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TECHNICAL STRUCTURED PROBLEM SOLVING (TSPS ~ 8D)

BY ELITE INDIGO

Enhance your team's analytical capabilities and master the art of technical structured problem-solving to tackle complex challenges with precision.

Walk away with practical "quick wins" to apply systematic problem-solving frameworks and drive effective, data-driven solutions immediately.

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Technical Structured Problem Solving (TSPS ~ 8D)

• Program Overview

The Technical Structured Problem Solving (TSPS) Course equips participants with a structured methodology to analyze and resolve complex technical issues systematically. Inspired by the 8 Disciplines (8D) Problem Solving Methodology, TSPS provides participants with a set of practical tools, including TSPS Checklists, Cause Analysis Worksheets, and Job Aids, to identify root causes, implement effective corrective actions, and standardize solutions.

This hands-on, interactive program is designed to develop critical thinking, leadership in problem-solving teams, and structured decision-making skills to drive sustainable improvements in technical and manufacturing environments.

• Course Objectives

By the end of this program, participants will be able to:

- pply the TSPS methodology to identify, analyze, and solve complex technical problems.
- Utilize problem-solving tools (TSPS Checklist, Cause Analysis Worksheets, Job Aids) to enhance troubleshooting efficiency.
- Lead and facilitate cross-functional problem-solving teams effectively.
- Develop data-driven solutions and validate their effectiveness.
- Standardize corrective actions to prevent recurrence.
- Create and present a TSPS Summary Report with well-documented problem resolutions.

• Learning Outcomes

- Participants will confidently apply a structured problem-solving approach to real-world technical challenges.
- Gain hands-on experience in root cause analysis, corrective action planning, and solution standardization.
- Effectively document and communicate findings through a structured TSPS Summary Report.
- Enhance their ability to collaborate and lead teams in resolving manufacturing, quality, or operational issues.

Technical Structured Problem Solving (TSPS ~ 8D)

• Methodology

This course uses a practical and interactive approach, combining:
- Instructor-led presentations (concepts, best practices).
- Hands-on activities (problem-solving exercises, real-world case studies).
- Group discussions (team-based analysis, decision-making).
- Q&A sessions (interactive engagement, troubleshooting guidance).
- Digital & Physical Tools:
  - Online Training: Laptop, Zoom (or equivalent).
  - In-Person Training: Projector, printed worksheets.

• Target Audience

- Engineering & Technical Teams
- Quality & Reliability Professionals
- Integration & Process Engineers
- Materials & Manufacturing Specialists
- IT & Data Analysts involved in problem-solving

• Pre-Requisites

None.

• Duration

Two (`2) Full-Day Workshop;

• Course Schedule

1. Define Problem
2. Current Situation
3. Identify Causes
4. Develop Solutions
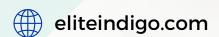5. Implement Solutions
6. Standardize Solutions
7. Next Steps

Technical Structured Problem Solving (TSPS ~ 8D)

• Course Outline & Schedule (Day 1)

Duration	Details
1.5 Hours	**Step 1: Define Problem** Purpose: · Identify the problem and the importance of working on it. Output: · Prepare for the TSPS process · Implement Emergency Containment Action (ECA). · Establish a team. · Develop a Problem Statement. · Begin TSPS Summary Report.
1.5 Hours	**Step 2: Current Situations** Purpose: · Clarify the problem areas as the situation exists today. Output: · Create a problem description using IS/IS NOT evaluation. · Implement Short-term Containment Actions, if needed, and remove the ECA. · Update TSPS Summary Report.
1 Hour	**Lunch Break**
4 Hours	**Step 3: Identify Causes** Purpose: · Identify and verify the root causes of the problem. Output: · Problem description with differences and changes. · Develop and test theories to isolate and verify the root cause of the problem and how it escaped detection by identifying and verifying the escape point. · Update the TSPS Summary Report.

Technical Structured Problem Solving (TSPS ~ 8D)

• Course Outline & Schedule (Day 2)

Duration	Details
1.5 Hours	**Step 4: Develop Solutions** Purpose: · Develop and evaluate solutions to eliminate the root cause. Output: · Select the best Permanent Corrective Action (PCA) to: – Remove the root cause of the problem. – Correct the root cause of the escape. · Test and Verify that both actions will be successful when implemented without causing undesirable effects. · Update TSPS Summary Report.
1.5 Hours	**Step 5: Implement Solutions** Purpose: · Implement and validate the Permanent Corrective Actions (PCA). Output: · Implementation plan, risks and barriers identified. · Validate that the PCA is working as intended. · Remove the Short-term Containment Action. · Update TSPS Summary Report
1 Hour	**Lunch Break**
2 Hours	**Step 6: Standardize Solutions** Purpose: · Modify processes and systems to ensure that improvements are sustained over time. Output: · Document plans for communicating, integrating and monitoring the changes. · Plan implemented for systemic improvements for similar products and processes.

Technical Structured Problem Solving (TSPS ~ 8D)

• Course Outline & Schedule (Day 2)

Duration	Details
2 Hours	**Step 7: Next Steps** Purpose: · Evaluate accomplishments and lessons learned. · Determine next steps. Output: · Document Post-mortem. · Recognize team and contributions. · Communicate results: TSPS Summary Report published and archived. **Wrap Up & Survey**

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• TSPS Root Cause Analysis Job Aids

Step 1 = Define Problem
Create Problem Statement

1. Describe **'What is Wrong with What?'** using facts and data, not assumptions, theories or conclusions.
2. Ask repeated 'Whys', 'Do we know why this is happening?' to create a new 'What is wrong with what' statement.
3. Keep asking 'why' until reaching a 'We don't know' answer.

> Example:
>
> The machine is broken.
>
> Why is the machine broken? Because the motor is not running.
>
> Why is the motor not running? Because there is no power to the motor.
>
> Why is there no power to the motor? We don't know.
>
> Final problem statement: No power to the motor.

Step 2 = Current Situation
Problem Description

Use similar units of measure when comparing where the defect is and is not.

	IS	IS NOT
What	• Name the object and the defect this object has.	• List similar objects that don't have the defect. • List defects the problem object could have but does not.
Where	• Where was the problem first seen? • Which factories, locations, geographies and other places is the defective object or problem found? • Where on the object is the defect found? • Where in the process flow is the problem first observed?	• Where else could this problem be occurring, but is not?
When	• When was the problem first seen? • Can the problem be linked specific points in a process, operation sequence, or other time dependent variable? • Can the problem be linked to specific shifts, days, work weeks, etc?	• When did the problem not happen or when is the problem not happening?
How Big	• How many lots, sites, product lines, SKUs have the problem? • How many defects are found on the object with the problem? • How big are the defects? • How does the defect affect yields, DPM, failure rates, etc?	• How big could this problem have been, but is not?

Technical Structured Problem Solving (TSPS ~ 8D)

• TSPS Root Cause Analysis Job Aids

Step 3 = Identify Causes

Differences/Changes

These are facts related to the problem description. These facts lead to clues pointing to the likely causes of the problem. When creating differences and changes consider the cause-effect categories of environment, procedures, materials, management, people, machines and information.

Differences

- Identify what is specific, unique, distinctive, exclusive, or true of the IS when compared to the IS NOT.
- Ask the question '**What is different about the IS when compared to the IS NOT**?' Ask this question for every IS/IS NOT combination.
- **Do not repeat facts already captured in the IS column.**

Changes are facts that are related to the differences.

- Identify what has changed to, within, about, or around the difference and when did the change occur.
- Ask the question '**What changed to create the difference**?'

Root Cause Theories

- Brainstorm ways the changes may have created the problem by asking, '**How could the change have caused the problem**?' Do this for each change identified.
- List simple, single variable theories first before creating more complex cause theories.
- Each change may have multiple theories.

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• TSPS Cause Analysis Worksheet

PROBLEM STATEMENT:

Describe Problem	IS	IS NOT	Comparative Analysis Differences	Changes	Date	Test +/-			Root Cause Theories
WHAT									
WHERE									
WHEN									
HOW BIG / HOW MUCH									

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- ## TSPS Cause Analysis Worksheet

TSPS SUMMARY REPORT

Title:
Product:
Team Leader:

Process:
Organization:

Date Opened:
Manufacturing Sites(s):
Team Members:

Last Updated:

Customers:

Problem Statement:
(What is wrong with what?)

STEP 1: DEFINE PROBLEM	STEP 2: CURRENT SITUATION
Key Symptoms:	Description:

	IS	IS NOT

Emergency Containment:
% Effective:
Date Implemented:

Short Term Containment:
% Effective:
Date Implemented:

STEP 3: IDENTIFY CAUSES	STEP 4: DEVELOP SOLUTIONS
Root Cause:	Permanent Corrective Action:
Verification: PASSIVE:	Verification:
ACTIVE:	
Escape Point:	

STEP 5: IMPLEMENT SOLUTIONS	STEP 6: STANDARDIZE SOLUTIONS	STEP 7: NEXT STEPS
Permanent Corrective Action:	Communication Plan:	Summary Report
		Completion Date:
	Documents Revised:	Archive Location:
Date Implemented:		
Short Term Containment Removal Date:		
PCA Validation:		
	BKMs Identified:	Post-mortem Completion Date:
% Effective:		Recognition:

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