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Management Report

Successful Implementation of Kaizen

Student Number
0122899

Schiffer, Michael
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1 Executive Summary

This paper focuses on the successful implementation and the full utilization of Kaizen. Kaizen helps to continuously improve processes, it is mostly used on shop floor processes where savings up to 90% can be generated from a single Kaizen event.

Since many companies fail or have only limited success in implementing Kaizen like JC, this paper analyses the different existing literature and summarizes the boundaries and basics for successful implementation of Kaizen and takes a critical look on various literatures about Lean Management, Implementing the Change, TPS and Kaizen. An almost complete checklist which is based on that literature is used to identify the gaps where JC failed implementing Kaizen.

The gap analyses was conducted with four JC regions UK, Iberia, Benelux and Eastern Europe highlighted several gaps where JC needs to improve in order to reach its vision to become a Lean Manufacturer.

The gap analyses and the look at the JC culture highlighted the following things.

- ? Lack of discipline in planning, conducting and closing Kaizen projects.
- ? Lack of Management focus and support.

The first initiative of implementing JCMS and Kaizen started good, but dropped later after the management focus moved on.

All issues which are identified can be solved from within the company; there are no major roadblocks which can't be solved.

The JCMS relaunch is going to support the implementation of improvements to the current Kaizen status

2 Introduction

The wider context of this research is the efficiency in JIT (Just in Time) Operation. There are many Initiatives to increase the efficiency within the production. Most of them are based on the Toyota Manufacturing System. The majority of these initiatives (e.g. Kaizen, TQM, KVP, CIP...) use a certain type of workshop in order to improve the production processes. In the following we will call this kind of workshop Kaizen event.

The workers of a certain area or production line organize and participate in a Kaizen event in order to improve the efficiency of their own working processes. If these workshops are conducted on a regular basis, the processes will continually be improved and as a consequence the company can develop a sustainable competitive advantage that remains safely proprietary (Schroeder and Robinson, 1991, p75). A competitive advantage which is gained due to a long history of Kaizen is the most secure competitive advantage, because the series of incremental steps and the ability to continually improve processes cannot easily be copied by competitors.

The implementation of other initiatives like One Piece Flow, Pull Processes, Standardization, 5s are very much process-driven. These processes can be described and copied easily without any major changes in culture and behavior of the workforce and management.

Kaizen and Just-in-Time concepts, however, cannot be that easily described and implemented. Implementation of Kaizen needs involvement of the management team as well as the workforce. It needs to be implemented top down and in order to improve processes later on bottom up. This is probably one of the reasons why most companies fail in implementing Just-in-time concepts in full scale. Masaaki Imai, the founder of the Kaizen-Concept, said in an interview with the FAZ (09-Dec-02) "99 percent of all production companies are still working with traditional production methods and the other one percent does a lot wrong"

Most literature indicates that Kaizen can radically improve processes.

Typical savings for setup time are 90%, for productivity 20-30% and one-piece-flow projects 50% (The Kaizen Blitz, 1999, p99). These shows the benefits which could be gained from successful implementation of Kaizen.

Basically, this report can be divided into three parts. In the first part relevant literature that has been published on this subject since 1990 will be reviewed. Following that, the current situation in JC plants will be analyzed. In the next chapter the main methods described in the literature review will then be applied to JC plants in order to be able to recommend how the implementation of Kaizen at JC can be improved.

2.1 Kaizen

2.1.1 Definition

In his book "Kaizen strategies for successful organizational change" Michael Colenso set up the following table with the main bullets which identify Kaizen.

	Kaizen
Purpose	? continues improvement of quality, service and process
Occurs because	? it is systemic within the organization
Operates by	? incremental steps
Addresses	? existing products ? existing systems and work processes
Achieves	? consolidation in existing markets ? competitive advantage by product/service improvement or by cost reduction
Requires	? attention to detail ? root cause analyses ? problem solving ? cross-functionality ? gaining consensus

Table 1: Kaizen strategies for successful organizational change

In a typical Kaizen Blitz project, a cross-functional multilevel team of 6 to 12 members work intensely, 12 to 14 hours a day, to rapidly develop, test, and refine solutions to problems and leave a new process in place in just a few days. They don't plan, they don't propose, they *do*. This focus on doing is what sets Kaizen apart from other improvement tools, but in order for it to work effectively; we need to recognize that it has other similarly unique characteristic.

(The Kaizen Blitz)

The word Kaizen is a Japanese term (see picture below) meaning "to make better", another translation of Kaizen is "Small-step improvement".



Some times the Kaizen activities are also called "Blitz", "5 Days and 1 Night", "Kaizen Blitz", "Blitz Kaizen", "(Value) Stream Kaizen", "System Kaizen", or "Breakthrough Kaizen". In different literature about Toyota the term "Quality Circle" is also used.

Typical improvements achieved by a single Kaizen are: (Wiley, 1999, p.3,7)

? Setup time reduction	70-90%
? Productivity improvement	20-60%
? Process time reduction	40-80%
? Inventory reduction	30-70%
? Walking distance reduction	40-90%

The typical budgets for these projects are 300-400\$ plus labor.

2.1.2 History

Since the definition of Kaizen is quite broad, there are several different thoughts about the history of Kaizen. The most common version is that it resulted from the competition between Nissan and Toyota.

The fact that Nissan won the Deming Price for quality in 1961 drove Toyota even more aggressive in its approach to lean manufacturing. Toyota therefore vowed that it, too, would win the Deming price. In order to overcome certain quality issues Shigeo Shingo elaborated a poke-yoke system. Based on the experience gathered during the elaboration Tetsuichi Asaka and Kaomi Ishakawa developed the Toyota Quality Circles in 1962. These Quality Circles were later called the first real Kaizen event. In the same year Masaaki Imai founded the Kaizen Institute, which promoted the Kaizen approach through the world. Other theories about the origin of Kaizen are described in the paragraph "Impact of cultural differences Japan, US, Europe" (Mika, 2000, p.5)

2.2 Toyota Production System

2.2.1 Definition

TPS is the JIT production system used by the founder of the Toyota Motor Corporation. This production system was developed and promoted by Toyota in order to eliminate by means of improvement activities various kinds of waste lying concealed within the company. The main philosophy is "Manufacture only what is needed by the customer, when it is needed, in the quantities ordered". TPS allowed Toyota to gain profits by decreasing costs through a production system that completely eliminated excessive inventory and work force. The TPS follows the Taylor system (scientific management) and the Ford System (mass-assembly line). (Toyota Production System, 1993, p1 and Mika, 2000, p.IV)

2.2.2 History

1922 Toyota humbly started in the textile industry. View years later Sakiichi developed the first automatic loom. Since that time Toyota had a tremendous growth that lasted till World War II.

1929 Kiichiro Toyota visited the Ford Rouge Plant.

1930 Toyota built the first special vehicles for the Japanese government

1932 Taiich Ohno joined Toyota and guided the venture into automotive manufacturing.

1937 The task to realize what Kiichiro saw at the Ford plant was assigned to Taiich Ohno.

With the outbreak of World War II the production shifted from textile equipment to heavy vehicles. After the World War II Japan went through a deep crisis and had to lay off 25% of its workers. This lead to a big strike which could only be settled by the agreement that from then on, no worker would ever lose his job.

1950 Taiichi Ohno became plant manager of the Honsha machining plant. Based on Frederick W. Taylor's "Shop Management and the Principles of Scientific Management", "The Secret of Eliminating Unprofitable Efforts", from 1924, which was a Japanese version of more Taylor's works, H.B Maynard's MTM (Methods, Time, Measurement), Larry T. Miles "Value analysis" and Marvin E. Muel's "Motion and time studies" Taiichi Ohno created his Toyota Production System. In the following years the TPS was heavily influenced by Dr. Deming, who came to Japan in order to advice and train Japanese manufactures in quality methods. Since that time, many modern management techniques have been integrated into the TPS. TPS is a system which is consciously improving itself, so there will probably never be a final version of this system.

2.2.3 Techniques used in TPS

2.2.3.1 The Production Cell

This is usually a team of employees responsible for producing a given group of products. This approach can improve productivity, because the group of workers will organize itself which increases the identification with their work. The Kaizen approach assures that all the resources necessary for doing the job are grouped together in the production cell. (Colenso, 2000, p30).

2.2.3.2 Pull System

The production is driven from the last operation in a process which pulls from the previous operation what is required to satisfy the needs of the customer at the end. Pull is the opposite of the conventional push process, where in operation produces a part, then the part is transferred to the next station and it waits there till it is processed there.

2.2.3.3 Just in Time (JIT)

JIT has been described by Ohno as follows "In a flow process, the right parts need in assembly reach the assembly line at the time they are needed and only in the amount needed" (Ohno, p. 4). According to Ohno this does not imply that the parts must arrive exactly when needed. Instead, a pull (Kanban) system can be used. Toyota explains that the goal of JIT is to translate each order into a delivery of finished, quality vehicle as quickly and efficient as possible. (Wiley, 1999, p28).

2.2.3.4 5s

The five Japanese words seiri, seiton, seiso, seiketsu and shitsuke describe different degrees of cleanliness.

The methodology behind this is that a clean and well-structured work area increases the efficiency, quality and safety of an operation. It is a good approach to run a 5s before a Kaizen project, so the Kaizen can focus on the process itself.

In its manufacturing booklet JCMS (Johnson Controls Manufacturing System) Johnson Controls defines the 5s as follows.

1S Separate and Scrap	Choose an area on the floor. Look at the items in the area. If you need it or will use it today, keep it in the area. If not, store it nearby or get rid of it (scrap it).
2S Straighten	Once you have decided what to keep, it is time to figure out where it belongs.
3S Scrub	Clean everything in the work area.
4S Standardize and Spread	It is time to determine what the standard approach to 5s will be.
5S Systemize	Put a system in place and reward good 5S performance.

2.2.3.5 Single Piece Flow

A process where parts are processed one part at a time and moved one at a time through completion. (Mika, 2002, p130)

Often Kaizen is used to establish this principle. This process increases the flexibility of production. With this principle the lot size is equal to one and therefore the setup time needs to be reduced to a minimum.

2.2.3.6 QC Circles

A quality control circle, or QC circle, is a small group of workers that study quality control concepts and techniques in order to provide solutions to problems in their workplace. (Toyota Production System, 1993, p193).

The purpose of this QC circle is to solve problems and to generate improvements within the workforce itself. With this approach the workers will increase their sense of responsibility for the product and process.

2.2.3.7 Tact and Cycle Time

Tact time is defined as parts produced per line divided by the time needed to produce those parts. So it is dependent on how many parts the customer ordered number of lines and the time available to produce these ordered parts. By adjusting those parameters to an optimum the actual operating rate of workers might increase by more than 90% (Ohno, 1993, p.304).

Cycle time is defined as the time needed to finish one operation step in the whole production process. The cycle of each step in the whole process time needs to be less or equal to the Tact Time.

2.2.3.8 Waste

The shortest definition of waste is given in the Paper “Detecting and Eliminating Invisible Waste” written by A. Robinson and Dean Schroeder: “Waste is anything that adds cost without adding value.”.

Waste needs to be identified and then eliminated or minimized in all processes. Kaizen is mostly used to identify the causes for waste and to eliminate them.

2.2.3.9 Gemba

Gemba is the “real place” where the work happens. The place where the value is added. The manager’s desk is emphatically not Gemba. Kaizen locates the responsibility of the process improvement with those who are actually involved into the process (Colenso, 2000, p30).

2.2.3.10 Poke-yoke

In other words fail save design. This principle should be designed into the product. If that is not the case, the outcome of a Kaizen might be a fixture or any other technique built into the process which makes it fool prove. (Colenso, 2000, p32)....

2.2.3.11 Total productive maintenance

This technique focuses on preventive maintenance. The idea is to avoid high cost due a breakdown of production equipment by means of a little regular maintenance. Kaizen’s focus is taking care of equipment rather than turning employees into service engineers. (Colenso, 2000, p33)....

3 Implementing Kaizen events

The most detailed guidance for the implementation, preparation, and running of Kaizen events is described in the two books “Kaizen Event Implementation Manual” and “The Kaizen Blitz”. The following table gives an overview about the main things / topics that have to be taken into account according to the authors in order to guarantee a successful implementation and running of Kaizen events. Since this is the most complete checklist, we based the questions for the survey we conducted with different JC plant JCMS facilitators on it. Purpose of this survey is the determination of best practice within JC and to get input from different JC experts. The analysis is described in Chapter 4.

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Topics & Things to be considered according to Literature	Kaizen Event Implement. The Kaizen Blitz	Questions for JC survey	Enter here the reality Agree 1 .. 6 Disagree	Enter here the Ideal World Agree 1 .. 6 Disagree Important ... Unimportant
Review the last Kaizen and make adjustments as needed	p.25	Have previous Kaizen events been reviewed before starting the next one?		
HR involvement, to select no "cement heads"	p.26	Has HR been involved in the selection of team members?		
HR pre-training prior to Kaizen events on "Participative Management" and "Change Management"	p.26, p.29	Has a training in Participative Management and Change Management been given prior to the event? If yes to whom and please send us the material.		
Make sure union is an integral part of the whole strategic plan	p.28	Have the unions been informed about Kaizen activities?		
Inform people in the process area and those who support the event what they should expect, and what should be the aftermath	p.29	Have all affected persons been informed prior the event?		
Make sure maintenance personnel can support the event as well as maintain the regular production	p.29	Have reasonable maintenance staff resources been scheduled to support the event?		
Let it be known that this is a team effort	p.29	Was it clearly stated that the outcome of the event is a team effort?		
No rank in Kaizen events, just team members	p.39			
Publish pictures pre and post, management and union personal working alongside operators	p.30	Have pictures pre and post and after been published?		
Selecting project (details see separate table in the Chapter 3.6)	p.33 p.96	What are the five most important criteria for the selection of a Kaizen event area?		
The scope and focus must be narrowly defined and clearly bounded.	p.8,9,	Were the targets and boundaries of the Kaizen event upfront clearly defined in a		

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Results must be unambiguously measured		98	written form?		
Goals for improvement should be set high to challenge the team and to encourage “out of the box thinking”		p.99	Have the goals been set high but realistic?		
The duration of the whole event should be	5 days Mo to Fr p.??	3 days p.xvi	How long do your Kaizen events usually take? (min. / avg. / max.)		
Selecting Team Members					
At least 50% of the team should be from outside the event area (Sales, marketing, engineering, other plants, customers, vendors, etc.)	p.33	p.27, 101	What was the amount of people from the event area and from outside? (# event area / # outside)		
Ideal team size 7-8	p.33				
At least 2 operators from event area	p.33	p.100			
Ask for volunteers	p.33	p.101	What has been considered to select the Kaizen event team?		
Look for most skilled people and innovators, open-minded. But don't set up an all-star team		p.101			
Maintenance personnel	p.33, p.44				
Members who are outwardly creative	p.33				
Select those that have an affinity to the shop floor	p.33				
Team Leader					
Team leader should not be from event area	p.36		How was the team leader selected?		
Immediate supervisor or someone a step or two up, of the project area		p.102			

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The teams for the first event might look for experienced outside supervision		p.102			
Previous experience and success in leadership are required, not necessarily in management, though. Must not be dictatorial in management style.	p.37	p.102 ., 103			
Experience as co-leader of previous events	p.37		How was the team leader trained / prepared?		
Knowledge of TPS tools and techniques	p.37				
Should be familiar with parts and processes of event area (Homework may be necessary)	p.37				
Tools and Material available anticipate what might be needed	p.44		Have all materials which might be needed for the event been available?		
Break-out rooms in the shop floor	p.40		Was a break-out room available?		
Flip charts, markers, white-boards	p.40		Were tools like charts, markers, white-boards available?		
Stop watches	p.40				
Video cameras, monitors with software to allow digital reproduction of pictures on overheads of beamer	p.40		Were video cameras and photo cameras available?		
Provide the team with relevant data such as PQ analysis, ODS, Customer production requirements, layout of event area, flow charts, time studies, quality measures, etc.	p.46		Were historical data, quality data, layouts, ODS and time studies available?		
Utility quick change hook-ups (air, electrical, water..)	p.40				
Connectors, tools for movement, Tape, cleaning material hammer ...	p.40				
Forklift with driver ...	p.40				
Make team members identifiable, either by	p.44		Have team members made identifiable		

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wearing special shirts or hats (let everyone see the activities as they are happening)			by wearing special shirts or heads?		
Make sure the rest of the production can continue (by sufficient WIP, customer down time...)					
The event area should be fairly uncluttered, run a 5s if required before the Kaizen event	p.42, p.46		Was the event area fairly uncluttered before starting the event?		
Train the event team and management in TPS, create a common language		p.103	Was your plant management trained in TPS / JCMS methods?		
Management should make clear that the event takes priority over any other work assignment	p.36		Did management clearly state that the Kaizen event takes priority over any other work assignment?		
During the event team members should 100% participate without interruption, (no cellular calls, back and forth between normal jobs)	p.48				
Notify plant security what will be going on	p.40				
Keep the other production workers informed as things are happening, not after	p.57		Have other affected workers been continually informed about the progress of the Kaizen event?		
Gather data. That forces team members to dig into the operation. It is usually a real eye opener.			Were decisions in the Kaizen event based on data and tests?		
Implement rather than make a perfect plan	p.44				
Kick off suggestions for redesigning the part		p.70	Has any feedback been given to designers of the parts?		
Invite support and maintenance staff for final presentation.	p.30				
Team celebration (e.g. team dinner in the first evening or lunch after presentation) incl. maintenance..	p.50, p.60		Did a team celebration happen during or after the even?		

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Update of all paperwork	p.74				
Keepsakes like hats, jackets, shirts,.. are appreciated. (walking advertisement of the Kaizen success)	p.60		Have keepsakes handed to the team members?		
Hand out evaluation sheet to team and audience before the presentation	p.79				
Presentation to management Plant Manager and higher officials. Coordinator presents the results and actions needed.	p.59-60	p.21	Were the results of the Kaizen event presented to Plant management by the team?		
Presentation should not exceed 20 min per team, all team members should participate in the presentation	p. 79	p.21			
Management thanks for accomplishments, agrees on the follow-ups, or explains why follow-up cannot be completed	p.60				
Follow-up list of things to do after the event	p.23 p.95		Were all items which were on the follow up list closed?		
Follow-up on the shop floor, the operators should be part of the weekly meeting that measures the process. (If they own the measure they will try harder to archive it)					
			What are the TOP 5 things that make a good and successful Kaizen event?		

(Table 2)

3.1 Impact of cultural differences between Japan, US, Europe

One of the most common arguments that Kaizen cannot be successfully implemented is the difference in culture between Japan vs. US and Japan vs. Europe. During my literature I spotted a lot of cultural differences. However, I did not find any evidence that these differences could not be overcome and cause to fail the successful implementation of Kaizen. The implementation of Kaizen is mostly dependent on the culture, leadership and knowledge of the company.

The following examples show that the basics of Kaizen have been founded and successfully utilized in Europe and the US. On the other hand there are also many Japanese companies which fail to implement Kaizen as successfully as Toyota.

1. Masaaki Imai, the founder of the Kaizen-Concept, said in an interview with the FAZ "Modern concepts like JIT have proven their success but they are not implemented - not even in Japanese companies".
2. The Scottish shipbuilder Denny of Dumbarton started a suggestion system in Great Britain in 1871. The suggestions had to meet one or more of the following criteria:
 - ? invent or improve a machine or hand tool
 - ? apply an existing machine or tool to new class of work
 - ? introduce a new method of executing the work
 - ? prevention of accidents
 - ? or anything which avoids waste, improves quality or reduces cost.

These is also a bottom up continues improvement initiative and the criteria are similar to those we have currently established for Kaizen projects only the structure to create this improvement was not as highly sophisticated as today.

3. After major quality issues John H. Patterson the founder of I NCR (National Cash Register Company) started a big wave of improvements in 1894. First he introduced better working

conditions like proper lighting, installation of safety devices, ventilation and bathrooms... Then he introduced the "hundred-headed brain" and promoted the idea of the team-oriented company. Problems were solved with minimal intervention by top management. Some were even solved before management became aware of them. This example shows similar approaches and targets to those used in Kaizen.

These examples show that the cultural differences between various countries cannot be the root cause for a lack of success that many companies experience when trying to introduce improvement initiatives like Kaizen. This is also supported by Spear and Bowen who write: "Frustrated by their inability to replicate Toyota's performance, many visitors assume that the secret of Toyota's success must lie in its cultural roots. But this is just not the case." They think that visitors see only the surface of a system which has grown naturally out of the company over five decades. (Spear and Bowen, 1999, p97 & 98)

What the examples two and three have in common is that these systems have been implemented by the owners or in other words by the top management who relied on the ability and skills of their employees. In my opinion the company's culture and the involvement of top management is far more important than the cultural differences of countries.

Another difference between Japan and US as well as Europe is the utilization of TWI (Training within the Industries). Compared to other countries of the developed world Japan uses training within the industry quite frequently; elsewhere it is done primarily in professional schools. These trainings have percolated deeply into Japanese Management. (Robinson and Schroeder, 1993, p51). With these trainings the modern management philosophies such as TPS and Kaizen are promoted within the whole Japanese Management. But again this is not just a given cultural thing. These trainings are also implemented in some US and European companies (Robinson and Schroeder, 1993, p44). This

underlines the importance of trainings and the participation the management in those trainings for a successful implementation.

There are several other differences like the payment of workers which is skill-based in Japanese companies and work-based in western countries. That makes it easier for Japanese companies to change the employees' jobs. But all these differences are of a more technical nature and can be solved with some creativity by the individual company (Monden, 1991, p342).

Yashiro Monden has a similar view on the impact of the country's culture on the company itself. He first explains the contingency theory which says that the formal organizational structure is a variable which depends on external variables. An organization would structure itself most efficiently based on the external influences. He then explains the theory that a proficient management system can exist and be applied in any country. That is supported by American companies like Kodak and Xerox which run a long-practiced lifetime system outside Japan.

Monden's theories are slightly different to the contingency theory, because the assumption that the external factors are given is not correct. He argues those environmental conditions - in particular the make-supplier and the management-labor relation which are vital for the implementation of the JIT system - are controllable by management in the long run (Monden, 1991, p336-337).

3.2 Company Culture

The company culture is essential for the success of Kaizen programs; this is supported by literature available for this report. I think the best description of the importance is written in the Kaizen event manual:

Kaizen is a cultural change, before it's a physical change. It has been said by the originators at Toyota that 80% of the journey to lean is learning and living the new philosophy, 20% changing things physically to accommodate the new way of thinking.

(Kaizen, 2002, p.15)

There are several examples for enablers and constrainers motioned in literature, which are in a wider context part of the company culture. The following table gives an overview about the different authors' view:

Enablers	Source / page
Upper Management (not middle or line Management) introducing the change to line labors.	YM / 327, SR / 69, 70, GM 3
Continuously optimizing the production & CIP system current tools and techniques are seen as counter measure till something better has been developed	SR / 67, SB / 104
All suggestions seen as an opportunity, and response is given to the initiator	SR / 78
Implementation of a suggestion system	SR / 69, 70
Rigid specifications are the very things that make the flexibility and creativity possible. All work shall be highly specified so that in each step of the work deviations can be identified.	SB / 97, 98
A rigorous problem solving process needs to be in place. That requires a detailed assessment of the current situation and a planned implementation of improvements that are verified. This should take place at the lowest level in the organization	SB / 98
The improvements are done by the frontline workers with the directions, assistance or training support of their supervisors (Participative Management)	SB / 104, GM / 27
Move the focus to the shop floor	SR / 69
The Problem Solving and learning takes place at all levels of the company	SB / 105
TWI (Training within Industry) Programs	SR / 72
Training and education of workforce and management	SR / 69, RS3 / 56 GM / 20, 29
Uniform treatment of all employees to lower barriers between management and workers	SR / 69, 75, YM / 336-337
Increasing wage disparity between production workers and top managers	SR / 76
Shares for employees programs	SR / 70
An employment guarantee is in place. Thus, employees are not afraid make themselves unemployed.	SR / 76, GM / 26, 97
Budget planning on cost of previous year.	SR / 76
<u>Direct</u> customer-supplier connection between each person to send requests and receive the response. No gray zones like who provides what to whom and when.	SB / 98, 100, YM 336-337
All people in the organization share a common goal	SB / 105
Benefits of change are seen as personal from the affected people	MC / 92
Positive changes are regarded as being beneficial for the individual as well as the company.	GM / 16

Structured project management tools are utilized for implementation of change	MC / 98
Hinders	
Separate the “thinking” from those required for “doing”	SR / 68
Decrees like “You must not invent anything new”	SR 71
Focus on innovation rather than relying on a process of continually subtle improvements	SR / 75
Focus on ROI and neglect small changes	SR / 75
Only using the tools and mechanism of CIP, without living / understanding the underlying philosophy	SR / 78, GM / 17
Employees don't believe in the change	MC / 10
Changes which are beneficial only for the company or where benefits are expected to be delayed.	MC / 92

Legend: SR = Schroeder, Robinson 1991; SR3 = Schroeder, Robinson 1993; SB = Spear, Bowen, 1999; MC Colenso, 2000; YM = Monden 1991; GM = Mika, 2002

Table 3: Enabler and Constraints

Summary of the most important enablers:

- ? Top Management needs to lead the implementation of the change (see next chapter)
- ? Training of all levels in TPS, management and creativity techniques.
- ? Common goals
- ? Employment guarantee
- ? Low borders between management and workforce
- ? Improvements are done by frontline workers

Training of all levels is important in order to create a common understanding and language regarding TPS, and to eliminate the lack of knowledge about modern management techniques. Most of the western managers, shift leaders and line workers have only the normal public education (School, University...) since that time most of the knowledge is either outdated or even forgotten. There we can learn from Japanese companies, because they participate in TWI Programs, which are partially more effective because the things which have been learned can immediately be applied to the running business. Trained people will better support and promote the change.

Common Goals and objectives of all employees need to be inline, otherwise the employees work into different directions and conflicts will occur. These conflicts can then hinder the implementation of changes. A common goal has to be defined in such a way that the company and all its employees benefit if the goal is reached. Colenso writes that changes where only the company has its benefit from will be harder to implement than changes where also the affected employees benefit from. Mika supports this; he argues that changes are for the benefit of the workers and company.

Employee guarantee is sensational for all improvement actives which focus on frontline improvement. Employees will not improve their own work if they are afraid of losing their job. Perspectives for workers which make themselves obsolete are for example: To become an expert in leading Kaizen events.

A similar constraint could be if budgets are planned on the costs of previous years. That might cause that a department which improves continuously its activities will have a lower budget each year. If that is the case there is no interest in or even a fear of improving the department processes.

Low borders between management and workforce increase the creativity, identification with the company and the willingness to accept or participate in changes.

Improvements are done by frontline workers that follows the idea of the “hundred headed brain” and the philosophies that those who do the job day by day know where the problems are and how to solve them. In addition that increases the identification with the job itself and the proposed and implemented change. A worker who has played an active part in the implementation of changes will be more motivated to prove their effectiveness. By the same token changes that are imposed on the employees by someone else will not be that easily accepted.

This statement does not mean that improvements are limited to the shop floor, other processes such as paying invoices, hiring people, etc. can also be improved by the frontline workers of these processes.

Other enablers which are not common within these authors because of their different background and focus are listed below.

I think these things are also important to support the implementation of Kaizen and JIT Production systems.

- ? Rigid specifications
- ? A rigorous problem solving process
- ? Direct customer-supplier relationship
- ? Employee suggestion system

“Rigid specification is the very thing that makes the flexibility and creativity possible.” Although this statement made by Spear and Bowen may sound paradox, I think it is the deciding basis for all improvements. This statement is based on the analysis of 40 Toyota plants which were part of a 4-year study. The authors gave the following example for a rigid specification:

Consider how workers at Toyota's Georgetown, Kentucky, plant install the front seat into a Camry. The work is designed as a sequence of seven tasks, all of which are expected to be completed in 55 seconds as the car moves at a fixed speed through a worker's zone. If the production worker finds himself doing task 6 (installing the rear seat-bolts) before task 4 (installing the front seat-bolts), then the job is actually done differently than it was designed to be done.....

(Spear, Bowen, 1999, p 99)

With a specification like this each deviation to the intended process can be identified. Once it is identified, it can be analyzed and corrective actions can follow. These actions could be a change in the process because a more sufficient way has been detected or a reinforcement of the existing process. These definitions decrease the variation of processes which can then be optimized. In other words: How can we improve something if we don't know how this something works?.

I think that these specifications are helpful in the process of continuous improvement but if they are not in place before the implementation of Kaizen, it will not impede a successful implementation of Kaizen. One of the results of a Kaizen event should then be an improved and well described process, which is more likely to remain at a high level and not fall back after the focus is moved to another process.

A rigorous problem solving process is also required according to Spear and Brown. They demand the utilization of problem solving techniques through the whole organization and a detailed assessment of the current state of affairs as well as a plan for improvement that is, in effect, an experimental test of the proposed changes (Spear, Bowen, 1999, p 98).

Direct customer-supplier relationship. Spear and Brown found at Toyota, that this relationship needs to exist for each person who receives or delivers a good or service to another person.

This has the same focus as the two previous points, that everything including management techniques and interfaces need to be well specified.

That applies also for the implementation of Kaizen. If the implementation is not well defined, it is hard to identify why it was a successful or a failure. Another benefit is that countermeasures can be put into place at an early stage, if the process is well defined.

Employee suggestion systems can also promote the implementation of Kaizen. This will help to identify the first project for a Kaizen event. Choosing the first Kaizen event areas based on the suggestions of employees will increase the trust into this improvement initiative.

Schroeder and Robinson argue that a focus on ROI (Return on Investment), and innovation is not supporting the philosophies of the incremental improvement process (Schroeder, Robinson 1993, p75). I think it is very hard to argue for any change that has no return on its investment (considering that improved quality, safety, etc. has also a positive financial impact).

This theory is not supported by Mika, either. He highlights the high ROI of Kaizen events to show the importance of Kaizen.

Wiley emphasizes that the typical productivity can be increased by up to 60% while only a very little invest is needed, that would result in a high ROI.

I think that a company should also focus on the ROI of changes and maybe use this as an indicator to prioritize different changes.

A company needs to make sure that its ROI is calculated properly. Savings resulting from improved quality level and safety as well as the cost of labor, ramp up and the rest of the production which can be affected by more than 25% (Mika, 2002, p23) need to be included in that calculation. Neglecting this can lead to an “improvement” with a negative ROI.

I see the innovation here in the same context as the ROI, not as an obstacle for a successful implementation of Kaizen. But it should be well considered if the targeted improvement can be obtained by a Kaizen event rather than by an investment in a new machine or innovation, that can result in a better RIO.

3.3 Management Support

All authors agree that the top common thing of cultural enablers for the implementation of organizational changes is that the change is lead by Top Management. Only the top management can show how important the change is, make people believe in the change and positively influence the company culture.

There are several examples where the implementation of changes was only successful because of management involvement. The owner of NCR even moved his desk to the shop floor. There are also other examples where the first implementation, e.g. of a JIT production system, failed. The second approach, however, where management got involved, and even participated in the reorganization of the shop floor, was a huge success. This does not contradict the participative management theory; this management involvement showed the importance of the change and lowered the barriers between management and workforce.

These examples support that the implementation of Kaizen is like all other initiatives (e.g. Six-Sigma, Lean Manufacturing ...) a Top-Down Process. Management needs to understand the importance of this initiative and then needs to fully support it. Otherwise employees will soon figure out or assume that all the time, creativity and the work they invest into the Kaizen event is wasted.

As mentioned in the previous paragraph, the success of Kaizen is also

depending on the company culture and the leadership styles; both can only be positively influenced and lead by Top Management.

“Kaizen cannot be successful without strong support from the top”.
(Wiley, 1999, p.5)

This is also supported by Colenso who summarizes this as follows:

“Unless people believe in and support the change (here implementing Kaizen), it is doomed to failure” (Colenso, 2000, p.10)

3.4 Training

Training is very important for the success of Kaizen implementation. It should cover the techniques of TPS and basic problem solving and creativity techniques. The trainings should be used to create a common language and understanding within a company through the whole organization.

The following topics should be covered:

- ? **Kaizen stories**, a case or success story from the own organization
- ? **Root Cause Analysis**, asking the “5 Why?” and Fishbone Diagrams.
- ? **Visual management**
- ? **Tally charts and check sheets** a data collection tool and frequency analysis.
- ? **Pareto diagrams** which drive the focus to the most important causes or mistakes according to 20/80 or 30/70 rule.
- ? **Histograms** visualize a distribution around a central peak
- ? **Control charts** show continuous measurements usually with an upper and lower limit and warning border.
- ? **Scatter plots** are diagrams which could indicate correlations between two measurements.
- ? **Other Graphs** like x-y chart, pie, bar..

(Colenso, 2000, p133)

- ? **TPS Techniques** such as The production Cell, Pull System, Just in Time (JIT), 5Ss, Single Piece Flow, QC Circles, Tact and

Cycle Time, Waste, Gemba, Poke-yoke, Total productive maintenance (details see Chapter 2.2.1)

- ? **Spaghetti Diagram** indicates the material flow in a process.
- ? **Value Added Ratio** = The sum of all operators cycle time divided by the total lead time from order entry to shipment (Mika, 2002, p66)
- ? **The Top Rules for a Kaizen Event** (see Chapter 3.9)

These techniques should be trained along with the PDCA (Plan, Do, Check, Act) or SDCA (Standardizes, Do, Check, Act) cycle. (Colenso, 2000, p133)

Mika focuses more on the TPS techniques, while Colenso is more focused on the creativity and problem solving techniques. Colenso recommends that the TPS should be added to the training in more detail if the Kaizen event is conducted at the production line.

Nevertheless, everyone who participates in a Kaizen event should be trained in the relevance of all work processes.

Like Wiley Mika focuses more on the TPS techniques; he recommends a 3 - 4 hour training which can take place at the beginning of the first day of the Kaizen event. For Wiley it is very important to start with training the management team upfront. The training delivered to the management team should be the same as later delivered to Kaizen event members.

At this stage, it is critically important that everyone have a common understanding of the overall philosophies, principles, objectives, and techniques involved. None are so complex that they can't be simply and clearly communicated and well understood by all levels of the organization. In fact, the ability to create this common understanding or common language across the organization should be a key test of the effectiveness of the education and training program. If people at all levels can't get past the jargon, look for another educational resource before you go forward.

(Wiley, 1999, p.103)

Mika suggest supporting the training with exercises, while Colenso recommends taking the participants through a Kaizen event story.

Based on my personal experience with trainings as trainer and participant I would propose a mixture of both approaches.

The training should cover all the topics mentioned above and not just focus on TPS because the other tools may even be more useful to identify the best solution for the Kaizen event. Spear and Brown wrote that Toyota sees the applied techniques in the TPS only as temporary countermeasure which will only last till something better is in place.

Training of only TPS would mean training of countermeasures which may not always be the best solution. On the other hand TPS techniques need to be trained in order to save much time in reinventing the wheel.

The training itself should not exceed 4 hours and the structure should be similar to the structure of the Kaizen event. Since the proposed content is quite high, there shouldn't be long exercises integrated, a short success story, with the same structure as the rest of the training, at the beginning would be a good start. In general the same training should be given to management and the participants of the Kaizen event. It is beneficial if the trainer changes the none written things depending on the audience. For example a success story where high savings are involved at the beginning will attract the attention of some managers more than improved working conditions. That does not need to be in conflict with goals it is just a different unit of measure.

Wiley argues the creation of a common language and understanding within one company is crucial for the success of the Kaizen implementation. I propose to support these with the common training, a standard template for the presentation of the Kaizen event "Friday Presentation" and a standard board at the shop floor where projects can be presented.

The training itself will not be efficient, if the learned methods are not put into practice immediately; the details of the training will soon be forgotten. In order to overcome this, the first Kaizen event areas should be chosen in a way that as many parts of the training as possible can be applied. So the Kaizen event team leader needs to support the team as a trainer. That will increase the overall efficiency of the training,

because the learned methods can be applied simultaneously to the real world.

None of the authors suggests how to progress once the first wave of employees are trained. I think there is no value added if the training concept stays the same and employees participate several times. On the other hand a company should make sure that each Kaizen event member needs to be trained. This is particularly difficult if outsiders like suppliers and customers participate in Kaizen events. Based on these thoughts I recommend for each Kaizen event a 15 to 30 min introduction into Kaizen where the top rules are summarized.

3.5 Kaizen event Schedule

According to Mika a typical Kaizen event runs five days and one night because there is usually at least one long work night during an event. According to Wiley (Wiley, 1999, p.xvi) three days should be planned for the Kaizen event. He argues that these three days came down to economics; three days was the right amount of time people can spend away from their normal business. This three day approach will increase the acceptance in management and workforce. But comparing the proposed schedules for the Kaizen event from Mika and Wiley (see table below) shows that each event takes five days in total.

(Mika, 2002, 65)		.(Wiley,1999, p.11)	
Mon 13:00-20:00	TPS Training	Prework	Learning Planning Preparing
Tue 07:00-14:00 14:00-???:??	Training completed Document current state	Day 1	Hit the ground running Do it now
Wed. 07:00-12:00 12:00-???:??	Future state development Process requirements analysis & design of new process	Day 2	Build it Try it Change it
Thur. 07:00-09:30 09:30-14:30 14:30-???:??	Review physical change made by maintenance Operators try new process, time study Being report-outs & complete presentation	Day 3	Change it again Try it again and again
Fri. 07:00-09:00 09:00-12:00 12:00	Rehearsals for presentation Presentation (20min) Celebration starts	Day 4	Refine it Test it Prove it
THE NEW WAY			

(Table 4)

As we can see in this table, both schedules are similar in structure and duration. Mika didn't include the preparation and planning in the table, because in his opinion this needs to be done far upfront. Wiley also defined that the learning, preparing and the training need to be done upfront but included it in the table. Overall Wiley schedules one day less in training. Therefore Wiley plans four days working (blue text) on the process, where Mika only plans three days (assuming the team works one "night"). 10 pages later in the same case study where Willey used the four days table he described the 5th day of the event with the following tasks: Final cleaning up, preparation of final report and the 20 min presentation at noon.

Comparing these two approaches, both end up with a five days event. Assuming that all team members are already trained, both schedules can be reduced to three days plus presentation.

3.6 Selecting the Kaizen Project

Especially for the first Kaizen events a careful selection of the event area is important for the implementation of Kaizen. The first events should be the basis for a series of Kaizen success stories.

Wiley recommends choosing an event area that can significantly change the business.

The following table is a summary of criteria which can be used to evaluate whether the event area is suitable for the first Kaizen events or not.

Positive criteria for the first Kaizen event	
Is guaranteed to succeed Be an easy project, a confidence builder (think about where and for whom)	M W
Be clear and unambiguously measurable (e.g. reduce setup time, improve output,...)	W
Satisfy a perceived business need (e.g. break a production bottleneck, production restriction...)	W/M
A highly visible process or location	W/M
Select an area that most employees are familiar with	M
Select an area that wanders all over the plant	
Select a product that has a sound initial process	M
Select the worst area in the plant, where everything is a disaster	M

Has significant market or financial impact	M
Take advantage of availability of team and support resources	W
Choose a line where the people will most likely respond favorably, lines that have operators that have been cross-trained and have been exposed to other Kaizen events	M
Enjoy management enthusiasm or support in the specific area	W
Have a strong environment for follow-up a management team that can counted on to strongly support the Kaizen team's change into future	W
A simple, easy to understand process	W
A stable, repeatable process	W
Select an area that is buried in WIP (Work in Process)	M
A people-based project highlighting the workers contributions (don't make it look a technical exercise)	W
A self-contained process, one not subject to considerable influence and change from outside sources	W
Is a complete product, not a process	M
Select a product that can be made in cell, needing not more than 12 operators	M
Select a product that is medium to high volume	M
A product that has 4-6 processes to complete a part	M
Can be copied and used in other areas	M
Operational problems not management or policy issues	M
Negative criteria for the first Kaizen event	
Out of control processes	W
Unreliable equipment	W
A machine or process that's not capable	W
A process highly dependent or easily affected by another process outside influence	W
An unnecessary improvement area /e.g. setup reduction on equipment that seldom needs to be changed	W
A machine or process soon to be obsolete or replaced	W
Any process where an immediate improvement can be stymied by technical limitation (e.g. Software that requires a programmer, who is not available)	W
Legend: W = Wiley, 1999, p 97; M = Mika, 2002, p.31	

Table 5

The most important criteria to select the first Kaizen event area are common within the Authors:

- ? Choose a project where the success is guaranteed, and improvement can be implemented by the team.
- Negative results will support those who already said "That won't work", "It was always done in this way" and

- ? Take advantage of areas with positive management support and skilled employees
- ? Choose an area which is highly visible and important for the company. This will be the best advertisement for the following Kaizen events.

Mika focuses more on initial Kaizen areas where one product is produced within one cell with not more than 12 team members. For Wiley it is more important to choose an area which is under control process wise. That is in contrast to Mika who suggests taking the worst area in the plant, where everything is a disaster (for effect). This area will probably be process wise out of control. I think once an organization understood that improved variance is also a significant improvement to the process, it does not matter whether to choose a process which is out of control or not.

After the first successful Kaizen events were conducted, nearly every process can be improved by a Kaizen event. Manufacturing processes, parts of a process or a whole production process of a single product. Kaizen events can also be a part of the value stream initiatives. Therefore, it may be necessary to add the value stream techniques to the initial training. (Warnecke, 2000, p.8).

Mika even recommends running an event before or instead of buying new machines or equipment.

There are hardly any limitations for the selection of the Kaizen area even the same process step can be improved by Kaizen several times. Jon Brodeur reports from a Jacobs manufacturing plant where a process has been optimized by a Kaizen event nine times. Each time improved efficiency was obtained and sustained.(Wiley,1999, p.xviii)

Once a project is identified, the scope and focus must be narrowly defined, clearly bounded and documented in a SOW (statement of work) for the Kaizen event. (Wiley, 1999, p.8,9)

The preparation and communication of a SOW is also supported by Fuller “To keep a performance project on track, all participants in the project need to know what they are attempting to achieve. If they do

not, the result will be project confusion". (Fuller, 1997, p.3) and (PMBOK, 2000, p.51)

3.7 Setting up the Right Team

Selecting the right participants is crucial for the first projects; the results of the Kaizen event are a team effort. So the result is dependent on the input and interaction of the team. This can be positively influenced by selecting the right people. The sections Team and Team Leader summarize the criteria for selecting the participants in a Kaizen event. It is based on the publications from Mika and Wiley who have quite similar view on this topic.

In addition to the criteria listed in the next two sections, it is highly recommendable to involve HR in the selection of the participants. (Mika, 2002, p.26)

3.7.1 Team

The Kaizen event team ideally consists of 6 to 8 team members. At least 2 of them are operators from the team area. At least 50% should be from outside the event area (e.g. Sales, Customer, Supplier, Vendors, Engineering or other plants).

Look for volunteers and people who are highly skilled, innovators, open-minded and / or creative. But don't set up an all-star team, which would create the image that Kaizen is not a tool for every team.

Team members which are not from the shop floor should have an affinity to the shop floor that will lower the barriers between the participants in the event.

Don't forget people like maintenance staff or programmers (e.g. for PLC programming) or other specialists. They might not be necessary team members, but they should at least be available to support the event, when needed. (References see Table 2)

In addition to that Wiley suggest sometimes the "doubting Thomas" on a team can be a real plus because converting the attitude of a well-known naysayer can pay real dividends in enhancing Kaizen's reputation and desirability in your organization. (Wiley, 1999, p.101) I think that

“doubting Thomas” can be very important to challenge the results of the team. For the first Kaizen events the risks of occurring conflicts would probably lower if the team leader drives the team to challenge their results themselves.

3.7.2 Team Leader

The Team leader should have leader skills and not necessarily management experience. “Rookies, domineering, complainers, too critical don’t make good team leaders.” (Mika, 2002, p.38).

In addition to that, the team leader should have detailed knowledge in subjects described in the Training section and experience in at least one Kaizen event as a co-leader.

The team leader should also have basic knowledge about the event area, homework may here be necessary.

The only thing where Mika and Wiley have a different view is whether the Team Leader should come from the event area or not. Wiley suggests selecting the immediate supervisor or someone a step or two higher up the hierarchy of the event area. Mike advises not to take a leader from the event area. I think that is very difficult to decide, because both approaches have their traps. If the Supervisor is not part of the team, he might cause difficulties later on, because it was not his idea. On the other hand the supervisor might misuse the event to implement his ideas. So I would recommend making the decision whether a direct supervisor participates as team leader, a team member or at all in a Kaizen event individually case by case, based on the criteria above. In order to avoid conflicts at all, I propose to setup the rule that team leaders have to come from a different area and that direct supervisors can only participate as normal members. The Team leader would also benefit from that, because he/she can see and learn more about other areas and build up his/her network in the organization.

In case that no person meets these criteria, an external Team Leader should be invited either from another Plant or a consultant. The first event should then be used to grow potential new Team Leaders.

(references see Table 2)

3.8 Preparation

This is a checklist of things to do or to consider before running a workshop, some of them may not be applicable for all Kaizen events:

- ? Inform people in the event area and those who support the event what they should expect.
- ? Review the lessons learned from last workshop
- ? Schedule supporting resources like maintenance personnel, forklift drivers, programmers and other experts. Please consider that the rest of the production in the plant continues.
- ? Management should clearly commit that the event takes priority over the normal work.
- ? Notify everyone who might be concerned (e.g. plant security)
- ? If the event area is fairly cluttered run a 5S workshop upfront
- ? Take care that other areas are not affected by the event (e.g. build up WIP or use customer downtimes)
- ? Get accessories to make the team identifiable (e.g. hats, or shirts) and keepsakes for the celebration. That will be the working advertisement for the Kaizen Initiative.
- ? Prepare an evaluation sheet for the final presentation
- ? And anticipate what might be needed to run the event, implement and test the solution:
 - o Breakout room in the shop floor,
 - o White boards, Flipchart, Markers
 - o Stop watches, camera, video camera, PC, overhead and or beamer
 - o Data like PQ, Analysis, ODS, customer production requirements, layout, process flow, time studies and quality data
 - o Utilities for a quick change of hook-ups (air, electrical, water,..)
 - o Connectors, tools, hammer, tape, color
 - o Forklift and other equipment to move machines in the event area.

(references see Table 2)

3.9 *Running the Kaizen event*

The Kaizen event mines the gold in the works heads, so creativity and critical thinking are welcome. In order to run the event successfully, the following **TOP RULES** need to be followed:

- ? **There is no rank among team members.**
- ? **Keep an open mind to change. Change is good, more changes are better.**
- ? **Maintain a positive attitude.**
- ? **Reject excuses, seek for solutions**
- ? **Nobody blames anyone for anything**
- ? **Ask 5 times Why? There no such thing as dumb question.**
- ? **Plans are only good if they can be implemented.**
- ? **Implement ideas immediately, don't seek perfection.**
- ? **There is no substitute for hard work.**
- ? **The event has the highest priority, team members work at least 100% for the event.**
- ? **Just do it!**

.(Wiley,1999, p.6) & (Mika, 2002, 64)

An idea for avoiding criticism is, that a notice that a fine of 100 yen or 0.80\$ is due for each criticism levied in the room from (Schroeder, Robinson, 1991, p77)

Focus on simple and easy solution, complex solutions are harder to implement, to follow and to control. “The simple, easy-to-follow solutions, the kind that Kaizen delivers, are the ones that last.”
.(Wiley,1999, p.9)

Challenge the results before the implementation, their might be better solutions, otherwise opportunities for better results are wasted.(Spear, Bowen, 1999, p104). A good way to challenge the proposed solution is to benchmark the expected results with other projects or the generic table in the paragraph Kaizen definitions.

This is not in contrast to the often used statement “Just do it” both Mika and Monden strongly recommend to validate solutions before implementing them. The “Just do it” is more focused on the

implementation rather than searching for solutions which can't be implemented within the Kaizen event.

Keep the affected workers and supervisors informed, that will avoid surprises later on. (Mika, 2002, p27).

One milestone in the Kaizen event could even be an informal review with those who are not participating in the event. That would bring two benefits, first the solutions and ideas can be validated by more people with altogether more experience and the 2nd is that the acceptance for the implementation later on will be higher.

Implement rather than make a perfect plan, plans are good but the intention of the Kaizen event is a focus on solutions which can be implemented immediately. (Mika, 2002, p.44) The risk with plans is that they are not implemented later on. If the team finds a solution which can radically improve the process, but can't be implemented, this need to be followed up by the follow-p list and another solution should be temporally implemented.

Use Data! Gathering data during the event will force the Team members to dig deeper into the operation and data is usually a eye opener. Data can be used to compare different alternatives, and to measure and estimate the improvements.

Proposals for parts redesign (Wiley, 1999, p.70) In the most cases owner of the process will not be the owner of the design of the manufactured part, so any proposals regarding improvement of the parts design need to be captured in the follow up list.

Update the Paper work, changes need to be documented. ODS and other documentation needs to reflect the latest process. (Mika, 2002, p.74) Check with your quality department if anything else like a process sign off is required.

3.10 The Final Presentation

This presentation is sometimes also called “The Friday’s Presentation” because it is in some companies a fixed event that improvement projects are presented to the management team each Friday.

A 20 min. presentation should be given by the whole team (everyone in the team should participate) to the plant management or higher.

A good way of getting feedback is to hand out evaluation sheets before the presentation starts.

The Management should then thank for accomplishments and agree on the follow-ups or explain why the follow-up can’t be completed.

After the final presentation the team celebration with the keepsakes can take place.

(References see Table 2)

3.11 Follow-up

One person has to be identified to track the agreed follow-up list and close items step by step. (Mika, 2002, p23, 95)

The improvement measures need to be followed up on the shop floor level, and documented in a highly transparent form (e.g. Key Measure board).

4 Current Status at JC

4.1 JC Company Culture

Wiley suggests to test whether an organization is ready to support changes such as implementing Kaizen by asking 3 questions:

1. Will a series of Kaizen events implement something consistent with the long-term directions of the company?
 2. If it will, has that something been defined - is there a vision of future operations? If not, Kaizen episodes will stir excitement but fizzle out before they can establish a lasting effect.
 3. If strategic direction and improvement campaign are clear, is the organization cultural ready? An acid test is to honestly evaluate whether prior improvement initiatives have stagnated. If they have, why? A legacy of failed attempts to revolutionize operations is not a good indicator that some new initiative called Kaizen will succeed. Perhaps a more basic set of problems needs to be addressed.
- .(Wiley, 1999, p.66)

Johnson Controls is now attempting a second wave of implementing JCMS, so these three questions will be divided into what was the status at the 1st wave of JCMS implementation and what the current status is. The following interview has been conducted with a representative of JC Leadership department.

Q: Was the implementation of Kaizen events something consistent with the long-term directions of the JC?

A: It was mainly based on a single Management Initiative

Q: What has changed since that time?

A: The focus on JCSM and Kaizen drop overall, there were small initiatives to improve this again

Q: What was defined, what was the vision of future operation?

A: The vision is to be a Lean Manufacture

Q: Did this vision become real?

A: Yes, the vision become real, unfortunately the vision becomes only real in the US.

Q: What is the current vision of future operations?

A: The vision to become a Lean Manufacture is still the same

Q: Is JC culturally ready for Kaizen?

A: Yes, for some areas.

Q: Why have other initiatives stagnated in the past?

A: Because of its management culture the discipline to push the implementation was not given.

Q: What do we learn from the past?

A: We have to keep the focus on the initiative also on the long run.

Further more we gained the knowledge about the TPS theory, 50% of the shop floor is educated and highly motivated.

Q: What are the success stories in Europe and how are they communicated? (Colenso, p4)

A: We have some but they are not communicated.

According to Colenso the process of building a strategy usually follows a number of steps:

Defining purpose – deciding what it is the organization is there to do.

That means defining the benefits it provides for its customers and stakeholders

Creating a vision – getting clear about where we want the organization to be in future. Visions define quantitative as well as qualitative aspiration.

Defining the values – agreeing the rules by which the organization chooses to play. That means being clear about the code of conduct it will follow with all the stakeholders of the organization

Defining the customers or markets – ...

Defining the products or services - ...

Defining our differentiation – how will we be different from our competitors? (Colenso, 2000, p18)

Q: All the following questions focus on Plant level please highlight if

there are deviations too the Cooperate strategies.

Q: What is the purpose of the plant?

A:- Get small but sustainable improvements

- Standardize work
- Increase performance and knowledge
- Involve Employees in changes

Q: What is the vision? Were do we want to be in future?

A: Make Kaizens part of our culture and a tool in Lean Manufacturing implementation.

Q: What are the values? What is our code of conduct?

A: "JCMS – The way we do manufacturing ".

Colenso distinguishes between enablers and constraints, he emphasizes to strengthen the enablers and minimize the effect of the constraints. He argues the people that support changes where the benefits are seen to be personal to them, immediate in their impact and a high probability of delivering the expected results. People would not support initiatives where the benefits are seen to be corporate, where the benefit is uncertain or in the later future. To overcome these issues and even benefit from them, he listed typical enablers and constraints in the following table. (Colenso, 2000, p92)

Some Typical Enablers	Some Typical Constraints
The change supports the competitive strategy.	People are cynical about yet another change.
The MD supports it	It's not clear whether the whole board support it.
'X' operating department will have their problems solved by it.	'Y' and 'Z' operating departments will have their activities curtail by it.
The job(s) will be easier to, do productivity will improve.	It will require immediate capital invest
There will be re-training opportunities.	There will be redundancies.
We have the IT base to support it.	We lack the skill base for implementation

(Table 5)

Q: I think this table focuses on the level of the General Plant Manager, the Plant Manager, Technical Manager and Shift Leaders. How are we going benefit from these enablers and minimize the constraints for the

implementation of JCMS? What is different to the approach we had in the first wave?

A: Yes. We start with reactivation of JCMS and communicating to all Plant Mgrs and after to Senior Management.

We have an Action Plan to this steps:

Link JCMS modules with plant performance in a 6 panel chart

Rank the plants in Continuous Improvement Implementation

Define a Quarter for each JCMS tools, e.g.: 1 Qtr 04 – Kaizen – during this quarter we are promoting all the best practices in Kaizens, raise the level of the weakest plant

Create a cross audit system among the plants. They are auditing and at the same time they can learn from each other

Share Success stories

Keep it SIMPLE

4.2 Data from Europe Plants

End of 2003 we installed the database called JCMS Track. The intent of this database is to measure the implementation and utilization of the JCMS tools and techniques. Currently 50 European JC plants report their JCMS activities in this database. The following JCMS tools and techniques are tracked in the database: 5S, Constraints Management, Error Proofing, HS/E, Kaizen, Kanban, Line Balance, Poka Yoke, PSD, Quick Changeover, Standardized Work, TPM, Visual Management

The following list of information is reported per project: ProjectTitle, Status, Area of Focus, Location, Process Owner, JCMS Facilitator, JCMS Regional Coordinator, Financial Analyst, Possibility to transfer to other Plants, Workshop Plan, Workshop Actual, Improve Plan, Improve Actual, Controls in Place Plan, Controls in Place Actual, Savings Validated by the Controller, Gross Savings Estimated Hard, Gross Savings Actual Hard, Implementation Costs Estimated Hard, Implementation Costs Actual Hard, Nett Savings Estimated Hard, Nett Savings Actual Hard, Gross Savings Estimated Soft, Gross Savings Actual Soft, Implementation Costs Estimated Soft, Implementation Costs Actual Soft, Nett Savings Estimated Soft, Nett Savings Actual Soft, Gross Savings Nett Ebit Hard, Gross Savings Nett Ebit Soft,

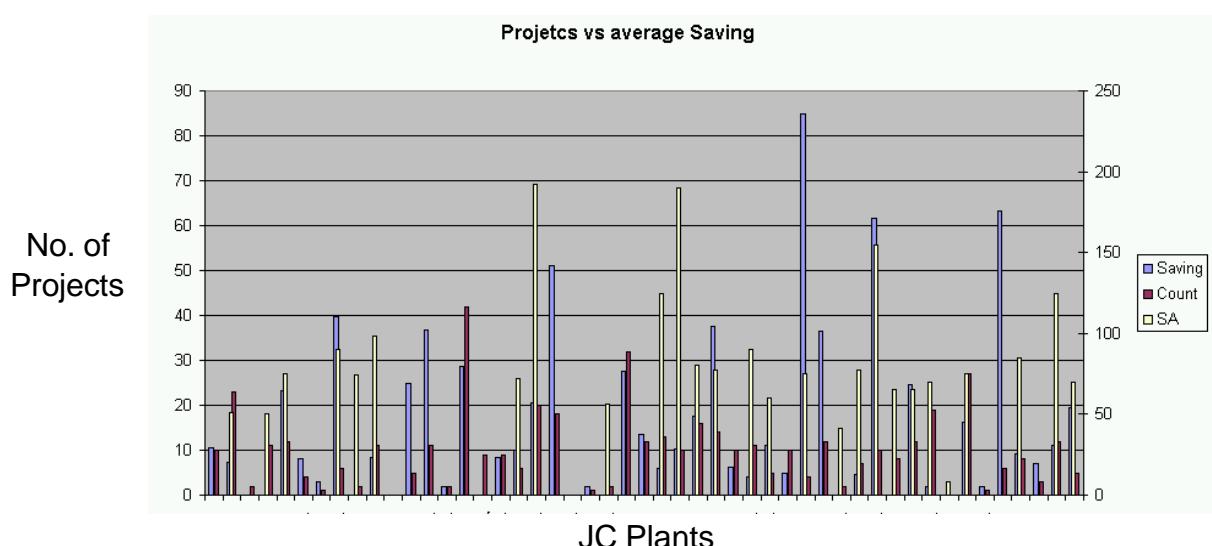
Implementation Costs Nett Ebit Hard, Implementation Costs Nett Ebit Soft, Nett Savings Nett Ebit Hard, Nett Savings Nett Ebit Soft.

This list is that detailed because it used for the report of actual data and as well to forecast the planed savings and cost. The analysis in the next paragraphs is based on the sum of Nett Savings Nett Ebit Hard and Nett Savings Nett Ebit Soft. These are the savings after the project is closed and the costs of implementation are deducted. I added soft and hard savings together because it is only a matter of time that soft saving become hard.

An example for hard and soft savings would be a project which results in a reduction of floor space required for a certain process. If the floor space is now free, not used but the company pays still the rent and has no recoveries from the extra free floor space this is called soft saving. If the company uses the space now for a new process, decreases its rent payments or gets recoveries for that floor space it will be called hard savings. So in a company which is continually growing most of the soft savings will soon or later be hard savings. (All data used in this sections has been normalized because it is based on confidential JC internal data)

4.2.1 Projects and Plant Self Assessment

The following chart shows the average savings per Kaizen project, number of projects and the self assessment by plant.



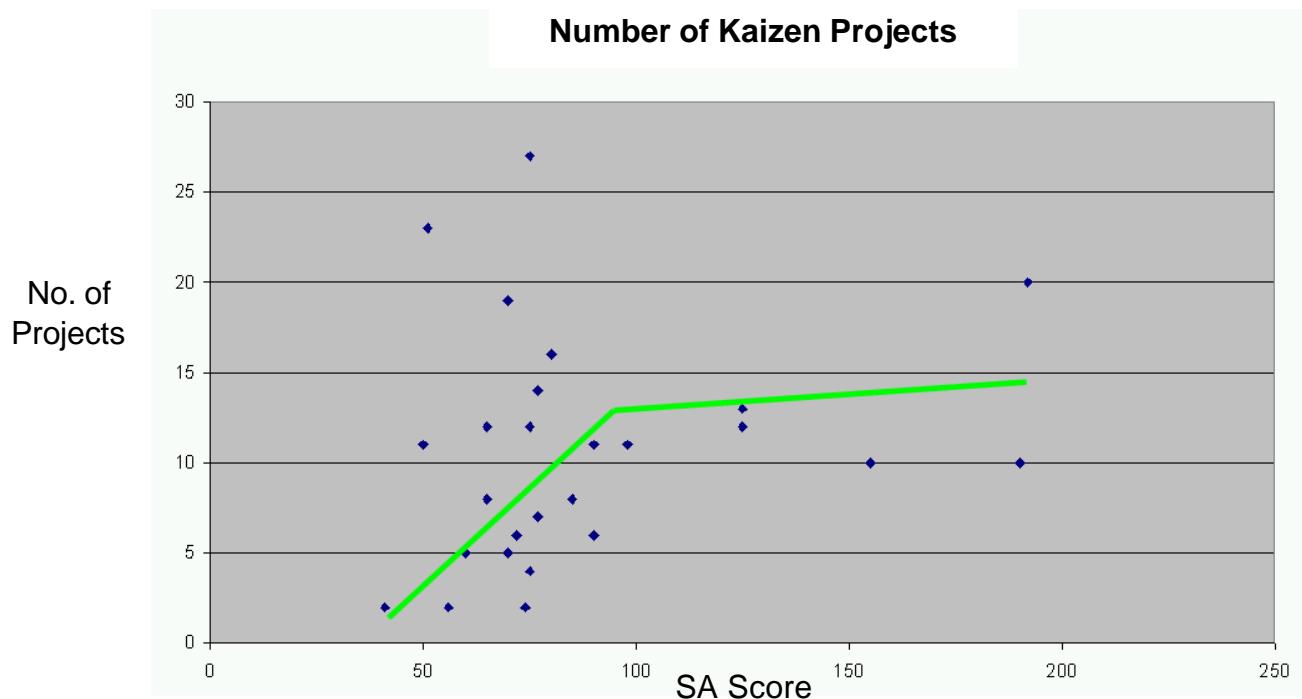
This graph indicates that there may be a dependency between the self

assessment and the amount of project and the average savings. The next two graphs will show this in more detail.

This graph indicates the trend of the savings vs. the self assessment in Kaizen. The X axis has the score of the self assessment an the Y axis represents the amount of hard and soft savings.



This graphs shows the amount of projects vs. the score in the plant self assessment



Both graphs show a trend that the savings per project and the amount of projects increases with the result in the self assessment. And that the score in the self assessment if it above 100 as no more a significant impact on the savings neither on the number of projects. The two graphs support that knowledge about kaizen is essential for the success of the kaizen projects but there is very soon a limit where the utilization of kaizen can't be improved significantly.

4.2.2 Kaizen Implementation in JC Plants Survey

Based on the Table 2 which summarizes the things to take care for a successful Kaizen event we made a survey with the JCMS facilitators of the regions Iberia, UK, Benelux and east Europe. For each point in the table they were asked to rate their own region based on the reality which happened during the last events. And then they were asked for their opinion as JCMS experts, if they think the point is important.

Based on this data we did a gap analyses, so we calculated the gap between the ideal and real JC world for each point. This data was then sorted by the gap, importance, and the reality rating to identify those points with the highest gaps the TOP 30 are shown in the following Table:

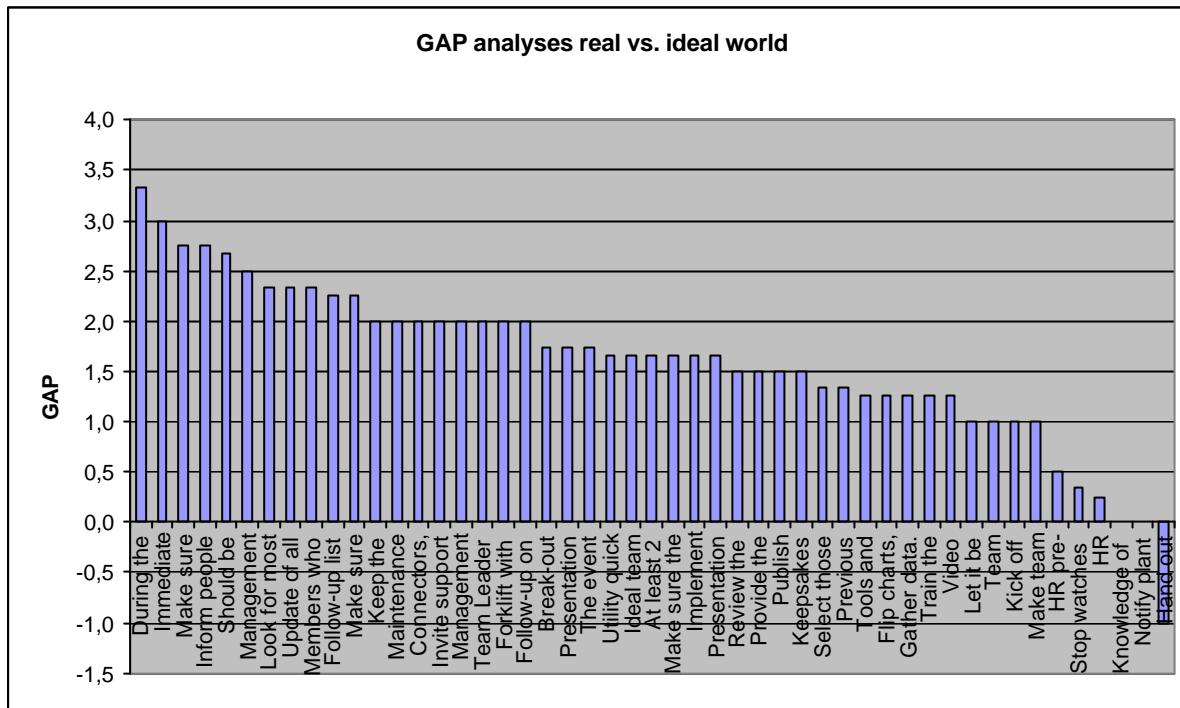
TOP 30 (highest gap between JC real and the ideal world)
During the event team members should 100% participate without interruption, (no cellular calls, back and forth between normal jobs)
Team leader: Immediate supervisor or someone a step or two up, of the project area
Make sure maintenance personnel can support the event as well as maintain the regular production
Inform people in the process area and those who support the event what they should expect, and what should be the aftermath
Team leader Should be familiar with parts and processes of event area (Homework may be necessary)
Management should make clear that the event takes priority over any other work assignment
Look for most skilled people
Update of all paperwork
Members who are outwardly creative
Follow-up list of things to do after the event
Make sure union is an integral part of the whole strategic plan
Keep the other production workers informed as things are happening, not after
Maintenance personnel available
Connectors, tools for movement, Tape, cleaning material hammer available...
Invite support and maintenance staff for final presentation.
Management thanks for accomplishments, agrees on the follow-ups, or explains why follow-up cannot be completed
Team Leader
Forklift with driver available
Follow-up on the shop floor, the operators should be part of the weekly meeting that measures the process. (If they own the measure they will try harder to archive it)
Break-out rooms in the shop floor
Presentation to management Plant Manager and higher officials. Coordinator presents the results and actions needed.
The event area should be fairly uncluttered, run a 5s if required before the Kaizen event
Utility quick change hook-ups (air, electrical, water..)
Ideal team size 7-8
At least 2 operators from event area
Make sure the rest of the production can continue (by sufficient WIP, customer down time...)
Implement rather than make a perfect plan
Presentation should not exceed 20 min per team, all team members should participate in the presentation

(Table 6)

These gaps support also the answers on JC culture, so JC is good in doing things and shows less performance in planning, follow up and continues management support.

The next graph shows that there is not a single cause for running Kaizens with a poor performance. There are 11 things with a gap over 2

(theoretical max = 5). All of them can be eliminated with a little more discipline of management and originators of the Kaizen event.



The second analysis of the data shows the most important things to consider based on the experience of the JCMS Facilitators.

The most important things have been identified by sorting the table 2 for the most important things to consider in ideal world.

TOP 30 things to consider for a successful Kaizen
During the event team members should 100% participate without interruption, (no cellular calls, back and forth between normal jobs)
Immediate supervisor or someone a step or two up, of the project area
Make sure maintenance personnel can support the event as well as maintain the regular production
Should be familiar with parts and processes of event area (Homework may be necessary)
Management should make clear that the event takes priority over any other work assignment
Look for most skilled people
Update of all paperwork
Follow-up list of things to do after the event
Maintenance personnel
Connectors, tools for movement, Tape, cleaning material hammer ...
Invite support and maintenance staff for final presentation.
Management thanks for accomplishments, agrees on the follow-ups, or explains why follow-up cannot be completed
Keep the other production workers informed as things are happening, not after
Break-out rooms in the shop floor
Presentation to management Plant Manager and higher officials. Coordinator presents the results and actions needed.
Ideal team size 7-8
At least 2 operators from event area
Make sure the rest of the production can continue (by sufficient WIP, customer down time...)
Implement rather than make a perfect plan
Presentation should not exceed 20 min per team, all team members should participate in the presentation
Review the last Kaizen and make adjustments as needed
Provide the team with relevant data such as PQ analysis, ODS, Customer production requirements, layout of event area, flow charts, time studies, quality measures, etc.
Select those that have an affinity to the shop floor
Previous experience and success in leadership are required, not necessarily in management, though. Must not be dictatorial in management style.
Tools and Material available
Flip charts, markers, white-boards
Gather data. That forces team members to dig into the operation. It is usually a real eye opener.
Let it be known that this is a team effort
Inform people in the process area and those who support the event what they should expect, and what should be the aftermath
Train the event team and management in TPS, create a common language

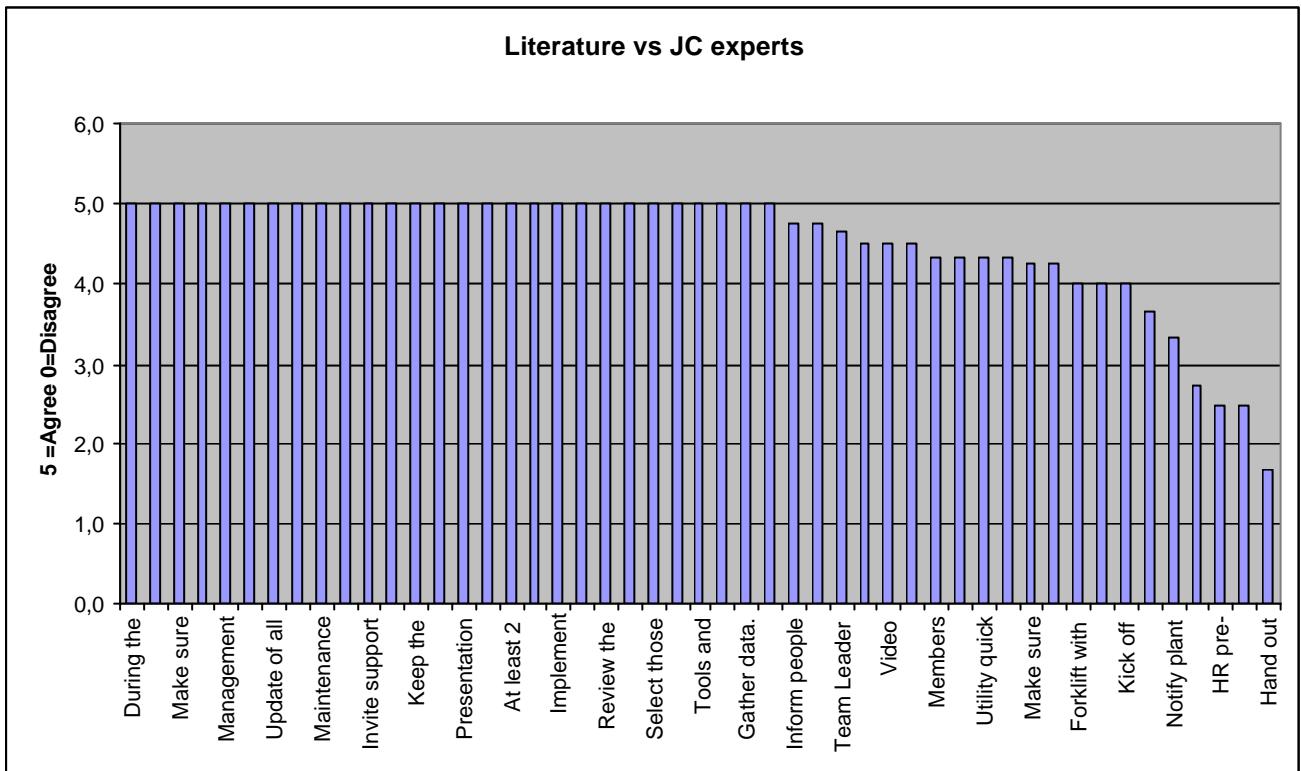
(Table 7)

This table can be used as a checklist in order to prepare a good kaizen event.

5 Analysis

5.1.1 JC vs. Literature

The following graphs show how important the topics from the literature have been rated by the JC experts.



According to this Graph there are only 3 to 4 things from the literature where the JC experts have a tendency disagree to the authors in the literature.

In the literature review I discussed whether the Team leader should come from the event area or not. The JC experts clearly stated in the survey that the Team leader should be the supervisor or process owner.

They also recommend like the literature event duration between 2 and 5 days (full time). The ratio between participants from the event area and outsiders is recommended between 60 and 70% of the event area.

Also the management focus and support which is highlighted from several authors is supported by the experts by the following points: Priority setting, support with resources and acknowledgment of the accomplishments. Since there is no big gap between the literature and

the JC experts opinion the gap analyses in the previous chapter also reflects the gap of JC versus the literature.

6 Recommendations

JC has a quite good basis to achieve there vision to become a “Lean Manufacture”. JC has good systems and motivated people in place.

The identified gaps are no real roadblocks, on the way to use Kaizen more efficient. But they clearly indicate that some things need to be changed, in order to reach the vision of becoming a lean manufacture. So the gaps which are identified need to be closed therefore I pose the following actions.

? Management focus and support:

Executive sponsor ship of the Kaizen activates (e.g. during the Training or the presentation of the results).

The Measurement system “JCMS Track” needs to become more accurate (that only real JCMS activates with remaining effects are reported), this measure need then be closer compared across Europe and should be linked to the performance measures of a Plant Manger and the General Plant Manager

? Higher discipline on the preparation process:

The gap analyses showed, that maintenance personal, equipment, resources are not available as needed during the event.

A the main focus of a JIT plant is deliver parts with the correct quality on time to the customer. This needs to be considered during preparation phase. If the kaizen events have continuously not the required support this is not caused by a single problem in production (which definitely needs to be solved). So the planning needs to make sure that the production and as well the Kaizen can run without effecting each other negatively.

? Higher discipline during the Kaizen event:

Team members should focus only on the event, most interruptions can be avoided (Imagine you were ill, in vacation or

at the customer side the business would go on without you).

Also the paperwork needs to be finished during the event.

? Higher discipline post the Kaizen event:

This includes the follow up, of the open tasks and as well the focus on the improved process. If the process falls later back to the level before the kaizen event took place this would indicate, that some thing went wrong during the event. This needs to be solved by reviewing the last event and conducting a new event.

? Success stories:

European success stories should be communicated, and utilized as advertisement and benchmark. The success stories from the US can't be used be cause of the different culture and standards of manufacturing.

? Program Management:

For the JCMS relaunch project “JCMS Activated” project, the standard program management tools should be used.

Establishing targets, setting up a timeline with key milestones and work breakdown structure. This plan needs to be closely followed up by a project manager.

The analyses of the data in the “JCMS Track” database indicated that the data is not well maintained, and that the measurement system is not stable yet. That is quite normal for a system which as been implemented since 6 month. Now where the measurement system is in place JC needs to focus on the data quality. Therefore I recommended better defining the data which is expected to be entered into the data base. This gives the user a better guidance and once it is defined people who are cheating can be identified more easily, because they don't have the chance to search for excuses “Oh I thought I should enter this...”.

Kaizen is not high sophisticated, and it works quite well once the basics are installed. In the Graphs about the Plant Kaizen Self assessment you can see that there is no significant improvement after a certain level of the SA is reached. In order to make the self assessment more towards

lean I would recommend reducing the number of points in the Kaizen section.

7 References

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8 Acknowledgments

I should like to thank:

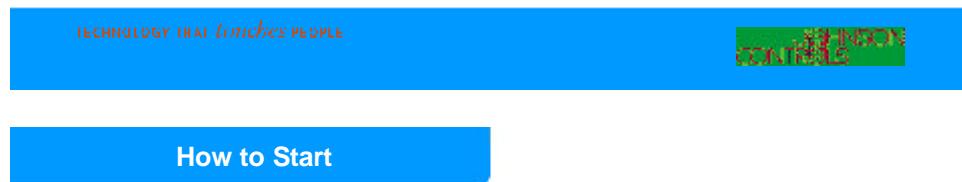
- ? The managers of Johnson Controls, who allowed me time to discuss my report with them and provide me with access to company records.
- ? My tutor for his supervision and advice during the time that I was planning, developing and writing this report.
- ? My family for all the help and support they have provided during my studies.

9 Appendix

9.1 Presentation for the Survey at the JCMS leaders day



Successful Implementation of Kaizen

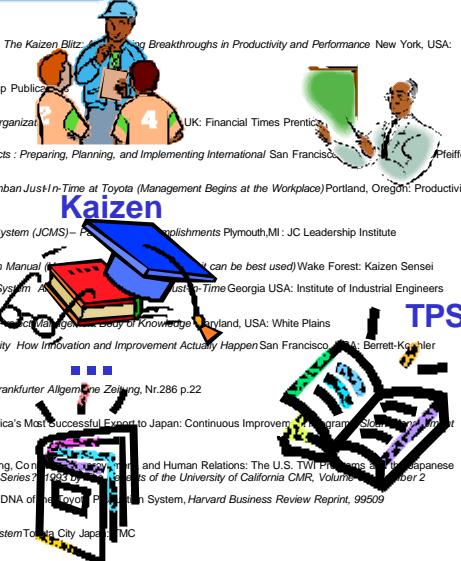


What are the most important things to consider
while Implementing Kaizen?



Source

- Anthony C. Laria, Patricia E. Moody, Robert W. Hall (1999) *The Kaizen Blitz: Breakthroughs in Productivity and Performance* New York, USA: John Wiley & Sons, Inc
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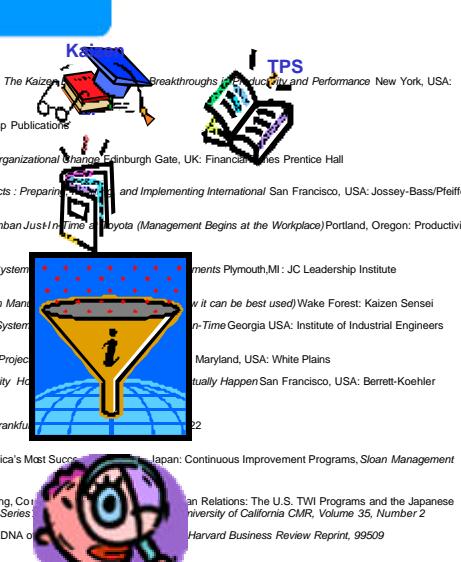


Technology that motivates people

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Scanning

- Anthony C. Laria, Patricia E. Moody, Robert W. Hall (1999) *The Kaizen Blitz: Breakthroughs in Productivity and Performance* New York, USA: John Wiley & Sons, Inc
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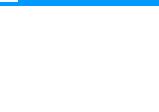
Reference List

Topics & Things-to-be-considered-according-to-Literature	Kaizen Event Implementation	The Kaizen Blitz	Questions for JC-survey	Enter here the reality Agree=1...6 Disagree	Enter here the Ideal-World Agree=1...6 Disagree
Review the last Kaizen and make adjustments as needed ^a	p.25 ^a	☒	Have previous Kaizen events been reviewed before starting the next one? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
HR involvement, to select no "cement heads" ^a	p.26 ^a	☒	Has HR been involved in the selection of team members? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
HR pre-training prior to Kaizen events on "Participative Management" and "Change Management" ^a	p.26 ^a	p.29 ^a	Has a pre-training on "Participative Management" and "Change Management" been given prior to the event? If yes to whom? If no, has the material been provided? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Make sure union is an integral part of the whole strategic plan ^a	p.28 ^a	☒	Have the unions been informed about Kaizen activities? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Inform people in the process area and those who support them, what they should expect, and what should be the alternative ^a	p.29 ^a	p.27 ^a	Have all affected persons been informed prior to the event? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Make sure maintenance personnel can support the Kaizen event as much as the regular production ^a	p.29 ^a	☒	Have reasonable maintenance staff been scheduled to support the event? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Let it be known that this is a team effort ^a	p.29 ^a	☒	Was it clearly stated that the outcome of the event is a team effort? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
No rank in Kaizen events, just team members ^a	p.29 ^a	☒	Was the rank given to the team members? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Post pictures pre and post, management and union personal working alongside operators ^a	p.30 ^a	☒	Have pictures pre and post and after been published? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Selecting project^a (details see separate table in the Chapter 3.6) ^a	p.33 ^a	p.36 ^a	What are the five most important criteria for the selection of a Kaizen event area? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Focus must be in narrowly defined and clearly defined areas ^a	p.36 ^a	☒	Were the targets and boundaries of the Kaizen event area well defined? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Results must be unambiguously measurable ^a	p.36 ^a	☒	Was the form? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Goals for improvement should be set high to challenge the team and to encourage "out of the box" thinking ^a	p.36 ^a	☒	Have the goals been set high but realistic? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
The duration of the whole event should be 5 days. Max 10 days ^a	p.33 ^a	p.22 ^a	How long do your Kaizen events usually take? (min. / avg. / max.) ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Selecting Team Members^a	p.33 ^a	p.22 ^a	What was the amount of people from the event area and from outside? (in event area / # outside) ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
At least 50% of the team should be from outside the event area (Sales, marketing, engineers, other places, customers, vendors, etc.) ^a	p.33 ^a	p.101 ^a	What was the amount of people from the event area and from outside? (in event area / # outside) ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ideal team size 7-8 ^a	p.33 ^a	☒	What was the amount of people from the event area and from outside? (in event area / # outside) ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
At least 2 operators from event area ^a	p.33 ^a	p.100 ^a	What was the amount of people from the event area and from outside? (in event area / # outside) ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ask for volunteers ^a	p.33 ^a	p.101 ^a	What has been considered to select the Kaizen event team? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Look for most skilled people and innovators, open-minded. But don't set up an all-star team ^a	p.33 ^a	p.101 ^a	What has been considered to select the Kaizen event team? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Maintenance personnel ^a	p.33 ^a	☒	What has been considered to select the Kaizen event team? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Members who are outwardly creative ^a	p.33 ^a	☒	What has been considered to select the Kaizen event team? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Select those that have an affinity to the shop floor ^a	p.33 ^a	☒	What has been considered to select the Kaizen event team? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Team Leader = ^a	p.36 ^a	☒	How was the team leader selected? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Team leader should not be from event area ^a	p.36 ^a	☒	How was the team leader selected? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Immediate supervisor or someone a step or two up, of the project area ^a	p.102 ^a	☒	How was the team leader selected? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



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Topics & Things-to-be-considered-according-to-Literature	Kaizen Event Implementation	The Kaizen Blitz	Questions for JC-survey	Enter here the reality Agree=1...6 Disagree	Enter here the Ideal-World Agree=1...6 Disagree
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HR pre-training prior to Kaizen events on "Participative Management" and "Change Management" ^a	p.26 ^a	☒	Has a training in "Participative Management" and "Change Management" been given prior to the event? If yes to whom? If no, has the material been provided? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Make sure union is an integral part of the whole strategic plan ^a	p.28 ^a	☒	Have the unions been informed about Kaizen activities? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Inform people in the process area and those who support them, what they should expect, and what should be the alternative ^a	p.29 ^a	p.27 ^a	Have all affected persons been informed prior to the event? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Make sure maintenance personnel can support the Kaizen event as much as the regular production ^a	p.29 ^a	☒	Have reasonable maintenance staff been scheduled to support the event? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Let it be known that this is a team effort ^a	p.29 ^a	☒	Was it clearly stated that the outcome of the event is a team effort? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
No rank in Kaizen events, just team members ^a	p.29 ^a	☒	Was the rank given to the team members? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Post pictures pre and post, management and union personal working alongside operators ^a	p.30 ^a	☒	Have pictures pre and post and after been published? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Selecting project^a (details see separate table in the Chapter 3.6) ^a	p.33 ^a	p.36 ^a	What are the five most important criteria for the selection of a Kaizen event area? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Focus must be in narrowly defined and clearly defined areas ^a	p.36 ^a	☒	Were the targets and boundaries of the Kaizen event area well defined? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Results must be unambiguously measurable ^a	p.36 ^a	☒	Was the form? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Goals for improvement should be set high to challenge the team and to encourage "out of the box" thinking ^a	p.36 ^a	☒	Have the goals been set high but realistic? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
The duration of the whole event should be 5 days. Max 10 days ^a	p.33 ^a	p.22 ^a	How long do your Kaizen events usually take? (min. / avg. / max.) ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Selecting Team Members^a	p.33 ^a	p.22 ^a	What was the amount of people from the event area and from outside? (in event area / # outside) ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
At least 50% of the team should be from outside the event area (Sales, marketing, engineers, other places, customers, vendors, etc.) ^a	p.33 ^a	p.101 ^a	What was the amount of people from the event area and from outside? (in event area / # outside) ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ideal team size 7-8 ^a	p.33 ^a	☒	What was the amount of people from the event area and from outside? (in event area / # outside) ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
At least 2 operators from event area ^a	p.33 ^a	p.100 ^a	What was the amount of people from the event area and from outside? (in event area / # outside) ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ask for volunteers ^a	p.33 ^a	p.101 ^a	What has been considered to select the Kaizen event team? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Look for most skilled people and innovators, open-minded. But don't set up an all-star team ^a	p.33 ^a	p.101 ^a	What has been considered to select the Kaizen event team? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Maintenance personnel ^a	p.33 ^a	☒	What has been considered to select the Kaizen event team? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Members who are outwardly creative ^a	p.33 ^a	☒	What has been considered to select the Kaizen event team? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Select those that have an affinity to the shop floor ^a	p.33 ^a	☒	What has been considered to select the Kaizen event team? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Team Leader = ^a	p.36 ^a	☒	How was the team leader selected? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Team leader should not be from event area ^a	p.36 ^a	☒	How was the team leader selected? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Immediate supervisor or someone a step or two up, of the project area ^a	p.102 ^a	☒	How was the team leader selected? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



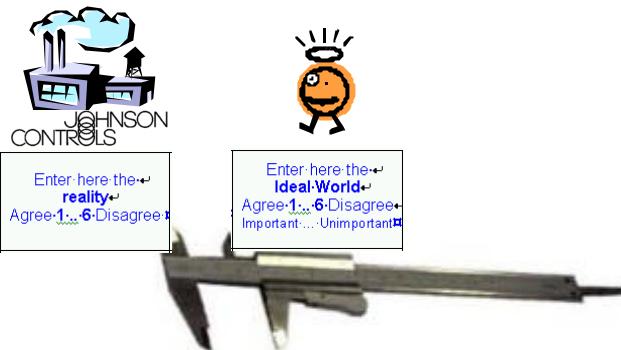
TECHNOLOGY THAT touches PEOPLE

Topics & Things-to-be-considered-according-to-Literature	Kaizen Event Implementation	The Kaizen Blitz	Questions for JC-survey	Enter here the reality Agree=1...6 Disagree	Enter here the Ideal-World Agree=1...6 Disagree
Review the last Kaizen and make adjustments as needed ^a	p.25 ^a	☒	Have previous Kaizen events been reviewed before starting the next one? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
HR involvement, to select no "cement heads" ^a	p.26 ^a	☒	Has HR been involved in the selection of team members? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
HR pre-training prior to Kaizen events on "Participative Management" and "Change Management" ^a	p.26 ^a	☒	Has a training in "Participative Management" and "Change Management" been given prior to the event? If yes to whom? If no, has the material been provided? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Make sure union is an integral part of the whole strategic plan ^a	p.28 ^a	☒	Have the unions been informed about Kaizen activities? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Inform people in the process area and those who support them, what they should expect, and what should be the alternative ^a	p.29 ^a	p.27 ^a	Have all affected persons been informed prior to the event? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Make sure maintenance personnel can support the Kaizen event as much as the regular production ^a	p.29 ^a	☒	Have reasonable maintenance staff been scheduled to support the event? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Let it be known that this is a team effort ^a	p.29 ^a	☒	Was it clearly stated that the outcome of the event is a team effort? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
No rank in Kaizen events, just team members ^a	p.29 ^a	☒	Was the rank given to the team members? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Post pictures pre and post, management and union personal working alongside operators ^a	p.30 ^a	☒	Have pictures pre and post and after been published? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Selecting project^a (details see separate table in the Chapter 3.6) ^a	p.33 ^a	p.36 ^a	What are the five most important criteria for the selection of a Kaizen event area? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Focus must be in narrowly defined and clearly defined areas ^a	p.36 ^a	☒	Were the targets and boundaries of the Kaizen event area well defined? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Results must be unambiguously measurable ^a	p.36 ^a	☒	Was the form? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Goals for improvement should be set high to challenge the team and to encourage "out of the box" thinking ^a	p.36 ^a	☒	Have the goals been set high but realistic? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
The duration of the whole event should be 5 days. Max 10 days ^a	p.33 ^a	p.22 ^a	How long do your Kaizen events usually take? (min. / avg. / max.) ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Selecting Team Members^a	p.33 ^a	p.22 ^a	What was the amount of people from the event area and from outside? (in event area / # outside) ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
At least 50% of the team should be from outside the event area (Sales, marketing, engineers, other places, customers, vendors, etc.) ^a	p.33 ^a	p.101 ^a	What was the amount of people from the event area and from outside? (in event area / # outside) ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ideal team size 7-8 ^a	p.33 ^a	☒	What was the amount of people from the event area and from outside? (in event area / # outside) ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
At least 2 operators from event area ^a	p.33 ^a	p.100 ^a	What was the amount of people from the event area and from outside? (in event area / # outside) ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Ask for volunteers ^a	p.33 ^a	p.101 ^a	What has been considered to select the Kaizen event team? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Look for most skilled people and innovators, open-minded. But don't set up an all-star team ^a	p.33 ^a	p.101 ^a	What has been considered to select the Kaizen event team? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Maintenance personnel ^a	p.33 ^a	☒	What has been considered to select the Kaizen event team? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Members who are outwardly creative ^a	p.33 ^a	☒	What has been considered to select the Kaizen event team? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Select those that have an affinity to the shop floor ^a	p.33 ^a	☒	What has been considered to select the Kaizen event team? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Team Leader = ^a	p.36 ^a	☒	How was the team leader selected? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Team leader should not be from event area ^a	p.36 ^a	☒	How was the team leader selected? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Immediate supervisor or someone a step or two up, of the project area ^a	p.102 ^a	☒	How was the team leader selected? ^a	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>



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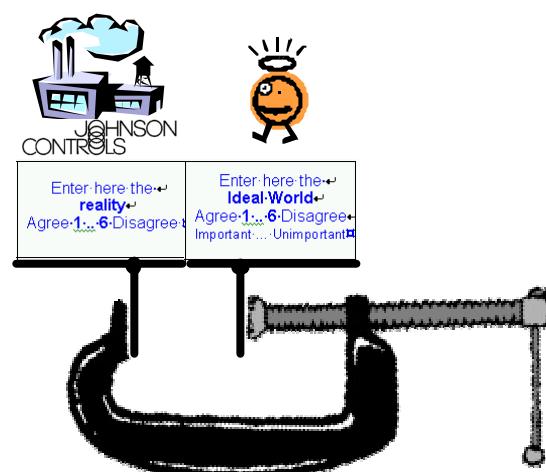
Gap Analyses



TECHNOLOGY THAT *touches* PEOPLE

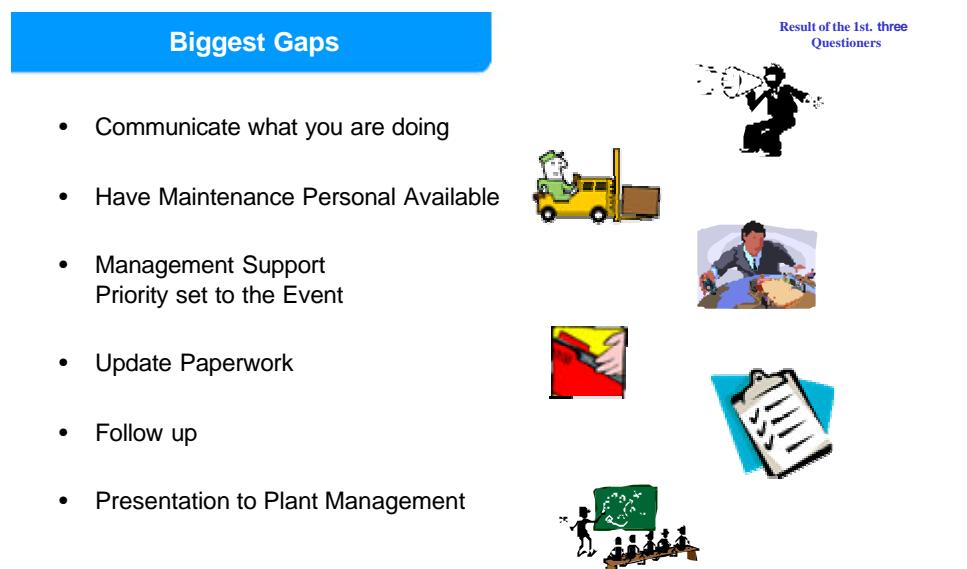
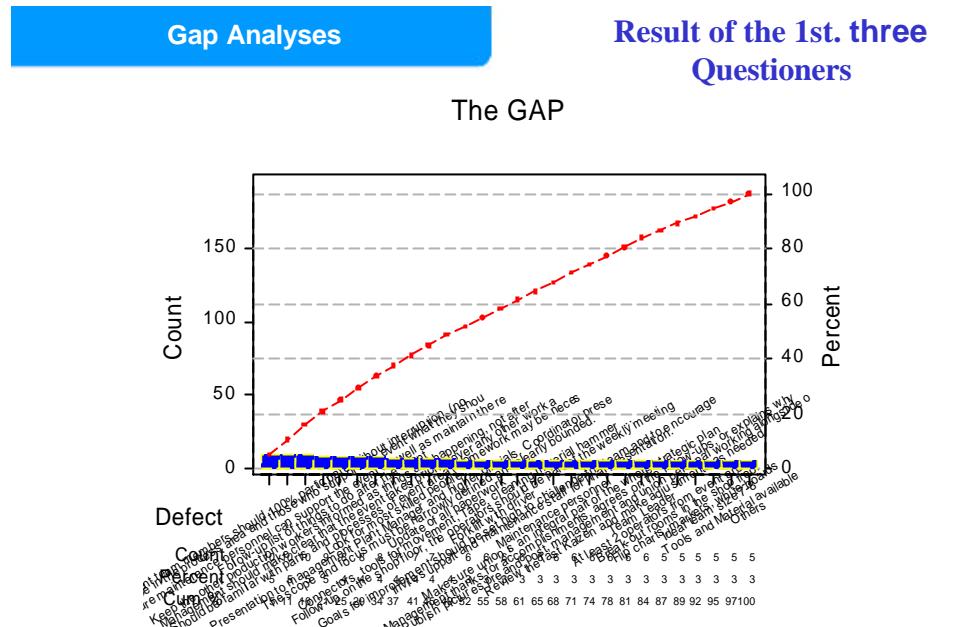
JOHNSON
CONTROLS

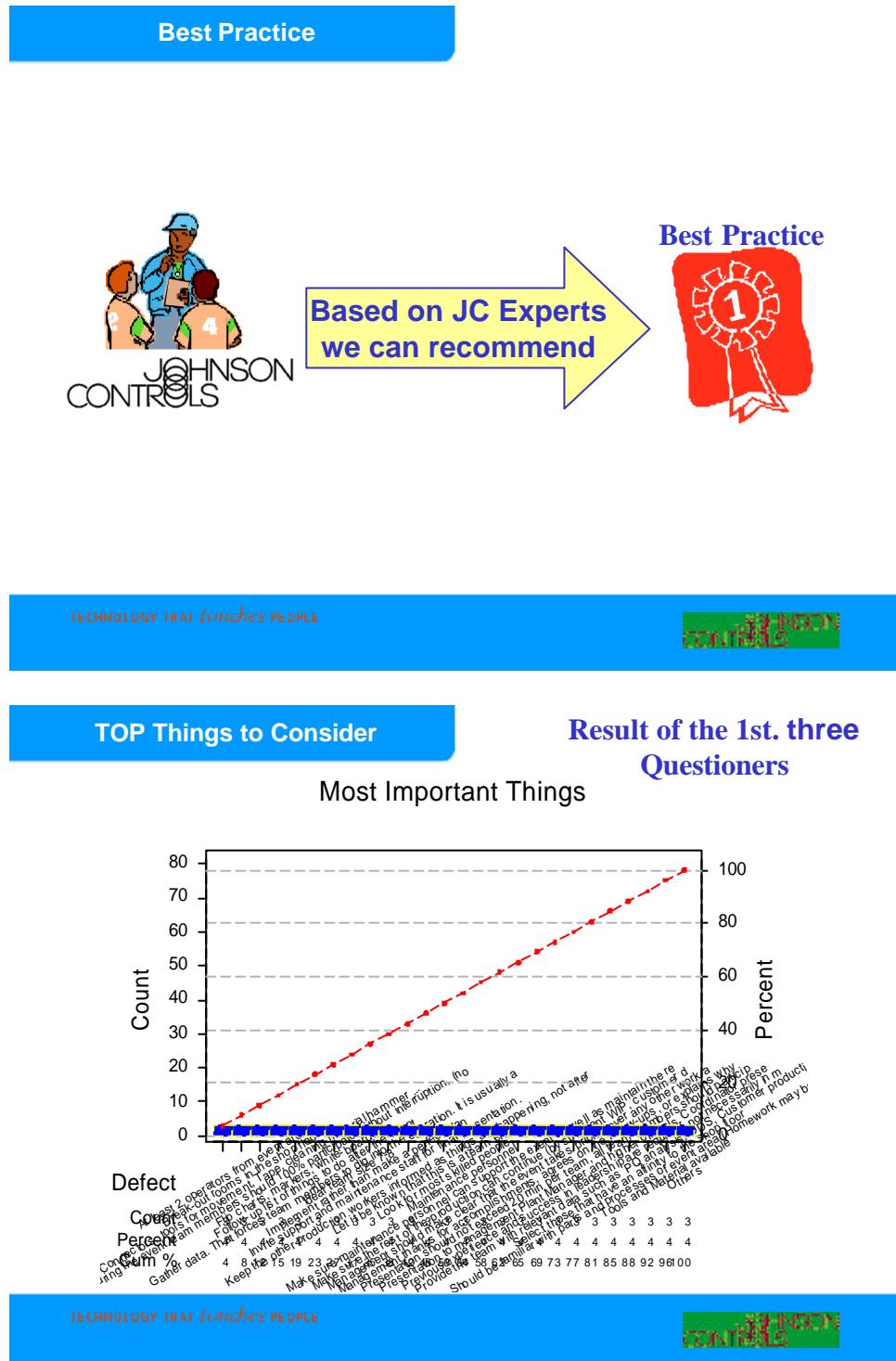
Gap Analyses



TECHNOLOGY THAT *touches* PEOPLE

JOHNSON
CONTROLS





TOP Things to Consider

- Communicate what you are doing
- Have Maintenance Personal Available
- Management Support
- Implement
- Update Paperwork
- Presentation to Plant Management
- Follow up

Result of the 1st. three Questioners



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EVINSON CONTROLS

Support needed

Please Support us with your Input!



9.2 Table with the Gap analyses

JC Plant Kaizen Survey Gap Analysis		real	Ideal	real	Ideal	real	Ideal	real	Ideal	real	Ideal	real	Ideal	real	Ideal	
		Agree 1 .. 6 Disagree 6	.. 6 Disagree 6	Delta	Agree 1 .. 6 Disagree 6	.. 6 Disagree 6	Delta	Agree 1 .. 6 Disagree 6	.. 6 Disagree 6	Delta	Agree 1 .. 6 Disagree 6	.. 6 Disagree 6	Delta	Agree 1 .. 6 Disagree 6	.. 6 Disagree 6	Delta
Topics & Things to be considered	Questions for JC survey	Geel R	Geel I	Geel D	Iberia R	Iberia I	Ineria D	UK R	UK I	UK D	E R	E I	E G	J C R	J C I	J C D
	Total :	97	70	-27	148	69	-79	216	72	-144	65	42	-23	151	72	-79
During the event team members should 100% participate without interruption, (no cellular calls, back and forth between normal jobs)		3	1	-2	5	1	-4	5	1	-4			0	4,3	1,0	-3,3
Immediate supervisor or someone a step or two up, of the project area		3	1	-2	4	1	-3	5	1	-4			0	4,0	1,0	-3,0
Make sure maintenance personnel can support the event as well as maintain the regular production	Have reasonable maintenance staff resources been scheduled to support the event?	4	1	-3	4	1	-3	5	1	-4	2	1	-1	3,8	1,0	-2,8
Inform people in the process area and those who support the event what they should expect, and what should be the event's impact on their work	Have all affected persons been informed prior the event?	3	2	-1	6	1	-5	5	1	-4	2	1	-1	4,0	1,3	-2,8
Should be familiar with parts and processes of event area (Homework may be necessary)		2	1	-1	3	1	-2	6	1	-5			0	3,7	1,0	-2,7
Management should make clear that the event takes priority over any other work assignment?	Did management clearly state that the Kaizen event takes priority over any other work assignment?	2	1	-1	5	1	-4	4	1	-3	3	1	-2	3,5	1,0	-2,5
Look for most skilled people		3	1	-2	1	1	0	6	1	-5			0	3,3	1,0	-2,3
Update of all paperwork		3	1	-2	3	1	-2	4	1	-3			0	3,3	1,0	-2,3
Members who are outgoing/creative		3	3	0	5	1	-4	4	1	-3			0	4,0	1,7	-2,3
Follow-up list of things to do after the event	Were all items which were on the follow up list closed?	2	1	-1	4	1	-3	6	1	-5	1	1	0	3,3	1,0	-2,3
Make sure union is an integral part of the whole strategic plan	Have the unions been informed about Kaizen activities?	1	1	0	3	2	-1	6	1	-5	6	3	-3	4,0	1,8	-2,3
Keep the other production workers informed as things are happening, not after	Have other affected workers been continually informed about the progress of the Kaizen event?	2	1	-1	5	1	-4	4	1	-3	1	1	0	3,0	1,0	-2,0
Maintenance personnel		2	1	-1	1	1	0	6	1	-5			0	3,0	1,0	-2,0
Connectors, tools for movement, Tape, cleaning material, hammer...		1	1	0	3	1	-2	5	1	-4			0	3,0	1,0	-2,0
Invite support and maintenance staff for final presentation		1	1	0	3	1	-2	5	1	-4			0	3,0	1,0	-2,0
Management should be clear for accomplishments, agrees on the follow-ups, or explains why follow-up cannot be completed		1	1	0	3	1	-2	5	1	-4			0	3,0	1,0	-2,0
Team Leader		3	2	-1	1	1	0	6	1	-5			0	3,3	1,3	-2,0
Follow-up plan		4	2	-2	3	3	0	5	1	-4			0	4,0	2,0	-2,0
Follow-up on the shop floor																
Presentations to management Plant Manager and higher officials	Were the results of the Kaizen event presented to Plant management by the team?	1	1	0	3	1	-2	6	1	-5	1	1	0	2,8	1,0	-1,8
Coordinator presents the results and actions needed																
The event area should be fairly uncluttered, run a 5s if required before the Kaizen event	Was the event area fairly uncluttered before starting the event?	3	2	-1	5	2	-3	2	1	-1	3	1	-2	3,3	1,5	-1,8
Utility quick change hook-ups (air, electrical, water...)		1	1	0	4	1	-3	5	3	-2			0	3,3	1,7	-1,7
Ideal team size 7-8		1	1	0	1	1	0	6	1	-5			0	2,7	1,0	-1,7
At least 2 operators from event area		1	1	0	1	1	0	6	1	-5			0	2,7	1,0	-1,7
Make sure the rest of the production can continue (by sufficient WIP, customer down time...)		1	1	0	1	1	0	6	1	-5			0	2,7	1,0	-1,7
Implement rather than make a perfect plan		1	1	0	3	1	-2	4	1	-3			0	2,7	1,0	-1,7
Presentation should not exceed 20 min per team, all team members should participate in the presentation		1	1	0	1	1	0	6	1	-5	3	1	-2	2,8	1,0	-1,8
Review the last Kaizen and make adjustments as needed	Have previous Kaizen events been reviewed before starting the next one?	2	1	-1	4	1	-3	3	1	-2	1	1	0	2,5	1,0	-1,5
Provide the team with relevant data such as: PD analysis, ODS, Customer production requirements, layout of event area, flow charts, time studies, quality measures, etc	Were historical data, quality data, layouts, ODS and time studies available?	2	1	-1	1	1	0	4	1	-3	3	1	-2	2,5	1,0	-1,5
Publish pictures pre and post, management and union personal involvement	Have pictures pre and post and after been published?	3	2	-1	3	1	-2	4	1	-3	3	3	0	3,3	1,8	-1,5
Keepsakes like hats, jackets, shirts... are appreciated (walking advertisement of the Kaizen success)	Have keepsakes handed to the team members?	4	1	-3	3	1	-2	1	3	2	6	3	-3	3,5	2,0	-1,5
Select those that have an affinity to the shop floor		1	1	0	1	1	0	5	1	-4			0	2,3	1,0	-1,3
Previous experience and success in leadership are required, not necessarily in management, though Must not be dictatorial in management style		1	1	0	3	1	-2	3	1	-2			0	2,3	1,0	-1,3
Tools and Material available	Have all materials which might be needed for the event been available?	2	1	-1	1	1	0	5	1	-4	1	1	0	2,3	1,0	-1,3
Flip charts, markers, white-boards	Were tools like charts, markers, white-boards available?	1	1	0	1	1	0	6	1	-5	1	1	0	2,3	1,0	-1,3
Getting data. That forces team members to dig into the operation. It is usually a real eye opener.	Were decisions in the Kaizen event based on data and tests?	1	1	0	2	1	-1	5	1	-4	1	1	0	2,3	1,0	-1,3
Train the event team and management in TPS, create a common language	Was your plant management trained in TPS / JCMS methods?	4	2	-2	1	1	0	4	1	-3	1	1	0	2,5	1,3	-1,3
Video cameras, monitors with software to allow digital reproduction of pictures on overheads of beamer	Were video cameras and photo cameras available?	1	3	2	1	1	0	6	1	-5	3	1	-2	2,8	1,5	-1,3
Let it be known that this is a team effort	Was it clearly stated that the outcome of the event is a team effort?	1	1	0	1	1	0	5	1	-4	1	1	0	2,0	1,0	-1,0
Team celebration (e.g. team dinner in the first event, lunch after presentation) and maintenance.	Did a team celebration happen during or after the event?	1	1	0	4	1	-3	2	3	1	3	1	-2	2,5	1,5	-1,0
Kick off suggestions for redesigning the part	Has any feedback been given to designers of the parts?	1	1	0	6	5	-1	4	1	-3	1	1	0	3,0	2,0	-1,0
Make team members identifiable, either by wearing special shirts or hats (let everyone see the activities as they are happening)	Have team members made identifiable by wearing special shirts or hats?	4	4	0	6	3	-3	1	3	2	6	3	-3	4,3	3,3	-1,0
HR pre-training prior to Kaizen events on "Participative Management" and "Change Management"	Has a training in Participative Management and Change Management been given prior to the event? If yes to whom and please send us the material!	3	3	0	6	3	-3	1	2	1	6	6	0	4,0	3,5	-0,5
Stop watches		1	3	2	1	1	0	4	1	-3			0	2,0	1,7	-0,3
HR involvement, to select no "cement heads"	Has HR been involved in the selection of team members?	1	1	0	6	4	-2	2	3	1	6	6	0	3,8	3,5	-0,3
Knowledge of TPS tools and techniques		3	3	0	1	1	0	3	3	0			0	2,3	2,3	0,0
Notify plant security what will be going on		1	1	0	4	1	-3	3	6	3			0	2,7	2,7	0,0
Hand out evaluation sheet to team and audience before the presentation		1	1	0	6	6	0	3	6	3			0	3,3	4,3	1,0

9.3 Table with the TOP things to consider

JC Plant Kaizen Survey Top Things to Consider		really	Ideal World	really	Ideal World	really	Ideal World	really	Ideal World	really	Ideal World	really	Ideal World	Delta		
		Agree ..6 Disagree ..6	Agree ..6 Disagree ..6	Delta	Agree ..6 Disagree ..6	Agree ..6 Disagree ..6	Delta	Agree ..6 Disagree ..6	Agree ..6 Disagree ..6	Delta	Agree ..6 Disagree ..6	Agree ..6 Disagree ..6	Delta	Agree ..6 Disagree ..6	Delta	
Topics & Things to be considered	Questions for JC survey	Geel R	Geel D	Geel I	Iberia R	Iberia I	Ineria D	UK R	UK I	UK D	E R	E I	E G	J C R	J C I	J C D
Total :		97	70	-27	148	69	-79	216	72	-144	65	42	-23	151	72	-79
During the event team members should 100% participate without interruption, (no cellular calls, back and forth between normal jobs)		3	1	-2	5	1	-4	5	1	-4			0	4,3	1,0	-3,3
Immediate supervisor or someone a step or two up, of the project area		3	1	-2	4	1	-3	5	1	-4			0	4,0	1,0	-3,0
Make sure maintenance personnel can support the event as well as maintain the regular production	Have reasonable maintenance staff resources been scheduled to support the event?	4	1	-3	4	1	-3	5	1	-4	2	1	-1	3,8	1,0	-2,8
Should be familiar with parts and processes of event area (Homework may be necessary)		2	1	-1	3	1	-2	6	1	-5			0	3,7	1,0	-2,7
Management should make clear that the event takes priority over any other work assignment	Did management clearly state that the Kaizen event takes priority over any other work assignment?	2	1	-1	5	1	-4	4	1	-3	3	1	-2	3,5	1,0	-2,5
Look for most skilled people		3	1	-2	1	1	0	6	1	-5			0	3,3	1,0	-2,3
Update of all paperwork		3	1	-2	3	1	-2	4	1	-3			0	3,3	1,0	-2,3
Follow-up list of things to do after the event	Were all items which were on the follow up list closed?	2	1	-1	4	1	-3	6	1	-5	1	1	0	3,3	1,0	-2,3
Maintenance personnel		2	1	-1	1	1	0	6	1	-6			0	3,0	1,0	-2,0
Connectors, tools for movement, Tape, cleaning material hammer		1	1	0	3	1	-2	5	1	-4			0	3,0	1,0	-2,0
Invite support of maintenance staff for the presentation		1	1	0	3	1	-2	5	1	-4			0	3,0	1,0	-2,0
Management thanks for accomplishments, agrees on the follow-ups, or explains why follow-up cannot be completed		1	1	0	3	1	-2	5	1	-4			0	3,0	1,0	-2,0
Keep the other production workers informed as things are happening, not after	Have other affected workers been continually informed about the progress of the Kaizen event?	2	1	-1	5	1	-4	4	1	-3	1	1	0	3,0	1,0	-2,0
Break-out rooms in the shop floor	Was a break-out room available?	1	1	0	1	1	0	6	1	-5	3	1	-2	2,8	1,0	-1,8
Presentation to management Plant Manager and higher officials. Coordinator presents the results and actions needed.	Were the results of the Kaizen event presented to Plant management by the team?	1	1	0	3	1	-2	6	1	-5	1	1	0	2,8	1,0	-1,8
Ideal team size 7-8		1	1	0	1	1	0	6	1	-5			0	2,7	1,0	-1,7
At least 2 operators from event area		1	1	0	1	1	0	6	1	-5			0	2,7	1,0	-1,7
Make sure the rest of the production can continue (by sufficient WIP, customer down time...)		1	1	0	1	1	0	6	1	-5			0	2,7	1,0	-1,7
Implement rather than make a perfect plan		1	1	0	3	1	-2	4	1	-3			0	2,7	1,0	-1,7
Presentation should not exceed 20 min per team, all team members should participate in the presentation		1	1	0	1	1	0	6	1	-5			0	2,7	1,0	-1,7
Review the Kaizen and make adjustments as needed	Have previous Kaizen events been reviewed before starting the next one?	2	1	-1	4	1	-3	3	1	-2	1	1	0	2,5	1,0	-1,5
Provide the team with relevant data such as: PQ analysis, ODS, Customer production requirements, layout of event area, flow charts, time studies, quality measures, etc	Were historical data, quality data, layouts, ODS and time studies available?	2	1	-1	1	1	0	4	1	-3	3	1	-2	2,5	1,0	-1,5
Select those that have affinity to the shop floor		1	1	0	1	1	0	5	1	-4			0	2,3	1,0	-1,3
Previous experience and success in leadership are required, not necessarily in management, though. Must not be dictatorial in management style		1	1	0	3	1	-2	3	1	-2			0	2,3	1,0	-1,3
Tools and Material available	Have all materials which might be needed for the event been available?	2	1	-1	1	1	0	5	1	-4	1	1	0	2,3	1,0	-1,3
Flip charts, markers, white-boards	Were tools like charts, markers, white-boards available?	1	1	0	1	1	0	6	1	-5	1	1	0	2,3	1,0	-1,3
Gather data. That forces team members to dig into the operation: It is usually a real eye opener	Were decisions in the Kaizen event based on data and tests?	1	1	0	2	1	-1	5	1	-4	1	1	0	2,3	1,0	-1,3
Let it be known that this is a team effort	Was it clearly stated that the outcome of the event is a team effort?	1	1	0	1	1	0	5	1	-4	1	1	0	2,0	1,0	-1,0
Inform people in the process area and those who support the event what they should expect, and what should be the aftermath	Have all affected persons been informed prior the event?	3	2	-1	6	1	-5	5	1	-4	2	1	-1	4,0	1,3	-2,8
Train the event team and management in TPS, create a common language	Was your plant management trained in TPS / JCMs methods?	4	2	-2	1	1	0	4	1	-3	1	1	0	2,5	1,3	-1,3
Team Leader		3	2	-1	1	1	0	6	1	-5			0	3,3	1,3	-2,0
The event area should be fairly uncluttered, run 5s if required before	Was the event area fairly uncluttered before starting the event?	3	2	-1	5	2	-3	2	1	-1	3	1	-2	3,3	1,5	-1,8
Video cameras, monitors with software to allow digital reproduction of pictures on overheads of beamer	Were video cameras and photo cameras available?	1	3	2	1	1	0	6	1	-5	3	1	-2	2,8	1,5	-1,3
Team celebration (e.g. team dinner in the first evening or lunch after presentation) incl. maintenance...	Did a team celebration happen during or after the event?	1	1	0	4	1	-3	2	3	1	3	1	-2	2,5	1,5	-1,0
Members who are outwardly creative		3	3	0	5	1	-4	4	1	-3			0	4,0	1,7	-2,3
Follow-up on the shop floor, the operators should be part of the weekly meeting that measures the process. (If they own the measure they will try harder to archive it)		4	3	-1	4	1	-3	3	1	-2			0	3,7	1,7	-2,0
Utility quick hook-ups (air, electrical, water...)		1	1	0	4	1	-3	5	3	-2			0	3,3	1,7	-1,7
Stop watches		1	3	2	1	1	0	4	1	-3			0	2,0	1,7	-0,3
Make sure union is an integral part of the whole strategic plan	Have the unions been informed about Kaizen activities?	1	1	0	3	2	-1	6	1	-5	6	3	-3	4,0	1,8	-2,3
Publish pictures pre and post, management and union personal working alongside operators	Have pictures pre and post and after been published?	3	2	-1	3	1	-2	4	1	-3	3	3	0	3,3	1,8	-1,5
Forklift with driver		4	2	-2	3	3	0	5	1	-4			0	4,0	2,0	-2,0
Keepsakes like t-shirts, hats, shirts, aprons etc. (including advertising of the Kaizen success)	Have keepsakes handed to the team members?	4	1	-3	3	1	-2	1	3	2	6	3	-3	3,5	2,0	-1,5
Kick-off suggestions for redesigning the part	Has any feedback been given to designers of the parts?	1	1	0	6	5	-1	4	1	-3	1	1	0	3,0	2,0	-1,0
Knowledge of TPS tools and techniques		3	3	0	1	1	0	3	3	0			0	2,3	2,3	0,0
Notify plant security what will be going on		1	1	0	4	1	-3	3	6	3			0	2,7	2,7	0,0
Make team members identifiable, either by wearing special shirts or hats (let everyone see the activities as they are happening)	Have team members made identifiable by wearing special shirts or hats?	4	4	0	6	3	-3	1	3	2	6	3	-3	4,3	3,3	-1,0
HR pre-training prior to Kaizen events on "Participative Management" and "Change Management"	Has a training in Participative Management and Change Management been given prior to the event? If yes to which and please send us the material!	3	3	0	6	3	-3	1	2	1	6	6	0	4,0	3,5	-0,5
HR involvement, to select no "cement heads"	Has HR been involved in the selection of team members?	1	1	0	6	4	-2	2	3	1	6	6	0	3,8	3,5	-0,3
Hand out evaluation sheet to team and audience before the presentation		1	1	0	6	6	0	3	6	3			0	3,3	4,3	1,0