection	Poor sealing, excessive pressure test	Medium leakage, personnel scalding	Medium Risk	Sealing inspection, pressure monitoring
Power-on Commissioning	Poor grounding,	Electric shock, equipment burnout	Medium Risk	Insulation detection, pre-

	short circuit of lines			power-on inspection
Load Testing	Overloading, failure of protection devices	Equipment damage, fire	Medium Risk	Load calculation, protection device verification

Article 5 Priority of Risk Control

1. High-risk operations: Special control plans must be formulated, which shall be approved by the company's HSE Committee before operation, and full-time guardians shall be assigned to the site;
2. Medium-risk operations: Business departments shall formulate control measures, which shall be approved by the department heads before operation, and part-time guardians shall be assigned to the site;
3. Low-risk operations: Team leaders shall implement post control requirements, complete safety briefings before operation, and keep briefing records.

Chapter 3 HSE Control Measures for Operations

Article 6 Control of Material Storage and Handling Operations

(I) General Material Storage

1. Stacking Specifications:

◦ Determine the stacking height according to material characteristics (e.g., steel ≤ 3 layers, cartons ≤ 5 layers), and set anti-toppling baffles;

◦ The width of channels shall be ≥ 1.5m with clear signs (height limit, weight limit, material name), and fire-fighting channels shall not be blocked;

2. Storage Inspection:

◦ Check the stability of stacking, temperature and humidity (10-30℃ for normal temperature storage areas, humidity ≤ 65%) daily;

◦ Conduct monthly inventory of materials, isolate and handle problems such as mildew and rust immediately, and record in the Warehouse Material Abnormality Ledger;

3. Handling Operations:

◦ Forklift operators must hold the Special Equipment Operation Certificate, check the brake, horn, lights and other devices before operation, and conduct no-load test run;

◦ Before crane operation, check the wear of lifting tools (steel wire ropes, hooks) (wear amount ≤ 10%), and stop operation when the wind speed is ≥ 6 levels;

◦ Set up a warning area during handling, prohibit non-operation personnel from entering, and place materials gently to avoid collision.

(II) Hazardous Material Storage

1. Storage Requirements:

◦ Hazardous materials shall be stored separately in explosion-proof warehouses, and stored in different areas and categories (e.g., the distance between flammables and oxidants shall be ≥ 5m), with MSDS and warning signs posted;

◦ The warehouse shall be equipped with explosion-proof lamps, ventilation equipment (ventilation ≥ 6 times per hour), and fire-fighting equipment (dry powder fire extinguishers, fire-fighting sand);

2. Handling Control:

◦ Explosion-proof forklifts shall be used for handling hazardous materials, and operators shall wear anti-static clothing and anti-static shoes;

◦ Rough operation is prohibited during handling, and kindling is not allowed to be brought into the warehouse area. Electronic devices such as mobile phones shall be stored in explosion-proof cabinets;

3. Leakage Disposal:

◦ Leakage treatment kits (absorbent cotton, explosion-proof tools) shall be equipped on-site. In case of leakage, isolate the contaminated area immediately, start the ventilation equipment, and the disposers shall wear gas masks.

Article 7 Control of Equipment Maintenance Operations

(I) Hot Work (Including Welding and Cutting)

1. Operation Permit:

◦ Fill in the Hot Work Permit, specifying the hot work time (no more than 8 hours at a time), scope, and guardian;

◦ Clean flammable materials within a radius of 10m before hot work, or cover them with fire blankets, and equip with 2 dry powder fire extinguishers of 4kg;

2. Gas Detection:

◦ Detect the concentration of combustible gas (≤ 10% LEL) within 30 minutes before hot work, and re-detect every 2 hours, and record in the Hot Work Gas Detection Form;

◦ For hot work in confined spaces, simultaneously detect the oxygen content (19.5%-23.5%) and toxic gas concentration (e.g., hydrogen sulfide ≤ 10mg/m³);

3. On-site Supervision:

◦ Guardians shall hold the HSE Supervision Qualification Certificate, stay on duty throughout the process, and shall not leave their posts without authorization;

◦ After hot work, clean the site, confirm no residual fire (cool down with water), and recheck after 1 hour to ensure no re-ignition risk before evacuation.

(II) Work at Height

1. Protective Equipment:

◦ Operators shall wear full-body safety belts (high-hanging and low-using), non-slip shoes, and carry tool bags (throwing tools is prohibited);

◦ The operation platform shall pass acceptance (bearing capacity ≥ 2.5kN/m²), and be equipped with protective railings (height ≥ 1.2m) and toe boards (height ≥ 18cm);

2. Operation Control:

◦ Check the stability of the platform and the integrity of the safety belt (no breakage, intact buckle) before operation;

◦ Stop operation in case of heavy rain, thunder and lightning, or strong wind (≥ 5 levels), and operators shall evacuate to a safe area;

◦ Use special ladders to go up and down the operation platform, and climbing equipment and pipelines is prohibited.

(III) Confined Space Operations

1. Isolation and Replacement:

◦ Before operation, close the valves associated with the space, install blind plates (numbered and registered), cut off the electrical power and lock;

◦ Use nitrogen/air to replace the medium in the space, and detect the oxygen content and toxic gas concentration after replacement. Operation can be carried out only if the detection is qualified;

2. Ventilation and Detection:

◦ Maintain continuous ventilation during operation (air volume ≥ 3 times per hour), and re-detect the gas concentration every 1 hour;

◦ Operators shall wear positive pressure air respirators (pressure ≥ 25MPa) and carry four-in-one gas detectors (real-time data display);

3. Personnel Control:

◦ The number of operators in the space shall be ≤ 2, and full-time guardians shall be assigned outside to maintain smooth communication (using explosion-proof walkie-talkies);

◦ Operators shall be rotated every 30 minutes, and check their physical conditions during the rotation interval. If dizziness or nausea is found, stop the operation immediately.

Article 8 Control of Material Transportation and Distribution Operations

(I) General Material Transportation

1. Vehicle Preparation:

◦ Before transportation, check the vehicle's brakes, tires, lights, and reflective signs. Trucks shall be equipped with wheel chocks and 2 dry powder fire extinguishers of 4kg;

◦ Load materials evenly and fix them firmly (using ropes, pallets), and avoid overloading (load ≤ the rated load of the vehicle) and unbalanced loading;

2. Driver Control:

◦ Drivers shall hold valid driving licenses (Class A/B licenses depending on the vehicle type), and shall not drive fatigued (continuous driving ≤ 4 hours, rest ≥ 20 minutes);

◦ Abide by traffic rules during transportation, and shall not overspeed (≤ 90km/h on highways, ≤ 60km/h on national highways), and record in the Driving Log daily;

3. Unloading Control:

◦ Before unloading, check the stability of the foundation at the unloading point and set up a warning area;

◦ When using a forklift for unloading, ensure that the forks are fully inserted into the pallets, lift stably, and avoid sudden braking and sharp turns.

(II) Hazardous Material Transportation

1. Qualification Requirements:

◦ Transportation vehicles shall obtain the Hazardous Material Transportation Permit and be equipped with explosion-proof devices and satellite positioning systems (real-time monitoring);

◦ Drivers and escorts shall hold the Hazardous Material Transportation Qualification Certificate and pass the pre-job training and assessment;

2. Route and Time:

◦ Plan special transportation routes, avoid schools, residential areas, and water sources, and avoid peak hours (7:00-9:00, 17:00-19:00) for transportation;

◦ Stop and inspect every 2 hours during transportation (packaging, valves, temperature), and record in the Hazardous Material Transportation Inspection Ledger;

3. Emergency Preparation:

◦ Vehicles shall be equipped with leakage treatment kits, gas masks, and emergency contact cards (including the phone numbers of the company's HSE Department and local emergency departments);

◦ In case of leakage, evacuate personnel in the surrounding area, use absorbent cotton to block the leakage point, and prevent pollution from spreading.

Article 9 Control of Equipment Installation and Commissioning Operations

(I) Equipment Lifting and Positioning

1. Plan Review:

◦ Formulate the Lifting Operation Plan, specifying the lifting points, selection of lifting tools, and command signals, which shall be reviewed by the technical and HSE departments;

◦ For lifting equipment over 10t, a qualified unit shall be entrusted to carry out the operation. Before operation, verify the qualification of the lifting unit and the certificates of the personnel;

2. On-site Control:

◦ Set up a warning belt in the lifting area, prohibit non-operation personnel from entering, and the commander shall use standard signals (flag signals, walkie-talkies);

◦ When the equipment is lifted to 30cm above the ground, pause, check the stress of the lifting tools and the balance of the equipment, and continue lifting only after confirmation.

(II) Power-on Commissioning

1. Electrical Inspection:

◦ Before commissioning, check the insulation resistance of the lines (≥ 0.5MΩ) and grounding resistance (≤ 4Ω), and fasten the terminal blocks;

◦ Post "Danger of Electricity" signs on the distribution boxes, and equip with leakage protectors (operating current ≤ 30mA, operating time ≤ 0.1s);

2. Commissioning Process:

◦ First conduct no-load commissioning (check the motor rotation direction and speed), then conduct load commissioning (gradually increase from 50% of the rated load to 100%);

◦ Monitor the current, voltage, and temperature in real-time during commissioning. If exceeding the limit, cut off the power immediately, troubleshoot, and then re-commission;

3. Personnel Protection:

◦ Commissioning personnel shall wear insulating gloves and insulating shoes, use insulating tools, and single-hand operation of live equipment is prohibited.

Chapter 4 Emergency Disposal

Article 10 Emergency Organization and Responsibilities

1. Emergency Commander-in-Chief: The company's leader in charge of HSE, responsible for emergency decision-making and resource allocation;

2. On-site Commander: The person in charge of the business department, responsible for on-site emergency disposal and personnel scheduling;
3. Rescue Team: Composed of HSE specialists and technical backbones, responsible for personnel rescue and equipment disposal;
4. Liaison Team: Composed of administrative personnel, responsible for reporting accidents (report to the Group's HSE Department within 1 hour) and contacting external rescue (hospitals, fire departments).

Article 11 Disposal Procedures for Typical Emergencies

(I) Fire and Explosion Accidents

1. Stop the operation immediately, cut off the power and gas supply, and evacuate on-site personnel to a safe area upwind;
2. Use on-site fire extinguishers (dry powder/carbon dioxide) to put out initial fires. For large-scale fires, call 119 to request fire support;
3. The rescue team shall wear fire-resistant clothing and air respirators to search and rescue trapped personnel, and cool down the surrounding equipment (cool down with water);
4. After the fire is extinguished, clean the site, detect the concentration of toxic gases, and enter the site only after confirming safety.

(II) Personnel Falling Accidents

1. Stop the operation immediately, prevent other personnel from approaching the falling area to avoid secondary injuries;
2. The rescue team shall rush to the site with stretchers and first-aid kits, check the consciousness and breathing of the injured. If there is a fracture, fix it; if the injured is unconscious, perform cardiopulmonary resuscitation immediately;
3. The liaison team shall call 120 to send the injured to the hospital and keep the medical records;
4. Investigate the cause of the fall (e.g., broken safety belt, collapsed platform), and resume operation only after rectification.

(III) Poisoning and Suffocation Accidents

1. Evacuate the operators in the confined space immediately, and the rescue team shall enter with positive pressure air respirators to transfer the injured to a ventilated place;
2. Unfasten the injured's collar to keep the respiratory tract unobstructed. If breathing stops, perform artificial respiration immediately and call 120;
3. Detect the concentration of toxic gases in the space, and use forced ventilation for replacement. Enter the space to clean only after the detection is qualified;

4. Trace the cause of poisoning (e.g., medium leakage, insufficient ventilation) and revise the control measures.

(IV) Traffic Accidents

1. The driver shall stop the vehicle immediately, set up warning signs (wheel chocks, warning lights), and protect the scene;
2. If there are injured personnel, call 120 immediately, and report to the traffic police (122) and the insurance company at the same time;
3. In case of hazardous material leakage, evacuate personnel in the surrounding area, use absorbent cotton to block the leakage point, and prevent pollution from spreading;
4. Cooperate with the traffic police to investigate the cause of the accident, submit the Accident Investigation Report, and implement the rectification measures.

Article 12 Emergency Materials and Drills

1. Material Configuration:

◦ First-aid kits (bandages, tourniquets, disinfectants), fire extinguishers (1 for every 50 ㎡), and emergency lighting shall be equipped at the operation site;

◦ Additional air respirators (≥ 2 units), rescue tripods (for confined space operations), and leakage treatment kits shall be equipped at high-risk operation sites;

2. Emergency Drills:

◦ Conduct special drills (e.g., fire, poisoning) once a quarter, with full participation, and keep drill videos and records;

◦ Conduct a comprehensive drill once a year to test the response capability of the emergency organization, evaluate the drill effect, and revise the emergency plan.

Chapter 5 Post-operation Management

Article 13 On-site Cleaning and Acceptance

1. Cleaning Requirements:

◦ After the operation, clean up the on-site debris (waste materials, packaging), store them in categories (recyclable/hazardous waste), and transfer hazardous waste to qualified units for disposal;

◦ Return equipment and tools to their original positions, check the status of the equipment (e.g., crane returned to position, forklift powered off), and close the water, electricity, and gas valves;

2. Acceptance Process:

◦ The operation supervisor shall organize the acceptance, fill in the Post-operation Acceptance Form, and confirm on-site safety, intact materials, and complete records;

◦ The acceptance of high-risk operations shall be participated in by the HSE Department. If the acceptance is unqualified, re-acceptance shall be conducted after rectification.

Article 14 Record Archiving and Evaluation

1. Record Management:

◦ Organize and archive operation-related records (permit approval forms, risk identification forms, briefing records, detection data) for a retention period of ≥ 3 years;

◦ Electronic records shall be stored in the company's OA system, and paper records shall be kept by special personnel in the business department for easy traceability;

2. Operation Evaluation:

◦ Hold a monthly HSE operation evaluation meeting to analyze problems existing in the operation (e.g., illegal operation, control loopholes);

◦ Summarize the evaluation results quarterly, revise the control measures (e.g., optimize the operation process, update the training content), and form a management closed loop.

Chapter 6 Guarantee Measures

Article 15 Organizational Guarantee

1. Establish the company's HSE Operation Management Group, with the general manager as the leader, to coordinate the HSE management of operations;
2. Each business department shall be equipped with full-time HSE personnel (at least 1 for every 50 people), responsible for operation risk identification and on-site supervision;
3. Each team shall be equipped with part-time HSE supervisors, responsible for pre-job briefings and daily inspections, and report hidden dangers in a timely manner.

Article 16 Personnel Guarantee

1. Training and Assessment:

◦ New employees shall complete HSE operation training (no less than 24 hours) before taking up their posts, and can only operate independently after passing the assessment;

◦ Special operation personnel (forklift, crane, hot work) shall undergo re-examination every 3 years. No operation is allowed without a certificate;

◦ Conduct HSE operation skill competitions (e.g., emergency disposal, equipment operation) every year to improve personnel capabilities;

2. Health Management:

◦ Organize regular physical examinations for employees (once every six months for high-risk posts). If occupational contraindications are found, adjust the posts immediately;

◦ Provide employees with labor protection equipment that meets standards (safety helmets, safety belts, anti-static clothing, etc.), and replace them regularly (e.g., safety belts shall be tested every 2 years).

Article 17 Material and Fund Guarantee

1. Material Supply:

◦ Establish an HSE operation material ledger, conduct regular inventory (once a month) to ensure sufficient and effective materials;

◦ Give priority to purchasing equipment and tools that meet national standards (e.g., explosion-proof forklifts, qualified lifting tools), and prohibit the use of scrapped and expired materials;

2. Fund Guarantee:

◦ Include HSE operation funds in the annual budget (no less than 5% of the total operation funds) for material procurement, training, and drills;

◦ The funds shall be used exclusively for the specified purposes and shall not be embezzled. Audit the use of funds quarterly to ensure compliance.

Article 18 Supervision and Assessment

1. Supervision and Inspection:

◦ The HSE Department shall conduct special inspections on HSE operations quarterly, focusing on checking the control of high-risk operations. If problems are found, issue a Rectification Notice;

◦ Encourage employees to report illegal operation behaviors (e.g., hot work without a permit, overloaded transportation). Those who are verified shall be rewarded (500-2000 yuan);

2. Assessment and Rewards and Punishments:

◦ Incorporate the HSE performance of operations into the employee performance assessment (accounting for ≥ 15%), and give priority to evaluating excellent employees who have no violations and no accidents;

◦ For operation accidents, investigate the responsibility in accordance with the HSE Responsibility Investigation Measures. The department head and the operation supervisor shall bear the management responsibility.

Chapter 7 Supplementary Provisions

Article 19 Right of Interpretation

These Plans shall be interpreted by the company's Quality, Safety and Environmental Protection Department.

Article 20 Implementation Date

These Plans shall take effect as of the date of issuance, and the former Company Operation Safety Management Regulations shall be repealed simultaneously.

Article 21 Revision and Update

These Plans shall be revised once a year according to the update of laws and regulations (e.g., revision of the Work Safety Law), business changes (e.g., addition of new equipment procurement business), and accident lessons to ensure applicability.

Article 22 Appendices

1. Appendix A: HSE Operation Permit Approval Form (Including Hot Work, Work at Height, Confined Space)
2. Appendix B: Operation Risk Identification Form (Classified by Scenario)
3. Appendix C: Emergency Contact List (Including Internal Departments and External Rescue Phone Numbers)
4. Appendix D: Post-operation Acceptance Form
5. Appendix E: Operation HSE Material Ledger Template