Kaizen Training

6 Step Approach
KAIZEN IS A STRUCTURED AND PROVEN PROBLEM SOLVING APPROACH WORKING EVERYWHERE

1a. PROBLEM DEFINITION
Problem title: 
Description of problem to solve: 
Owner: 
Team: 

1b. QUANTIFICATION OF PROBLEM
Conclusion from quantification analysis:
Solving issue 1 would address X% of non-productive time
Owner: 
Team: 
Problem title: 

KAIZEN IS A STRUCTURED AND PROVEN PROBLEM SOLVING APPROACH WORKING EVERYWHERE

2a. ROOT CAUSE ANALYSIS – ‘THE FISHBONE’
Owner: 
Team: 
Problem title: 

2b. RANKING OF CAUSES
Conclusion from ranking:
Addressing causes A, B, C would solve X% of the issue
Owner: 
Team: 
Problem title: 

5. PROGRESS UPDATE
Problem title: 
Action Status
Main highlights since last review
Main challenges

6b. PRIORITISATION OF SOLUTIONS
Plan Legend
•A1: …
•A2: …
•A3: …
•B1: …
•B2: …
•C1: …
•C2: …
•C3: …
•C4: …

3a. IDENTIFICATION OF SOLUTIONS
Root cause Possible solutions
Owner: 
Team: 
•Cause A
•Solution A1
•Solution A2
•Solution A3
•Solution B1
•Solution B2
•Solution C1
•Solution C2
•Solution C3
•Solution C4

4. IMPLEMENTATION PLAN
Action Owner:
Responsible Name … Name … 
Start date Date … Date … 
End date Date … Date … 
Completed? Yes

3d. APPROVALS PLAN
Who needs to approve 
Owner: 
Team: 
Who is responsible for getting the approval 
By when Approval received

3c. SOLUTIONS APPROVAL TEMPLATE
Solution title 
Expected impact
Required investment
Time until capturing impact

3b. PRIORITISATION OF SOLUTIONS
Problem title: 

3e. SOLUCTIONS APPROVAL TEMPLATE
Problem title: 
Solution title 
Brief description
Expected impact
Required investment
Time until capturing impact

4. IMPLEMENTATION PLAN
Problem title: 
Action Owner:
Name … Name … 
Start date Date … Date … 
End date Date … Date … 
Completed? Yes
Focus on problem itself, not who caused it
1 PROBLEM DEFINITION

Statement: Non Value Added time is 40%

Bad Example:

Reduce the non value added time

Good Example:

Reduce the non value added time due to walking from 2 hours per shift to 0.5 hours per shift within one month

KEY CRITERIAS
- Describe problem specifically
- Give Target
- Give deadline
1a. PROBLEM DEFINITION

Problem title: ____________________________________________________________

Owner: ____________________  Team: _________________________________________

Description of problem to solve: ____________________________________________

Current outcome: ____________________  Target outcome: ____________________

What is excluded from the ‘solution space’: ________________________________
1b. QUANTIFICATION OF PROBLEM

Problem title: __________________________________________________________

Owner: ______________________ Team: _________________________________

Conclusion from quantification analysis: ________________________________

NVA time: _______ _______ _______ _______ _______ _______
1. **Why** did the machine stop? – Bearing is overheated!

2. **Why** is the bearing overheated? – Has too little oil!

3. **Why** too little oil? – Pump doesn't supply enough oil!

4. **Why** doesn't the pump supply enough oil? – The filter is fouled!

5. **Why** is the filter fouled? – Maintenance interval too long!

Root cause of the problem!
2a. ROOT CAUSE ANALYSIS – ‘THE FISHBONE’

Problem title: ____________________________________________
Owner: ____________________  Team: ____________________________

Man  |  Machine  
Method | Material | NVA time
2b. RANKING OF CAUSES

Problem title: ____________________________________________

Owner:_________________________    Team: ________________________________

Conclusion from ranking: ____________________________________________

% of NVA time caused

Cause A  Cause B  Cause C  Cause D  Cause E  Cause F  Cause G
3 SOLUTION DEVELOPMENT

Problem: Excessive time for cleaning to remove rusts

- **Man**
  - Primary cause: Inspection criteria is inconsistent among inspectors
  - Fifth cause: High variation of criteria in determining the occurrence of rust
  - Countermeasures: Manufacture samples and approve

- **Machine**
  - Primary cause: Lack of ant-rust facilities on the shop floor
  - Fifth cause: Material is not flexible and easily erodible
  - Countermeasures: Use elastic and anti-erodable material

- **Material**
  - Primary cause: Cleaning brush is easily broken.
  - Fifth cause: The drill for manual work is revamped
  - Countermeasures: Close holes when cleaned up

- **Method**
  - Primary cause: Rust can not be removed manually
  - Fifth cause: Contact with water when removing oil
  - Countermeasures: Change chemicals use in removing oil

- **Countermeasures**
  - Manufacture samples and approve
  - Anti-moisture indoor shop
  - Use elastic and anti-erodable material
  - Close holes when cleaned up
  - Change chemicals use in removing oil
  - Develop tools for exclusive use

Speed fast / impact high
- Speed slow / impact low

Impact:
- High
- Moderate
- Low
3 SOLUTION DEVELOPMENT

If you do a good root cause analysis, then you can easily develop solutions.

Excessive time for cleaning to remove rusts

Man
- Inspection criteria is inconsistent among inspectors
- High variation of criteria in determining the occurrence of rust
- Lack of approved sample to be compared or applied

Countermeasures
- Manufacture samples and approve
- Anti-moisture indoor shop
- Use elastic and anti-

Impact
- Speed fast / impact high
- Speed slow / impact low

Machine
- Lack of ant-rust facilities on the shop floor
- Cleaning brush is easily broken.
- Material is not flexible and easily erodable
- The drill for manual work is revamped

Material
- A lot of holes and thick T/S
- Rust may easily reoccur
- Carbon material is exposed
- Contact with water when removing oil

Method
- Rust can not be removed manually
- Lack of automatic tool for exclusive use
- Develop tools for exclusive use
- Apply tool using air

Prioritize the solutions based on impact and easiness:
- Close holes when cleaned up
- Change chemicals use in removing oil
- Develop tools for exclusive use

Problem
- Primary cause
- Fifth cause
- Inspection criteria is inconsistent among inspectors
- High variation of criteria in determining the occurrence of rust
- Lack of approved sample to be compared or applied

Countermeasures
- Manufacture samples and approve
- Anti-moisture indoor shop
- Use elastic and anti-

Impact
- Speed fast / impact high
- Speed slow / impact low
Implementing a Band-Aid

- A Band-Aid is a temporary solution, to contain a problem.
- A countermeasure must address the root cause!
### 3a. IDENTIFICATION OF SOLUTIONS

<table>
<thead>
<tr>
<th>Root cause</th>
<th>Possible solutions (title and brief description)</th>
</tr>
</thead>
</table>
| • Cause A  | • Solution A1  
|            | • Solution A2  
|            | • Solution A3  |
| • Cause B  | • Solution B1  
|            | • Solution B2  
|            | • Solution B3  |
3b. PRIORITISATION OF SOLUTIONS

Problem title: ____________________________________________

Owner: ________________________ Team: __________________________

Legend (explanation of symbols)

- A1
- A2
- A3
- B1
- B2
- B3

Impact

High

Do it soon

Plan

A1

B1

Do if there is time

Low

Skip

A3

B3

Low

High

Effort
# 3c. SOLUTIONS APPROVAL TEMPLATE

<table>
<thead>
<tr>
<th>Problem title:</th>
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<table>
<thead>
<tr>
<th>Owner: ___________________________</th>
<th>Team: ___________________________</th>
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</table>

<table>
<thead>
<tr>
<th>Solution title</th>
<th>Brief description</th>
<th>Expected impact</th>
<th>Required investment</th>
<th>Time until capturing impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2</td>
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<td>B2</td>
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<tr>
<td>A1</td>
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<td>B1</td>
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<tr>
<td>A3</td>
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</tbody>
</table>

- **Do it soon**: A2, B2
- **Plan**: A1, B1
- **Do if there is time**: A3
### 3d. APPROVALS PLAN

<table>
<thead>
<tr>
<th>Who needs to approve</th>
<th>By when</th>
<th>Who is responsible for getting the approval</th>
<th>Approval received</th>
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<tbody>
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</table>
# 4. PLAN WITH APPROVAL

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<thead>
<tr>
<th>Action</th>
<th>1️⃣ DEADLINE</th>
<th>2️⃣ RESPONSIBLE</th>
<th>Approval received</th>
</tr>
</thead>
<tbody>
<tr>
<td>Order new pipe</td>
<td>16 Feb 2008</td>
<td>Maintenance Engineer</td>
<td>✓</td>
</tr>
<tr>
<td>Train new operator</td>
<td>10 Feb 2008</td>
<td>Supervisor</td>
<td>✓</td>
</tr>
</tbody>
</table>

Approved by

Igor Boševski
4. IMPLEMENTATION PLAN

Problem title: ____________________________________________________________

Owner: ___________________________  Team: ________________________________

<table>
<thead>
<tr>
<th>Action</th>
<th>Responsible</th>
<th>Start date</th>
<th>End date</th>
<th>Completed?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action A1.1</td>
<td>Name</td>
<td>Date</td>
<td>Date</td>
<td></td>
</tr>
<tr>
<td>Action A1.2</td>
<td>Name</td>
<td>Date</td>
<td>Date</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Action</th>
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</thead>
<tbody>
<tr>
<td>Action B1.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Action B1.2</td>
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</tbody>
</table>

Approved by

___________________________
Igor Boševski
STEP 5: IMPLEMENT THE SOLUTION

STEP 6: SUSTAIN

IMPLEMENT

SUSTAIN

TELL

TRAIN

MONITOR

CHECK
5. PROGRESS UPDATE

Problem title: _________________________________

Owner: ___________________  Team: _________________________________

Period: ___________________

<table>
<thead>
<tr>
<th>Action</th>
<th>Status</th>
<th>Main highlights since last review</th>
<th>Main challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Action A1.1</td>
<td>![Status Icon]</td>
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<tr>
<td>Action A1.2</td>
<td>![Status Icon]</td>
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<tr>
<td>Action B1.1</td>
<td>![Status Icon]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Action B1.2</td>
<td>![Status Icon]</td>
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</tbody>
</table>
Problem Solving
Trees should be mathematical correct

What is wrong?

- QC tests for raw materials from other Company sites
- Combine batches in one delivery from supplier to one batch for sampling
- Perform real-time measurement of selected parameters
- Establish robustness of test to eliminate double-testing of samples
- Reduce aspiration level
- Install data base to automatically coordinate process changes
- Replace newer technology
- Transfer test results electronically to external parties
- Create order database for tests outside regular supply chain (e.g., R&D)
Empty templates
1a. PROBLEM DEFINITION

Problem title: ________________________________________________________________

Owner: ________________________    Team: _________________________________

Description of problem to solve: _____________________________________________

_________________________________________________________________________

_________________________________________________________________________

Current outcome: _______  Target outcome: _______

What is excluded from the ‘solution space’: _______________________________
1b. QUANTIFICATION OF PROBLEM

Problem title: __________________________________________
Owner: _____________________  Team: ________________________

Conclusion from quantification analysis: ________________________
2a. ROOT CAUSE ANALYSIS – ‘THE FISHBONE’

Problem title: ________________________________________________________________

Owner: ______________________ Team: _________________________________________

- Man
- Machine
- Method
- Material
- NVA time
2b. RANKING OF CAUSES

Problem title: ____________________________________________

Owner: ____________________  Team: ___________________________

Conclusion from ranking: ____________________________________

% of _______ caused

Cause A  Cause B  Cause C  Cause D  Cause E  Cause F  Cause G
3a. IDENTIFICATION OF SOLUTIONS

Problem title: ________________________________________________________________

Owner: ____________________  Team: ____________________________________________

Root cause
____________________________________
• __________

Possible solutions (title and brief description)
____________________________________
• __________
• __________
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3b. PRIORITISATION OF SOLUTIONS

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<tbody>
<tr>
<td>High</td>
<td>Low</td>
<td>Do it soon</td>
</tr>
<tr>
<td></td>
<td>High</td>
<td>Plan</td>
</tr>
<tr>
<td>Low</td>
<td>Low</td>
<td>Do if there is time</td>
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<tr>
<td></td>
<td>High</td>
<td>Skip</td>
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</tbody>
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Problem title: ____________________________________________________________

Owner: _____________________  Team: ________________________________

Plan Legend:
- **High**: High impact, high effort
- **Low**: Low impact, low effort
- **Do it soon**: High impact, low effort
- **Do if there is time**: Low impact, high effort
- **Plan**: Medium impact, medium effort
- **Skip**: Low impact, low effort
## 3c. SOLUTIONS APPROVAL TEMPLATE

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30
4. IMPLEMENTATION PLAN

Problem title: _________________________________________________________

Owner: ___________________________  Team: ________________________________

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## 5. PROGRESS UPDATE

<table>
<thead>
<tr>
<th>Problem title:</th>
<th>Owner:</th>
<th>Team:</th>
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<tbody>
<tr>
<td>Period:</td>
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<table>
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