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SHAKAMBHARI GROUP #SteelWithin	**SHAKAMBHARI ISPAT & POWER LTD.** (Formerly known as Ess Dee Aluminium Ltd.)		
STANDARD OPERATING PROCEDURE			
Title: SOP for Failure Investigation and CAPA Management System			**Page No.** 1 of 3
SOP No.	**Version No.**	**Effective Date**	**Next review date**
SIPL/QAS/031	00	07.07.2026	06.07.2028

1.0 PURPOSE

1.1 To establish a structured procedure for investigating quality failures, identifying root causes, and assigning CAPAs in aluminium foil manufacturing.

2.0 SCOPE

2.1 Applicable to all foil production lines, including incoming raw materials (aluminium ingots, coils), rolling, annealing, slitting, and final packaging.

3.0 REFERENCE(S) & ATTACHMENTS

3.1 References

3.1.1 ISO 15378:2017

3.2 **Attachments:** Nil

4.0 RESPONSIBILITY

4.1 Production Head

4.1.1 To ensure the training of the SOP to all concerned department personnel involved in implementation of the SOP.

4.1.2 To ensure the implementation of the SOP after training.

4.2 Quality Assurance Person

4.2.1 To check the SOP.

4.2.2 To maintain the original copy of the SOP.

4.2.3 To issue controlled copy of the SOP.

4.2.4 To maintain issuance record of SOP.

4.2.5 To retrieve the controlled copy of the SOP when it is superseded / obsolete & maintain its record.

4.3 QA Head

4.3.1 To approve new or revised SOP.

4.3.2 To ensure the implementation of the defined system.

4.4 Plant Head

4.4.1 To approve new or revised SOP.

4.4.2 To ensure the implementation of the defined system.

5.0 DISTRIBUTION

5.1 Quality Control

5.2 Production

5.3 Quality Assurance

6.0 DEFINITION(S) & ABBREVIATION(S)

6.1 Definitions

6.1.1 Nil

6.2 Abbreviations

6.2.1 CAPA: Corrective Action and Preventive Action

Prepared By:	Checked By:	Approved By:
05.07.2026	05.07.2026	05.07.2026

7.0 PROCEDURE

7.1 Failure Identification & Quarantine

7.1.1 **Detection:** Operators, QA inspectors, or customer complaints trigger the failure report. Common foil defects include pinholes, gauge variations, surface scratches, oil stains, or poor winding tension.

7.1.2 **Immediate Action:** The production supervisor must immediately stop the affected process, segregate the defective material, and apply a "HOLD" / Quarantine tag.

7.1.3 **Initiation:** The QA team issues a numbered Failure Investigation Report (FIR).

7.2 Root Cause Analysis (RCA)

7.2.1 A cross-functional team (Production, QA, Engineering) shall be formed to investigate the problem. The investigation must review:

7.2.1.1 **Machine / Equipment:** Condition of mill rolls, tension controls, and annealing furnace settings.

7.2.1.2 **Material:** Supplier coil specs, thickness compliance, and surface treatment.

7.2.1.3 **Method / Process:** Rolling speed, coolant / lubricant flow, and gauge control.

7.2.1.4 **Investigation Tools:** Utilize RCA tools such as the Fishbone Diagram (Ishikawa) or 5-Whys Analysis to find the fundamental cause.

7.3 CAPA Action Plan

7.3.1 Once the root cause is established, the team must determine a CAPA plan:

7.3.1.1 **Correction:** Immediate rework, scrap disposal, or downgrading of the affected foil batch.

7.3.1.2 **Corrective Action:** Measures taken to ensure the specific failure does not recur (e.g. replacing worn-out mill rolls, recalibrating thickness gauges).

7.3.1.3 **Preventive Action:** Proactive measures to eliminate the causes of potential failures across all lines (e.g. updating equipment maintenance schedules, introducing new operator training protocols).

7.4 Implementation & Documentation

7.4.1 **Approvals:** All CAPA plans must be reviewed and approved by the Head of Quality Assurance.

7.4.2 **Execution:** Responsible department heads implement the required actions within the agreed target deadlines.

7.5 Effectiveness Check

7.5.1 **Verification:** Quality Assurance conducts an effectiveness check [30 to 90 days] after implementation to ensure the defect has not reappeared.

7.5.2 **Closure:** If verification is successful, QA formally closes the CAPA record. If it fails, the CAPA must be reopened and re-investigated.

8.0 REVISION HISTORY

Revision No.	00	**Effective Date**	07.07.2026	CC No.	NA
Details of revision: New SOP					

Prepared By:	Checked By:	Approved By:
05.07.2026		05.07.2026