

All About Kaizen

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In the U.S., kaizen is often synonymous with "Kaizen Blitz" or "Kaizen Event." Such events rapidly implement workcells, improve setups or streamline processes. In Japanese, the definition of Kaizen is "improvement" and particularly, "Continuous Improvement"-- slow, incremental but constant.

Taiichi Ohno and Shigeo Shingo developed both kaizen versions at Toyota. They are important tools for Lean Manufacturing, the Toyota Production System (TPS), Just In Time (JIT) and other effective manufacturing strategies.

Large-Scale Vs. Small-Scale Improvement

Large-scale improvement is attractive. It promises quantum jumps in productivity, quality and effectiveness. However, it is difficult to implement because it affects many areas, people and processes. The design must be near perfect because failure courts disaster. The risks and difficulties work against large-scale improvements.

Small-scale improvements are easier and faster. The risks are low because they generally have

limited effect. However, the accumulated effect is often greater than a single large improvement. The Kaizen Blitz is a localized, smaller scale improvement and Mini-Kaizen are very small-scale improvements.

The Kaizen Blitz

The Blitz or Event is a focused, intense, short-term project to improve a localized process. Substantial resources- Engineering, Maintenance, Cell Operators, and others are available for immediate deployment. An event usually includes training followed by analysis, design, and re-arrangement of a product line or area. A consultant often orchestrates. The Event normally takes 2-5 days. The results are immediate, dramatic and satisfying.

Mini-Kaizen

Before the recent popularity of the Blitz, kaizen meant "Continuous Improvement." This is the slow accumulation of many small developments in processes and quality that, over 50 years, has helped make Toyota the lowest cost and highest quality automobile company in the world. Let's call these improvements "Mini Kaizen."

Quick and Easy or Mini Kaizen

The "Kaizen Blitz" or "Kaizen Event" is the fast, big and dramatic form of improvement. Norman Bodek is introducing us to a sort of "Mini Kaizen" which he calls "Quick & Easy Kaizen."

Quick and Easy Kaizen recognizes that the person doing a job is the best expert on that job. It encourages everyone to make small improvements that are within their power to implement. Over time, these thousands of small improvements have major effects.

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Key Characteristics

- Permanent method changes
- Continuous flow of small ideas
- Immediate, local implementation
- The Quick & Easy Process

Here is the sequence of events for a **Quick & Easy Kaizen**:

1. An employee identifies a problem, waste, defect or something not working. He/she writes it down.
2. Employee later develops an improvement idea and goes to immediate supervisor.



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3. Supervisor reviews it and encourages immediate action.
4. The idea is implemented.
5. The idea is written up on a simple form in less than three minutes.
6. Supervisor posts the form to stimulate others and recognize the accomplishment.

per month from each employee and 80% have been implemented.

After a workshop, Technicolor in Detroit went from 40 suggestions in July to 550 in October. Most have been implemented.

Quick and Easy Kaizen Benefits

Mini kaizen empowers employees, enriches the work experience and brings out the best in every person. It Improves quality, safety, cost structures, environments, throughput and customer service.



Dana Corporation has used Quick and Easy Kaizen for the past ten years. They get 24 ideas

Kaizen in The Manufacturing Strategy

Quick and Easy Kaizen is the missing ingredient in many Lean Manufacturing initiatives but is the heart of the Toyota production system.

Toyota states:

"...based on the concept of continuous improvement, or kaizen, every Toyota team member is empowered with the ability to improve their work environment. This includes everything from quality and safety to the environment and productivity. Improvements and suggestions by team members are the cornerstone of Toyota's success."

It requires both conscious and sub-conscious thinking about improvements day-by-day and minute-by-minute from everyone. While each improvement is indeed "Quick & Easy," nurturing such a program and effectively integrating into corporate culture is far more difficult than a blitz. But, as Toyota has demonstrated, it offers a more sustained competitive advantage.

The Kaizen Blitz or Event

What Is A Kaizen Blitz?

The Kaizen Blitz (or Kaizen Event) is a focused, short-term project to improve a process. The most common targets for kaizen events are:

- **Workcell Implementation**
- **Setup Reduction**
- **5S**

It includes training followed by an analysis, design, and re-arrangement of a product line or area. The usual Kaizen Event takes 2-10 days.

Significant resources such as Engineering and Maintenance must be available. Cell Operators are part of the team. A consultant often orchestrates the "Blitz".

Advantages of The Kaizen Blitz

Following Von Clausewitz' principle of "concentration" it focuses all resources towards a narrow and specific objective. The intensity and urgency overcomes the intellectual resistance to a new paradigm. People have little time to think of reasons for delay. It forces solutions.

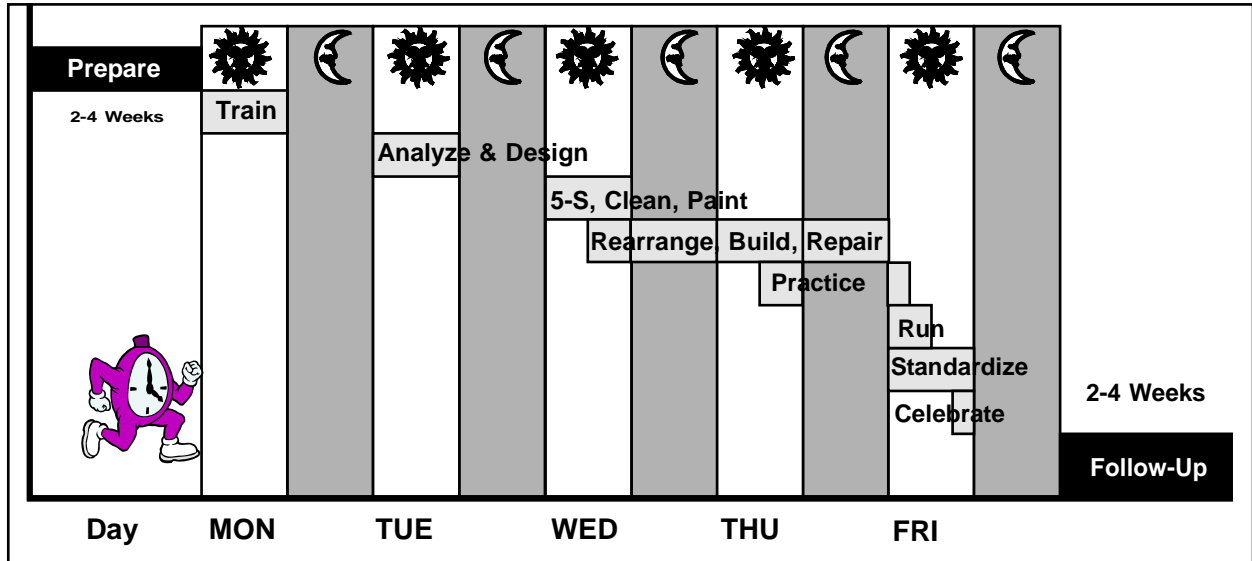


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The execution is dramatic. The results are significant, clear and quick. This generates enthusiasm and satisfaction. The Blitz is a great

introductory tool for Lean Manufacturing and its components of setup reduction, 5S and Workcells.



Typical Kaizen Timeframe for Workcells

Dangers in The Blitz

There are some dangers with the blitz. The training, for a Blitz is necessarily superficial. There is insufficient time for deep learning of principles, tradeoffs, and design methodology.

The Blitz does not allow time to develop important corollary elements of Lean Manufacturing. Total Quality management, for example, takes time to introduce and produce results. Teams take months or years to properly develop. These are often forgotten in the afterglow of an event.

The overall process may suffer. These events focus on localized areas, and As Goldratt said, "A system of local optimums is not an optimum system." It can result in islands of productivity within a factory that, overall, is a mess.

It is not a substitute for Manufacturing Strategy. Like the infamous Blitz at Pearl Harbor, a

successful tactic can lead to ultimate disaster without sound underlying strategy.

Where and when is the Blitz OK?

- At the beginning of Lean Implementation to shift paradigms and quickly demonstrate results.
- When an experienced practitioner identifies a simple, independent family of products and processes that fit the slogans and edicts.
- When the event is part of a well thought out Manufacturing Strategy.

Summary

Rommel, Patton, MacArthur, Hap Arnold, and all military leaders who enjoyed long-term success trained their troops intensely. No matter how colorful their personalities and tactics, they knew that training, learning, and competence is the real basis of success for any organization.



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Case Study

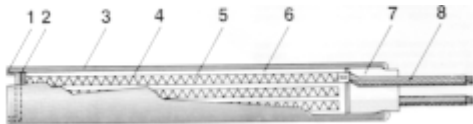
Kaizen Events For Industrial Heaters

Kaizen Events (Blitz) successfully improved workflow, productivity and quality for a manufacturer of industrial heaters.

several departments. Normal lead-time was about 60 days and even expedited orders required 15 days. Scheduling was very complex and generally considered ineffective.

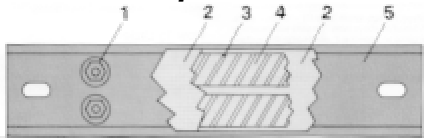
The blitz approach was used to implement six workcells.

Cartridge Heater



1. Welded end seal.
2. Mica.
3. Stainless steel sheath
4. Element wire
5. Magnesium oxide packing.
6. Ceramic element support.
7. Ceramic cap.
8. Teflon insulated leads

Strip Heater



1. Post Terminals.
2. Mica Insulator.
3. Resistance Ribbon Wire.
4. Mica Element Support.
5. Rust Resistant Steel Sheath.

Background

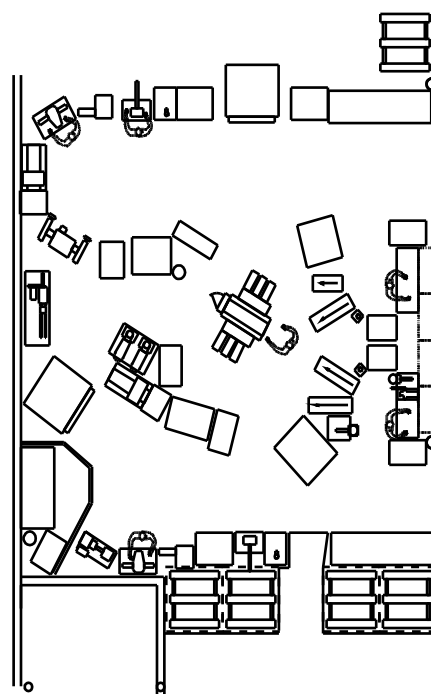
Pele Products (not the firm's real name) manufactures a wide variety of electric heaters. These heaters go into dishwashers, hot tubs and many consumer and industrial appliances or equipment.

Two of the many different types of heater are shown above. Each type of heater has many variations in voltage and wattage as well as in dimensions and physical features. There are tens of thousands of possible permutations. Because of the almost infinite variety, most heaters are made to order.

The plant was originally arranged in a functional layout, which required each order to travel to

Preparation

The product and process complexity required considerable analysis and preparation in advance of the actual blitz. The products were grouped into families with similar characteristics and enough volume to justify a workcell. Two of these families were the product groups shown above. A separate cell prepared ceramic cores and wound them for the other cells that used these cores.



Cartridge Heater Cells



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Case Study

A Kaizen Blitz Overdose

The company in question manufactured a wide variety of commercial and home water purification products. Some were quite simple, others complex. A wide variety of injection-molded parts were made onsite.

Over the previous several years, the company had initiated over 150 Kaizen Blitz'. Many of their cells and small production lines seemed well designed and effective.

Team development, Total Quality, Setup Reduction, Lean Scheduling, inventory reduction, and overall layout planning had been ignored. The results:

- Good Productivity Within Cells
- High Inventories
- Complex Material Flows External To Cells
- Messy, Fragmented Storage Areas
- Quality Problems

In addition, many people in the organization were frustrated with the constant pressure for instantaneous results, the lack of important fundamental changes, and the diminishing returns from each subsequent Blitz.

The executive who promoted the overuse of the Blitz had recently departed. A Strategos consultant then conducted a 2-day seminar, Facility Design for Lean Manufacturing. The intent was to rationalize the macro-layout.

During this seminar, the managerial team also began to think through their Manufacturing Strategy. They began to develop the fundamental skills and knowledge that would eventually lead to a highly successful manufacturing operation.

Case Study

When Kaizen Blitzing Replaces Strategy

A smaller but well-known aircraft company attempted to implement Lean Manufacturing for their machine shop and subassembly operations. The Kaizen Blitz was their primary approach. They employed consultants who came in with the usual panoply of edicts and pronouncements:

- Inventory is evil and must be eliminated regardless of all other considerations.
- The primary measure of work-cell performance is throughput time.
- Machine utilization is of no consequence and should be ignored.
- Work-cells must have a straight-through flow for all products.
- Work-cells must have one-piece flow.
- Low-tech, manual machine tools are superior to high-tech NC equipment.

- Lot sizes must be cut drastically.

These edicts apply to many manufacturing situations including this particular manufacturer's subassembly cells. Indeed, the subassembly cells functioned quite well.

Things did not work well in the machining cells. Here, a very low-volume, high-variety product mix combined with the above beliefs brought the following results:

One Piece Flow combined with a disregard for equipment utilization resulted in cells that were paced to the slowest operation on each part thus reducing effective capacity.

Straight-through flow precluded many parts from a particular cell. These inconvenient parts were simply outsourced.

Failure to adequately implement setup reduction brought even less capacity as lot sizes were reduced.

Cells were initially tied to particular subassemblies rather than developing families of similar piece parts. This resulted in sub-optimum cells and limited the number of parts available to a workcell. Many cells were starved for work.

Operations were taken off NC equipment and replaced by a series of operations on manual machines. The multiple fixtures produced tolerance buildups and created severe quality problems for some items.

Eventually, so many parts were outsourced and so little produced that the shop could not cover fixed cost. This did not seem readily apparent, however, because of the fixation on throughput time and WIP as the only significant metrics.

The overall result has been layoffs, higher inventories, an unprofitable cost structure, management changes, and severe pressure from the corporate masters.

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