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How do you ensure that the gains made during a kaizen event stand up to the behavior extinguishing winds of time? At the Engenio Storage Group division of LSI (ESG/LSI), the answer to that question proved more problematic than the scenarios that led to the kaizen events themselves. And finding a way to ensure sustainment of improvements from business process kaizens was far more challenging than for shop floor kaizens.

Shop floor processes are far more visual than business processes. In a shop floor kaizen, the layout and workstations are typically physically relocated, which involves special resources to move heavy equipment and perform electrical and mechanical reconfigurations, changes that cannot easily be undone by the operators and, by that reason, reinforce the behavior that sustains the newly implemented flow. As Terry Gowin, lead of the KPO states, “If you change the operator’s physical world, you change their behavior.” Visual management techniques flourish in a shop floor scenario: hour-by-hour charts, jidoka applications—including the very visible andon lights, and performance charting with abnormality response plans, including the kaizen newspaper. Even the casual observer can discern when a production line is not flowing!

By contrast, business processes are typically not visual. They often involve a computer workflow which, unlike a manufacturing process, cannot be seen and have its performance instantaneously assessed by the casual passer-by. In addition, during a kaizen event no dramatic physical change takes place, which makes ‘turning back’ relatively easy, unlike with a shop floor kaizen.

The KPO at ESG/LSI is using a tool and approach, developed in-house by the Director of Quality Management Systems (QMS) Dave Cunningham, which has proved to be instrumental in ensuring that kaizen gains are sustained. As Dave indicates, “This is all about culture change, process speed, and execution excellence. The sustainment audits bring focus to ownership, metrics and continual improvement. It keeps us focused and engaged with the solutions

implemented by the kaizen teams.” The tool consists of an audit approach and a balanced scorecard with a scoring methodology.

### **Audit Approach**

Kaizen sustainment audits and the corresponding lead auditor are maintained on a roadmap by a member of the KPO. Kaizen auditors currently rotate from the pool of KPO members. However, if the need should arise, other sources include internal ISO auditors and employees who have volunteered to be on future kaizen teams. The actual audit is scheduled by the lead auditor with the process owner and targeted to take up to one hour. A total of five audits should be performed on a kaizen area—basically once a quarter, with the first audit occurring within 30 days of the kaizen event, followed by the 60-, 120-, 240-, and 360-day milestones. Audit sheets are stored on the KPO website and are accessible to everyone in the company.

### **Balanced Scorecard & Scoring Methodology**

The scorecard consists of five focus areas called audit objectives:

1. Process owner
2. Metrics available and current
3. Metrics monitored
4. Roles and responsibilities communicated and understood
5. Process compliance and improvement.

Each audit objective has associated measures, (descriptive) targets, and supporting initiatives. Let’s take a look at the individual audit objectives.

### Process Owner

The active involvement of the process owner post-kaizen is the key to sustainment. Make sure the identity of the process owner is known before exiting a kaizen event. The process owner must be aware of what that means: monitor process performance, initiate corrective action, and perpetuate continual improvement. We also want to be sure that the process users know the identity of the owner.

The auditor will interview the process owner and have the owner explain the area affected by the kaizen, how they are managing the area, and the recent improvements and problem areas. Using a subjective analysis of the process owner's answers, the auditor gives credit for the areas listed on the scorecard. A range of point credit can be given, depending on the degree of the process owner's support, management, and understanding.

#### Audit Objective

Process Owner

#### Measures

Process owner is actively aware of their ownership, ongoing area performance, and metrics monitoring.

#### Targets

Process owner is known and actively engaged with performance and metrics monitoring.

#### Supporting Initiatives

- +1 - 3 = Process owner understood by area employees
- +1 - 3 = Process owner ensures the process is maintained
- +1 - 4 = Process owner understands the process and current issues/improvements

The actual scoring is embedded in the "Supporting Initiatives." For "Process Owner" and each of the other audit objectives the maximum score is 10 points. Anywhere from 1 to 4 points can be subjectively given for the degree to which the identity of the process owner is understood by area employees, the process owner ensures the process is maintained and understands the process and current issues/improvements.



### Metrics Are Up-to-Date and Available

If process metrics are to be used to monitor, control, and improve a process, they must be current. In addition, they must have a designated location that is also stated in the process documentation. Ideally, they will be highly available and reside on a website or shared drive accessible by a number of users and not sequestered on the hard drive of one person's computer. The auditor will review the kaizen-area metrics with the process owner. One point is subtracted for each time-unit measure by which their metrics are delinquent (i.e., a week, a month, etc.). The auditor evaluates the availability of the metrics and subjectively gives them credit based on degree of availability. Examples of high availability would be a posting on a website, public bulletin board, and so on. Examples of low availability would be no metrics at all, metrics stored on a personal computer hard drive, and so on.

#### Audit Objective

Metrics are up-to-date and available

#### Measures

Confirm where metrics are stored; review the data to see if the metrics are up to date. Verify the location matches the process documentation.

#### Targets

Metrics should be current. They must be readily available (Web, shared drive, etc.), and the process must tell where they are stored.

#### Supporting Initiatives

Metrics current = 6 (minus 1 for each time period off)

Ex: 2 weeks out of date for a weekly metric would be a 4

Metrics Readily Available = 4 (0 = no, 2 = avail., 4 = readily avail.)

### Metrics Are Being Monitored

While metrics must be monitored, they must also be used to manage the process. The auditor will evaluate the monitoring of the metrics by the process owner and subjectively give them credit for this. If the process owner can demonstrate action taken to improve the metrics, they are given additional points.

#### Audit Objective

Metrics are being monitored

#### Measures

Evidence must be shown that the supporting metrics are monitored and managed against.

#### Targets

Metrics are monitored on a regular basis: weekly, monthly, or quarterly. Evidence must be shown concerning the actions taken from the metrics.

#### Supporting Initiatives

0 = Metrics are not monitored

1 - 2 = Metrics are rarely monitored

3 - 5 = Metrics are monitored but not regularly

6 - 8 = Metrics are monitored regularly

+2 = Evidence of action taken to improve metrics

**Roles and Responsibilities Are Communicated and Understood**

All participants in the process should be able to demonstrate their understanding of the when, where, how, and why of what they do. The auditor may want to talk to people working within the process and confirm their understanding. The process owner should be able to convey the overall roles and responsibilities to the auditor and is given subjective points for the demonstration of understanding. The auditor should also check for new-hire training on the process related to the kaizen and give them additional points if incorporation can be confirmed.

<b>Audit Objective</b>
Roles and responsibilities are communicated and understood
<b>Measures</b>
Locate the roles and responsibilities in the process. Spot check individuals and ask for their responsibilities. Include new hires.
<b>Targets</b>
All employees understand their roles and responsibilities. New hires are trained on their roles and responsibilities.
<b>Supporting Initiatives</b>
0 = R&R not understood. 1 - 3 = Small degree of R&R understood 4 - 6 = R&R generally understood 7 - 8 = R&R clearly understood +2 = New hire training covers updated R&R

**Process Compliance and Improvement**

As the business changes or improvements are made, the process may need to be updated by the process owner. This includes training for the improved process. The auditor will evaluate that the process is actively in place and any changes are being documented and the users are trained. Subjective points will be applied, with additional points given if the auditor finds evidence that the process is being improved upon.

<b>Audit Objective</b>
Process compliance and improvement
<b>Measures</b>
Review the kaizen report and confirm that the process changes put in place are being followed by walking through the current process.
<b>Targets</b>
Up-to-date processes should be in place. Any significant updates or improvements should be noted in the process documents.
<b>Supporting Initiatives</b>
0 = No utilization of the process 3 - 5 = Limited degrees of the process utilized 6 - 8 = Process is being followed 9 - 10 = Process continuous improvement is evident

**Audit Wrap-Up**

Typically a paper copy of the scorecard is used by the auditor during the audit. The scorecard is an Excel file with embedded formulas that average the scores for each audit objective. The average falls within ranges that translate into letter grades as follows:

A = 41-50    B = 31-40    C = 21-30  
D = 11-20    F = 00-10

The auditor enters the individual scores into the audit worksheet and walks through the outcome with the process owner. The "Audit Notes" column is valuable for clarifying observations and making recommendations. If corrective actions (CA) appear warranted, they will be created and placed in the CA system. At ESG/LSI, the overall grades are reviewed at the executive-staff level. The scorecards themselves are available as back-up should additional details be requested.

**Results**

The "Kaizen Event Balanced Scorecard" has been in use for several months at ESG and 100 percent of the events have been audited. Many audits were started at dates well beyond the 30-, 60-, and 120-day milestones as the events being audited had occurred before the creation of the sustainment audit. But, probably more so than for any more recent kaizen events, these older projects needed the assessment, and in some cases that assessment indicated a need to get back on track. The scorecard has been well received by process owners as well as the executive management team. As Phil Bullinger, executive vice president of ESG/LSI, notes, "Sustainment is what it's all about. If we don't sustain the changes, we are passing up on the real improvement opportunity offered by kaizens." ■

*ESG/LSI is pleased to share this tool with other Lean Sigma practitioners and welcomes any comments or questions. Cathy Elias can be reached at Cathy.Elias@lsi.com.*