



Cladding-Technology-Shanxi-Co.,-Ltd- CLADDING-ITP-022-Third-Party- Inspection-Coordination-Procedure

第三方检验配合与见证控制程序

Third-Party Inspection Coordination and Witness Control Procedure

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A/0	2024-01-01	质量部 Quality Dept.	技术部 Technology Dept.	总经理 General Manager

1. 目的 Purpose

本程序旨在规范科雷丁技术（山西）有限公司在与 API、ASME、NACE 认证机构及客户指定第三方检验机构进行检验配合与见证过程中的管理要求，确保增材制造与精密堆焊产品的检验见证工作有序、高效、合规开展，满足相关标准规范及客户合同要求，保障产品质量符合预期。



This procedure aims to standardize the management requirements for CLADDING-Technology-Shanxi-Co.,-Ltd in coordinating and witnessing inspections with API, ASME, NACE certification bodies and customer-designated third-party inspection agencies, ensuring that inspection witnessing work for additive manufacturing and precision cladding products is carried out in an orderly, efficient, and compliant manner, meeting relevant standards and customer contract requirements, and ensuring product quality meets expectations.

2. 适用范围 Scope

本程序适用于公司所有涉及 API、ASME、NACE 标准认证或客户合同要求第三方检验见证的产品和服务，包括但不限于：

法兰堆焊、管件堆焊、钢管堆焊、轴套管堆焊、模具堆焊修复，以及基于 TIG/MIG 工艺的金属零部件增材制造与梯度材料制备项目。

This procedure applies to all products and services involving API, ASME, NACE standard certification or customer contract requirements for third-party inspection witnessing, including but not limited to:

Flange cladding, pipe fitting cladding, steel pipe cladding, shaft sleeve cladding, mold cladding repair, and metal component additive manufacturing and gradient material preparation projects based on TIG/MIG processes.

3. 职责 Responsibilities

3.1 质量部 Quality Department

- 负责第三方检验机构的资质确认与档案管理
- 负责检验计划的编制、协调与执行跟踪
- 负责检验见证记录的收集、整理与归档
- 负责不合格项的协调处理与关闭确认

3.2 技术部 Technology Department

- 负责提供检验所需的技术文件与工艺参数
- 负责配合检验机构进行工艺评定与产品技术审查
- 负责检验过程中技术问题的解答与支持

3.3 生产部 Production Department

- 负责按检验计划安排生产进度与检验节点
- 负责提供检验所需的样品、试件与生产记录



- 负责检验见证期间的现场配合与协调

3.4 销售部 Sales Department

- 负责与客户沟通检验见证要求与时间安排
- 负责协调客户代表参与检验见证活动
- 负责检验结果的客户反馈与确认

3.5 总经理 General Manager

- 负责第三方检验配合工作的总体决策与资源调配
- 负责重大检验问题的最终裁决

4. 管理内容与程序 Management Content and Procedure

4.1 第三方检验机构管理 Third-Party Inspection Agency Management

4.1.1 资质确认 Qualification Confirmation

质量部负责建立并维护第三方检验机构名录，对拟合作的检验机构进行资质审查，审查内容包括：

- API、ASME、NACE 等认证机构的授权资质证明
- 检验人员的资格证书与专业范围
- 检验设备与检测能力的符合性证明
- 过往检验业绩与信誉记录

质量部应每年对合作检验机构进行资质复审，确保其资质持续有效。

The Quality Department shall establish and maintain a directory of third-party inspection agencies, and conduct qualification reviews for proposed inspection agencies, including:

- Authorization certificates from API, ASME, NACE and other certification bodies
- Qualification certificates and professional scope of inspection personnel
- Compliance certificates of inspection equipment and testing capabilities
- Past inspection performance and reputation records

The Quality Department shall conduct annual qualification reviews of cooperating inspection agencies to ensure their qualifications remain valid.

4.1.2 检验协议 Inspection Agreement

与第三方检验机构合作前，质量部应与其签订检验服务协议，明确双方权利义务，协议内容应包括：

- 检验范围与检验项目



- 检验标准与技术规范
- 检验时间安排与见证节点
- 检验费用与结算方式
- 保密条款与知识产权约定
- 争议解决机制

Before cooperating with third-party inspection agencies, the Quality Department shall sign an inspection service agreement with them, clarifying the rights and obligations of both parties. The agreement shall include:

- Inspection scope and inspection items
- Inspection standards and technical specifications
- Inspection schedule and witness points
- Inspection fees and settlement methods
- Confidentiality clauses and intellectual property agreements
- Dispute resolution mechanisms

4.2 检验计划编制 *Inspection Plan Preparation*

4.2.1 检验计划制定 *Inspection Plan Development*

质量部应根据产品合同要求、相关标准规范及检验机构要求，编制检验计划，检验计划应包括：

- 产品基本信息（产品名称、规格型号、数量、合同号）
- 检验依据的标准规范（API 579、ASME IX、NACE MR0175 等）
- 检验项目清单及检验方法
- 检验时间节点与见证要求
- 检验人员安排与资质要求
- 检验记录表格与报告格式

The Quality Department shall develop an inspection plan based on product contract requirements, relevant standards and specifications, and inspection agency requirements. The inspection plan shall include:

- Basic product information (product name, specification model, quantity, contract number)
- Standards and specifications for inspection basis (API 579, ASME IX, NACE MR0175, etc.)
- Inspection item list and inspection methods
- Inspection time nodes and witness requirements
- Inspection personnel arrangement and qualification requirements
- Inspection record forms and report formats



4.2.2 检验计划审批 *Inspection Plan Approval*

检验计划编制完成后，应提交技术部、生产部会签，经总经理批准后生效。检验计划应在检验开始前至少 5 个工作日提交第三方检验机构确认。

After the inspection plan is prepared, it shall be submitted to the Technology Department and Production Department for countersignature, and take effect after approval by the General Manager. The inspection plan shall be submitted to the third-party inspection agency for confirmation at least 5 working days before the inspection begins.

4.3 检验见证实施 *Inspection Witness Implementation*

4.3.1 见证前准备 *Pre-Witness Preparation*

生产部应根据检验计划安排生产进度，确保检验见证节点与生产计划相匹配。见证前准备工作包括：

- 检验样品的制备与标识
- 检验设备的校准与确认
- 检验记录的准备与归档
- 见证场所的布置与协调
- 检验人员的资质确认与到场安排

The Production Department shall arrange production schedule according to the inspection plan to ensure that inspection witness points match the production plan. Pre-witness preparation work includes:

- Preparation and identification of inspection samples
- Calibration and confirmation of inspection equipment
- Preparation and archiving of inspection records
- Arrangement and coordination of witness venues
- Qualification confirmation and on-site arrangement of inspection personnel

4.3.2 见证过程控制 *Witness Process Control*

检验见证过程中，质量部应指定专人负责协调配合，见证过程控制要求包括：

- 确保检验见证节点与生产进度同步
- 及时提供检验所需的样品、试件与记录
- 配合检验机构进行检验操作与数据记录
- 对检验过程中发现的问题及时协调处理
- 确保检验见证记录的完整与准确

During the inspection witnessing process, the Quality Department shall designate a dedicated person to coordinate and cooperate. Witness process control requirements include:



- Ensure inspection witness points are synchronized with production progress
- Timely provide inspection samples, test pieces, and records as required
- Cooperate with inspection agencies for inspection operations and data recording
- Timely coordinate and handle issues found during inspection
- Ensure completeness and accuracy of inspection witness records

4.3.3 关键见证节点 Key Witness Points

对于增材制造与精密堆焊产品，关键见证节点包括：

序号 No.	见证节点 Witness Point	见证内容 Witness Content	适用产品 Applicable Products
1	原材料检验 Material Inspection	基材、焊丝化学成分与力学性能检验	所有堆焊与增材制造产品
2	焊前准备 Pre-Weld Preparation	坡口加工、预热温度、装配间隙检查	法兰、管件、钢管堆焊
3	焊接工艺参数 Welding Parameters	TIG/MIG 电流、电压、焊接速度记录	所有 TIG/MIG 堆焊产品
4	层间温度控制 Interpass Temperature	层间温度测量与记录	多层堆焊产品
5	焊后热处理 PWHT	热处理温度、保温时间、冷却速率	轴套管、模具堆焊修复
6	无损检测 NDT	射线、超声、磁粉、渗透检测结果	所有承压类堆焊产品
7	尺寸检验 Dimensional Inspection	堆焊层厚度、尺寸精度、表面质量	所有堆焊与增材制造产品
8	硬度测试 Hardness Test	堆焊层及热影响区硬度分布	耐磨堆焊产品
9	金相检验 Metallographic Inspection	堆焊层组织、稀释率、裂纹检查	关键受力部件
10	性能试验 Performance Test	拉伸、弯曲、冲击试验结果	工艺评定试件

For additive manufacturing and precision cladding products, key witness points include:



No.	Witness Point	Witness Content	Applicable Products
1	Material Inspection	Chemical composition and mechanical properties of base material and welding wire	All cladding and additive manufacturing products
2	Pre-Weld Preparation	Groove machining, preheat temperature, assembly gap inspection	Flange, pipe fitting, steel pipe cladding
3	Welding Parameters	TIG/MIG current, voltage, welding speed records	All TIG/MIG cladding products
4	Interpass Temperature	Interpass temperature measurement and records	Multi-pass cladding products
5	PWHT	Heat treatment temperature, holding time, cooling rate	Shaft sleeve, mold cladding repair
6	NDT	Radiographic, ultrasonic, magnetic particle, penetrant test results	All pressure-bearing cladding products
7	Dimensional Inspection	Cladding layer thickness, dimensional accuracy, surface quality	All cladding and additive manufacturing products
8	Hardness Test	Hardness distribution of cladding layer and HAZ	Wear-resistant cladding products
9	Metallographic Inspection	Cladding layer microstructure, dilution rate, crack inspection	Critical load-bearing components
10	Performance Test	Tensile, bend, impact test results	Procedure qualification specimens

4.4 检验记录与报告 Inspection Records and Reports

4.4.1 检验记录要求 Inspection Record Requirements

检验见证过程中形成的所有记录应真实、完整、可追溯，记录要求包括：



- 记录内容应包含检验日期、检验人员、检验设备、检验数据
- 记录格式应符合相关标准规范及检验机构要求
- 记录应由检验人员和见证人员共同签字确认
- 记录原件应妥善保管，保存期限不少于产品使用寿命

All records generated during the inspection witnessing process shall be authentic, complete, and traceable. Record requirements include:

- Record content shall include inspection date, inspection personnel, inspection equipment, and inspection data
- Record format shall comply with relevant standards and inspection agency requirements
- Records shall be signed and confirmed by both inspection personnel and witness personnel
- Original records shall be properly stored, with retention period not less than product service life

4.4.2 检验报告编制 *Inspection Report Preparation*

质量部负责汇总检验见证记录，编制检验报告，报告内容应包括：

- 产品基本信息与检验依据
- 检验项目清单与检验结果
- 不合格项描述与处理措施
- 检验结论与产品合格判定
- 检验机构与见证人员签字

The Quality Department shall consolidate inspection witness records and prepare inspection reports. Report content shall include:

- Basic product information and inspection basis
- Inspection item list and inspection results
- Non-conformance description and corrective measures
- Inspection conclusion and product qualification determination
- Inspection agency and witness personnel signatures

4.5 不合格项处理 *Non-Conformance Handling*

4.5.1 不合格项识别 *Non-Conformance Identification*

检验见证过程中发现的不合格项，质量部应及时记录并通知相关部门，不合格项识别内容包括：

- 不合格项描述（缺陷类型、位置、尺寸、数量）
- 不合格项等级（严重、一般、轻微）
- 不合格项对产品质量的影响评估
- 不合格项的初步处理建议



Non-conformances found during the inspection witnessing process shall be recorded and notified to relevant departments by the Quality Department in a timely manner. Non-conformance identification content includes:

- Non-conformance description (defect type, location, size, quantity)
- Non-conformance level (critical, major, minor)
- Impact assessment of non-conformance on product quality
- Preliminary handling recommendations for non-conformance

4.5.2 不合格项处置 Non-Conformance Disposition

不合格项的处置应由质量部组织技术部、生产部共同评审，确定处置方案，处置方式包括：

- 返工修复（重新堆焊、补焊、热处理）
- 返修处理（打磨、机加工、局部修复）
- 让步接收（经客户同意后降级使用）
- 报废处理（无法修复时）

不合格项处置完成后，应重新进行检验验证，确保不合格项已有效关闭。

Non-conformance disposition shall be jointly reviewed by the Quality Department, Technology Department, and Production Department to determine the disposition plan. Disposition methods include:

- Rework repair (re-cladding, repair welding, heat treatment)
- Repair treatment (grinding, machining, local repair)
- Concession acceptance (downgraded use with customer approval)
- Scrap treatment (when unreparable)

After non-conformance disposition is completed, re-inspection verification shall be conducted to ensure the non-conformance has been effectively closed.

5. 监督考核 Supervision and Assessment

5.1 内部审核 Internal Audit

质量部应每年至少组织一次对第三方检验配合与见证控制程序的内部审核，审核内容包括：

- 检验计划的编制与执行情况
- 检验见证过程的规范性
- 检验记录的完整性与准确性
- 不合格项处理的及时性与有效性



The Quality Department shall organize at least one internal audit per year for the third-party inspection coordination and witness control procedure. Audit content includes:

- Preparation and execution of inspection plans
- Standardization of inspection witnessing processes
- Completeness and accuracy of inspection records
- Timeliness and effectiveness of non-conformance handling

5.2 绩效考核 Performance Assessment

公司将第三方检验配合与见证工作纳入相关部门绩效考核，考核指标包括：

- 检验见证计划按时完成率
- 检验见证记录合格率
- 不合格项关闭及时率
- 客户对检验见证工作的满意度

The company shall incorporate third-party inspection coordination and witness work into the performance assessment of relevant departments. Assessment indicators include:

- On-time rate of inspection witness plans
- Qualification rate of inspection witness records
- Timely closure rate of non-conformances
- Customer satisfaction with inspection witness work

6. 附则 Supplementary Provisions

6.1 相关文件 Related Documents

- CLADDING-QP-001 文件控制程序 Document Control Procedure
- CLADDING-QP-002 记录控制程序 Record Control Procedure
- CLADDING-QP-008 不合格品控制程序 Non-Conforming Product Control Procedure
- CLADDING-QP-015 内部审核控制程序 Internal Audit Control Procedure
- CLADDING-ITP-001 增材制造工艺控制程序 Additive Manufacturing Process Control Procedure
- CLADDING-ITP-005 堆焊工艺控制程序 Cladding Process Control Procedure

6.2 相关记录 Related Records

- CLADDING-FM-022-01 第三方检验机构资质确认表 Third-Party Inspection Agency Qualification Confirmation Form
- CLADDING-FM-022-02 检验计划表 Inspection Plan



- CLADDING-FM-022-03 检验见证记录表 Inspection Witness Record
- CLADDING-FM-022-04 检验报告 Inspection Report
- CLADDING-FM-022-05 不合格项处理记录 Non-Conformance Disposition Record

6.3 修订记录 Revision History

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A/0	2024-01-01	首次发布 Initial Release	质量部 Quality Dept.

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