ENGINEERING: ENGINEERING SYSTEMS ENABLEMENT

RADIOGRAPHY TESTING OF FOUNDRY CASTINGS

TECHNICAL SPECIFICATION

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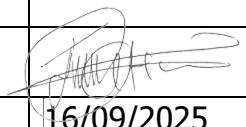
Compiler	Engineer
Signature	
Date	16/09/2025
Approver	Principal Engineer
Signature	
Date	16/09/2025

TABLE OF CONTENTS

1 DOCUMENT VERSION

This specification supersedes all previous specifications for the supply of radiographic testing services of cast components using X-ray or gamma ray inspection.

2 PURPOSE

2.1 The purpose of this specification is to specify the requirements and processes for radiography testing (RT) of cast components manufactured by Koedoespoort Foundry using X-ray or gamma ray inspection. This is intended to prevent the acceptance of castings with defects that may compromise safety, reliability, or performance in service.

3 SCOPE

3.1 This specification covers the requirements for RT of steel castings manufactured by Koedoespoort Foundry using X-ray or gamma ray inspection.

4 REFERENCE DOCUMENTATION

The latest editions of the following standards shall apply unless otherwise specified:

NAME	REFERENCE NUMBER
Standard Guide for Radiographic Examination	ASTM E94
Standard Reference Radiographs for Steel Castings	ASTM E446
Standard Practice for Design, Manufacture and Material Grouping Classification of Wire Image Quality Indicators (IQI) used for Radiology	ASTM E747
Radiographic Examination	ASME Section V, Article 2

Steel and iron Castings — Radiographic Testing	ISO 4993
Non-destructive testing — Qualification and Certification of NDT Personnel	ISO 9712

5 DEFINITIONS AND ABBREVIATIONS

5.1 Definitions

None

5.2 Abbreviations

5.2.1 IQI - Image Quality Indicator

5.2.2 NDT - Non-Destructive Testing

5.2.3 RT - Radiography Testing

5.2.4 ASTM - American Society for Testing and Materials

5.2.5 ASME - American Society of Mechanical Engineers

5.2.6 ASNT - American Society for Non-destructive Testing

5.2.7 ISO - International Organisation for Standardization

5.2.8 RFQ - Request for quotation

6 EXAMINATION PROCEDURE

6.1 Personnel

6.1.1 Subcontracting is not permitted.

Rationale: To ensure full traceability, accountability, and compliance with ISO/IEC 17025 and SANAS requirements, all radiographic examinations shall be performed directly by the contracted accredited laboratory. Subcontracting introduces risks of inconsistent quality, loss of control and potential legal liability.

6.1.2 The examination shall only be performed by personnel certified in accordance with ISO 9712 or ASNT, Level II or higher.

6.1.3 Level II personnel may perform the examination and interpretation of results.

6.1.4 Level III personnel shall be responsible for overall approval of the examination procedure and for technical oversight.

6.1.5 Personnel must be employed by an ISO/IEC 17025 or SANAS-accredited laboratory.

6.2 Coverage

6.2.1 Unless otherwise specified, the extent of examination shall be 100% for all castings.

6.3 Exposure Technique

6.3.1 The technique shall achieve a minimum sensitivity of 2% of wall thickness, verified with IQIs.]

6.4 Identification

6.4.1 Each radiograph shall be marked with the examined area identification as marked on the casting.

6.4.2 Markings shall be applied in such a way that they do not obscure the image of the area of interest.

6.5 Film

6.5.1 Radiographs shall be made using industrial radiographic film

6.5.2 The selected film shall demonstrate the required sensitivity as evidenced by the required IQI. In all cases, either general or critical applications, the quality requirements for radiographic film shall be in accordance with ASME V article 2 and 22.

6.5.3 All radiographs shall be free from mechanical, chemical or other marks that may mask or be confused with the image of any discontinuity in the area of interest of the casting being radiographed.

6.6 Radiographic Technique

6.6.1 The following techniques will be used where applicable

- Single Wall Single Image
- Double Wall Single Image

6.6.2 A single-wall exposure technique shall be used for radiography whenever practical.

6.6.3 When it is not practical to use a single-wall technique, a double wall technique shall be used.

6.7 Documentation and Reporting:

6.7.1 A radiographic examination report shall be submitted including the following but not limited:

- Casting identification.
- Examination procedure and standard followed.
- Source and exposure parameters.
- Film/digital system details.
- IQI sensitivity achieved.
- Acceptance evaluation and disposition (pass/fail).
- Name and certification level of examiner.

6.8 Quality Assurance:

- Quality control measures shall be implemented to ensure the reliability and repeatability of radiographic inspection results.
- Regular audits and reviews shall be conducted to verify compliance with specified procedures and standards as and when required.

7 QUANTITY

As per RFQ.

8 POST PURCHASE SUPPORT

- Interpreting report and films where clarity is needed.

9 DOCUMENTATION REQUIRED

- Signed radiographic examination report.
- Radiography films.
- Mark up drawing or pictures.

9.1 Procurement stage

- Accreditation certificate
- Reference letters

9.2 On delivery

- Delivery note
- Signed radiography examination report.
- Radiography films
- Mark up drawing or pictures.

10 DELIVERY

Is delivery required? YES/NO

11 TIME FRAME

As per RFQ

12 ACCEPTANCE CRITERIA

It is the responsibility of the supplier to ensure the understanding of the requirements/technical requirements of a required product or service. It is also the responsibility of the supplier to enquire and seek clarity on areas that may be unclear.

Before the delivery of a product/service, the product/service shall be evaluated for conformance to specification requirements, using the evaluation criteria in Table 1.

Criteria	Requirements	Weight	Scoring guidelines
Quality assurance and certification	Bidders are required to provide a valid accreditation with **ISO/IEC 17025** or **SANAS**.	**30 points**	Proof of valid ISO/IEC 17025 or SANAS accreditation: **30 points**. No valid ISO/IEC 17025 or SANAS accreditation: **0 points**.
Technical capability	The bidder must conform fully to TE specification without any deviations. Key considerations: • Availability and suitability of radiographic equipment (X-ray machines, gamma sources, digital radiography). • Capability to test the required range of material thicknesses and casting sizes. • Availability of qualified personnel (ISO 9712 Level II/III certified radiographers and).	**30 points**	Bidder must submit a signed copy of TE specification as acknowledgement that the bidder will deliver the radiography services as per TE specification. Bidder Conform fully to TE specification indicated by signing (signed copy of specification): **30 points**. Bidder does not conform to TE specification(unsigned copy of specification): **0 points**.
Experience or Previous work conducted	Bidders are required to submit two(2) reference letters from contactable clients for radiography work conducted. The reference letters must be signed by the clients.	**20 points**	Two (2) reference letters form contactable clients: **20 points**. One (1) reference letter from contactable client: **10 points**. No reference letter from contactable clients: **0 points**.
Delivery Lead Time	Provide a lead time to deliver the required service at the required time (from receiving the communication to delivery) The lead team must correspond with the lead time on the Pricing and delivery schedule on the RFP document.	**20 points**	Less or equal to 4 business days: **20 points**. Lead time of 5 business days: **10 points**. More than 5 business days: **0 points.**
Threshold 70%			

Table 1: Evaluation Criteria