Briefing on AIAG CQI-20 2nd Edition Effective Problem Solving Guide

ASQ Palmetto Section
March 12, 2019
Is Problem Solving a *problem* in your organization?
2014 AIAG Automotive Quality Survey

AIAG

in collaboration with

Deloitte.

QUALITY 2020

Automotive Industry's View on the Current State of Quality and a Strategic Path Forward
Problem Solving Unanimously Identified as Top Automotive Issue

Top 10 issues

OEMs and suppliers both ranked Problem Solving and CSR as the most critical issues impacting quality. QMS, Product Development, and Loss of Experience also rounded out the top issues as ranked by all respondents.

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<tr>
<th>Issues</th>
<th>All Respondents*</th>
<th>OEM</th>
<th>Supplier</th>
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<tbody>
<tr>
<td>Concerns related to Problem Solving</td>
<td>1</td>
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<tr>
<td>Concerns related to Customer Specific Requirements (CSR)</td>
<td>2</td>
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Is Problem Solving still #1 issue?

2017 Southern Automotive Conference
Panel of Automotive OEM leaders all agreed
their organization’s biggest challenge is
effective problem solving: 
getting to the real root cause of problems to prevent recurrence!
Evolution of AIAG’s Effective Problem Solving Guide

- **CQI-10**
  - April, 2006

- **CQI 20 & 21**
  - September, 2012

- **CQI-20**
  - September, 2018
CQI-20 Update Timeline

Mid-2016
AIAG Effective Problem Solving Working Group formed; decision to integrate CQI-21 Leader Guide into CQI-20

Early 2018
Final draft submitted for editorial review

September, 2018
Release of CQI-20 2nd edition
What’s New in CQI-20?

1. Integration of Leadership/Executive Support
2. Focus on Problem Solving Culture
3. Proactive metrics for measuring problem solving success
4. Models 8D process with 9 key steps
5. Emphasis on use of Problem Solving Tools
Leadership/Executive Support in Problem Solving

- Lead by example
- Align organizational vision
- **Address problem solving in the strategic plan**
- Establish a training and certification structure
- Allocate proper resources
- **Establish metrics**
- Monitor progress (to metrics)
- Organizational culture of problem solving

**Tips on Executive Support provided in each step**
Effective Problem Solving Culture

Quick Assessment:
0 – not us
3 – average
5 – world-class

Organization’s Problem Solving Culture

- Consistent Business Structures
- Continuity of Knowledge
- Culture of Continuous Improvement
- Diversified Organization
- Empowered Employees
- Ethical Organization
- Geographical Neutrality
- Open Communication
- Stable Systems
- Training

More detailed assessment in Appendix A of CQI-20
Problem Solving Culture Rating

- Consistent Business Structures
- Continuity of Knowledge
- Culture of Continuous Improvement
- Diversified Organization
- Empowered Employees
- Ethical Organization
- Geographical Neutrality
- Open Communication
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- Training
Problem Solving as a value-added process in your organization.

How do we manage value-added processes?
Managing a Value-Added Process

1. Process is recognized as essential to the success of the business
2. “Process ownership” is assigned
3. Process is defined, (and often documented)
4. Process interfaces are recognized
5. Process risks are identified and planned for
6. Process competencies are determined and training/actions are taken to ensure competencies are available
7. Process is communicated/talked about
8. Process occurs on a routine basis
9. Process is monitored and controlled
10. Process is measured and evaluated for performance, (execution and outcomes)
11. Process is reviewed for effectiveness by leadership
12. Process is considered for continual improvement
Problem Solving is a Continuous Process

Problem = gap between “what is” and “what should be”

- **Corrective Action**: Below target, Goal, spec
- **Preventive Action**: At target, goal, spec
- **Improvement Action**: New target, Goal, spec

- **Target**, **Goal**, **Spec**
How does your organization measure the effectiveness of your problem solving efforts?
Metrics of Problem Solving Success

- % on-time at each step of the problem solving process
- "Aging" of problem investigations
- "Severity" of open problem investigations
- Engagement of problem solving team members
- Planned vs. actual results
- % of actions with repeating root cause
- First Time through Quality, (FTQ); # of iterations required before problem solving success
Consider Extent of Problem and Select Appropriate Problem Solving Approach

How do you decide which problem solving approach & tools to use?

- Cause known – Just do it!
- Local process investigation – Fundamentals tools
- Formal problem solving – Cross-functional team
- Formal problem solving – Complex tools; long-term commitment
AIAG Effective Problem Solving Process

Steps

1. Become Aware of Problem
2. Establish/adjust the Team
3. **Describe the Problem**
4. Contain Symptoms
5. **Establish Root Cause**
6. Select & Test Corrective Actions
7. Implement Corrective Actions
8. **Prevent Recurrence**
9. Recognize Team Success
Highlights of Effective Problem Solving Process

Step 1: Become Aware of the Problem

D0 in 8D

All problems originate in Processes!

Step 3: Describe the Problem

Characterize the problem

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Step 3: Describe the Problem

- "Characterize the problem"
- What is the failure mode?
- What requirements are associated with the problem?
- Where is the problem coming from? (problem’s process of origin; location)
- How long has the problem existed? (time)
- What is the impact of the problem? (cost, frequency)

Data collection is required!

Favorite tools:
- FMEA
- Process flow
- Timeline
- Is/Is Not analysis
- Check sheet
- Concentration diagram
- Descriptive statistics
- Capability
- Measurement systems analysis
- Lessons learned database
Step 5: Establish Root Cause

**Systemic** = management system root cause

**(Planning)** = process planning root cause

**Occurrence** = trigger/process factor at process of origin

**Escape** = defect detection root cause
Step 8: Prevent Recurrence

- Where else could this same problem occur?
- What other processes include/are impacted by the confirmed root causes?
- What potential risks exist for other identified root causes?

- Containment
- Escape root cause
- Occurrence root cause
- Systemic root cause
- Implemented solutions
- Other opportunities

This step involves more than just auditing or updating documentation!
Which Problem Solving Tools do you use?

In which steps of the Problem Solving process do you use each tool?
Top 5 Problem Solving Tools

1. **Flowcharting**, (process flow diagrams) – used in all steps
2. **MSA**, (Measurement Systems Analysis) – used in all steps
3. **Check sheets** – used in all steps
4. **Concentration diagram** – used in almost all steps
5. **Capability, (quality index)** – used in almost all steps

Matrix of Problem Solving Tools mapped to Problem Solving Steps in Appendix F of CQI-20
Cathy’s Favorite Problem Solving Tool?
FMEA supports all of these Problem Solving process steps!

1. Become Aware of Problem
2. Establish/adjust the Team
3. Describe the Problem
4. Contain Symptoms
5. Establish Root Cause
6. Select & Test Corrective Actions
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## Failure Modes & Effects Analysis

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<tr>
<td>Process of origin</td>
<td>Technical definition of problem</td>
<td>Symptom</td>
<td>Process factors = root causes</td>
<td>Interim actions</td>
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*Can be utilized at Steps 1, 3, 4, 5, 6, 7*
AIAG/VDA FMEA Manual Update

Scheduled to be released: Q2 2019

Link to register for FREE Webinar
What’s else is New at AIAG?

CQI-28 Traceability Guide now available

“Supplier Reliability Guide” working group just forming

“Commitment to Safety” new CRS initiative
3rd annual event
September 12-13, 2019
Charleston, SC