Sanland Group Quality Management Manual

—Manufacturing Control

14 Manufacturing Control

14.1 General Provisions

14.1.1 This chapter defines the quality control requirements for the entire manufacturing process of our products, including smelting, casting, forging, heat treatment, riveting/welding, machining and assembly. The purpose is to ensure effective control over manufacturing quality to guarantee compliance with product drawings, process specifications and standards, while meeting the requirements of downstream processes and customers.

14.1.2 This chapter applies to the implementation and control of manufacturing processes for all products in our facility, excluding pressure vessels and products with special quality assurance requirements.

14.2 Responsibilities

14.2.1 The Production Department and plant planners shall:

Develop production operation plans

Execute production of blanks, components and product assembly/painting in strict accordance with product drawings, process specifications and technical standards

a. Subsidiary units (steelmaking, casting, non-ferrous foundry, forging, heat treatment) must ensure quality meets drawing, process, contract and relevant qualification standard requirements

b. Quality of riveted/welded parts must comply with drawing and process requirements

c. The machining workshop is responsible for component processing, assembly and paint quality to ensure compliance with drawings, processes and technical standards

14.2.2 Plant inspectors under the Deputy Technical Director shall:

Monitor key product quality characteristics

Control process quality according to the Process Quality Control Plan

Analyze/evaluate process conditions and promptly address abnormalities

14.2.3 Workshops and sub-factories shall:

Properly requisition, store and inspect production tools, fixtures, instruments and measuring devices per regulations

Supervise handling and storage of raw materials, semi-finished products and components to prevent loss, deformation, scratches or corrosion

Enforce process discipline, maintain orderly production, implement fixed-position management

Properly handle rework, reuse or scrapping of non-conforming products

14.2.4 All functional departments involved in manufacturing shall be responsible for:

Effectiveness of their quality-related duties and work quality during production

Addressing manufacturing defects caused by errors, service delays or poor coordination.

14.3 Production Planning

14.3.1 The Production Department shall:

Develop monthly production plans and issue them to manufacturing plants 5 days prior to the target month

Prioritize process sequencing in planning to ensure:
a) Coordination between blank/component processing schedules
b) Alignment of outsourced parts and assembly progress
c) Balanced load distribution across major equipment
d) Achievement of plant-mandated monthly production equilibrium

14.3.2 Workshop/subsidiary plant planners shall:

Translate plant-level monthly plans into workshop-specific schedules per drawings and process specifications

Execute manufacturing strictly according to drawing/process/standard requirements

Maintain both progress pacing and production equilibrium

14.3.3 Plant planners shall:

Monitor and coordinate plan implementation under Production Department guidance

Obtain plant manager approval for any equipment/process modifications

Ensure changes never compromise quality standards

14.3.4 During plan execution, planners must:

Enforce process discipline rigorously

Maintain orderly production environments

Implement fixed-position management with support from Technical and QA departments

Create conditions ensuring both quality compliance and schedule adherence

14.4 On-Site Document Control

14.4.1 Technical documents (drawings/processes/standards) at production sites must be:

Accurate, complete, unified, fully available, and legible

Provided to operators promptly

14.4.2 The document controller shall:

Manage issuance of all on-site technical documents

Replace damaged/lost files immediately

Operators must safeguard documents and report issues

14.4.3 Post-issuance modifications require:

Original designers/process engineers to execute changes

Compliance with modification procedures in Chapters 6/9/10

Guaranteed document version uniformity after changes

14.4.4 Design/Process departments must:

Provide timely on-site technical support

Guide new product trials

Resolve document discrepancies promptly

14.5 Equipment & Tool Management

14.5.1 Equipment operators shall:

Operate only certified equipment after proper training

Verify machining precision with maintenance staff before use

Conduct regular maintenance during operation

Report abnormalities immediately for corrective actions

Collaborate with technical staff to preserve product quality

14.5.2 The specific requirements for the operation, maintenance, repair, and preventive overhaul of production equipment shall comply with Chapter 12 "Equipment Management" of this manual.

14.5.3 When developing processes, technical personnel must consider the precision and capability of the equipment. Production planners shall arrange machining equipment according to process requirements while ensuring product quality, taking into account equipment load and processing capacity.

14.5.4 Equipment at quality control points must undergo daily inspections and periodic checks. Operators shall conduct thorough inspections per the equipment checklist, maintain accurate and complete records, and report any abnormalities immediately. Maintenance personnel shall perform regular inspections on control point equipment as specified.

14.5.5 All tools and auxiliary equipment used in product manufacturing must have a valid manufacturing certificate. Factory process engineers shall verify their condition prior to use, ensuring they pass inspection before being deployed in production.

14.5.6 Workshop tool custodians shall promptly procure and inspect all jigs, fixtures, and measuring instruments. They must store and distribute tools according to management requirements. Special tools must undergo quality inspection after use and may only be returned to storage if compliant. Any issues shall be reported immediately, followed by repair or replacement.

14.5.7 Measuring instruments (including gauges and meters) must be calibrated by qualified personnel and used within their valid calibration period. Operators shall use and maintain these instruments correctly per quality requirements and metrology management systems.

14.6 Personnel Control

14.6.1 All personnel involved in manufacturing shall receive training in quality awareness, practical skills, and relevant 专业知识. Training content and requirements follow Chapter 20 "Personnel Training," ensuring operators master standard tool rules and operating procedures.

14.6.2 Before producing new or critical products, the factory shall organize technical, managerial, and operational staff to study applicable standards and technical requirements, tailored to workshop conditions. Technicians shall explain product characteristics, quality controls, and processing challenges using specific drawings and processes when necessary.

14.6.3 The factory shall assign qualified technicians based on product complexity to provide guidance. Before production, they must review drawings/processes, verify tooling readiness, identify critical processes, establish control measures, and address issues promptly.

14.6.4 Specialized Roles

14.6.4.1 Welding on regulated products or first-time welding of specific steel grades shall only be performed by certified welders.

14.6.4.2 Welders who have not welded special steel grades for over six months must retest before resuming work.

14.6.4.3 Weld repairs shall be conducted by the original welder. If improper operation causes scrapping, inspectors shall [take disciplinary action/document the incident].

14.6.4.4 Non-destructive testing (NDT) personnel must obtain qualification certification in accordance with national labor regulations before performing inspections.

14.7 Identification & Non-Conforming Product Management

14.7.1 All castings, forgings, and heat-treated components must be permanently marked (e.g., embossing, stamping, or metal tags) and tracked through production stages for traceability.

14.7.2 Non-conforming products must be clearly labeled by QC inspectors:

Red: Scrap

Yellow: Rework-accepted (general)

White: Rework-accepted (copper components)

Blue: Pending repair

Labels must include part numbers.

14.7.3 Factories shall establish dedicated quarantine zones for non-conforming products, managed by assigned personnel. Regular audits ensure no mixing with conforming items.

14.7.4 Products designated for rework must be processed promptly and re-inspected post-repair.

14.8 Handling & Storage

Blanks and components during manufacturing shall:

Be handled/stored by designated personnel

Be protected against impact, scratches, rust, or damage

Detailed requirements follow Chapter 18.

14.9 Process Discipline

14.9.1 All personnel must strictly adhere to process discipline. Production must align with drawings, specifications, and standards.

14.9.2 Process engineers and QA teams shall conduct periodic audits and report findings to the Chief Engineer.

14.10 Process Quality Control Points

14.10.1 For product-characteristic-based control points:

Workshops must follow control plans issued by the Process Department

Control documents carry equal weight as process specifications

14.10.2 For equipment/key-process-based control points:

Implement per factory Fixed-Point Control Regulations

All control documents are equally binding

14.10.3 At any control point:

Stop production immediately if anomalies occur

Resume only after corrective actions and verification

Uncontrolled operation is prohibited