

Poka Yoke (Mistake Proofing)

Poka yoke is a quality management concept developed by a Matsushita manufacturing engineer named Shigeo Shingo to prevent human errors from occurring in the production line. Poka yoke (pronounced "poh-kah yoh-kay") comes from two Japanese words—"yokeru" which means, "to avoid", and "poka" which means "inadvertent errors." Thus, Poka yoke more or less translates to "avoiding inadvertent errors".

Poka yoke is sometimes referred to in English by some people as "fool-proofing". However, this doesn't sound politically correct if applied to employees, so the English equivalent used by Shingo was "error avoidance." Other variants like "mistake proofing" or "fail-safe operation" have likewise become popular.

The main objective of Poke Yoke is to achieve zero defects. In fact, it is just one of the many components of Shingo's Zero Quality Control (ZQC) system, the goal of which is to eliminate defective products.

Poka yoke is more of a concept than a procedure. Thus, its implementation is governed by what people think they can do to prevent errors in their workplace, and not by a set of step-by-step instructions on how they should do their job.

Poka yoke is implemented by using simple objects like fixtures, jigs, gadgets, warning devices, paper systems, and the like to prevent people from committing mistakes, even if they try to! These objects, known as Poka yoke devices, are usually used to stop the machine and alert the operator if something is about to go wrong.

Anybody can and should practice Poka yoke in the workplace. Poke-Yoke does not entail any rocket science—sometimes it just needs common sense and the appropriate Poka yoke device. Poka yoke devices should have the following characteristics:

1. Useable by all workers;
2. Simple to install;
3. Does not require continuous attention from the operator (ideally, it should work even if the operator is not aware of it);
4. Low-cost;
5. Provides instantaneous feedback, prevention, or correction. A lot of Shingo's poka yoke devices cost less than \$50!

Of course, error proofing can be achieved by extensive automation and computerization.

However, this approach is expensive and complicated, and may not be practical for small operations. Besides, it defeats the original purpose of Poka yoke, which is to reduce defects from mistakes through the simplest and lowest-cost manner possible.

Poka yoke is at its best when it prevents mistakes, not when it merely catches them. Since human errors usually stem from people who get distracted, tired, confused, or de-motivated, a good Poka yoke solution is one that requires no attention from the operator. Such a Poka yoke device will prevent the occurrence of mistake even if the operator loses focus in what she is doing.

"Unless you try to do something beyond what you have already mastered, you will never grow."

Ronald. E. Osborn

Where Lean Thoughts can become Reality

Order Management & Scheduling

Examples of 'attention-free' Poke Yoke solutions:

- A jig that prevents a part from being misoriented during loading
- Non-symmetrical screw hole locations that would prevent a plate from being screwed down incorrectly
- Electrical plugs that can only be inserted into the correct outlets
- Notches on boards that only allow correct insertion into edge connectors
- A flip-type cover over a button that will prevent the button from being accidentally pressed

Three levels of Poka yoke:

1. Elimination of spills, leaks, losses at the source or prevention of a mistake from being committed
2. Detection of a loss or mistake as it occurs, allowing correction before it becomes a problem
3. Detection of a loss or mistake after it has occurred, just in time before it blows up into a major issue (least effective)

Obsolete Inventory: Your Ticking Time Bomb

“Tick...tick...tick” I am following the warehouse supervisor as we walk through the storage area. He shows me both the incoming materials and finished goods warehouses. His pen is tapping each box on the shelf as we walk past.

“Tick...tick...tick” 3 more boxes get added to the total. He turns the corner to start a new row and the pen continues tapping on each box that sits there. Like the Energizer Bunny, he keeps going, and going and going.

“Tick...tick...tick” We had just finished discussing the presence of slow moving and obsolete inventory kept in the warehouse. To give our Kaizen team a rough idea of how much “old stuff” we had in storage, the warehouse supervisor agreed to give us a quick tour. His instructions from the team were “using your pen, tap on each box that has been sitting here for more than 3 years, and we’ll take a quick count”. So off the team goes, following the warehouse supervisor to find out how much “old stuff” we are talking about.

“Tick...tick...tick” By the time the supervisor is done his tour, the team calculates 30% of the warehouse has been storing material or finished goods that hasn’t moved in over three years. It’s all still good stuff: either saleable goods or useful inventory...but only if a customer is willing to pay for it! And with all the changes in the customer ordering patterns, this material is no longer in demand. Back in the Kaizen room, the team discusses the possibility of freeing up valuable warehouse space by removing the slow moving and obsolete inventory. It sounds like a workable plan, until we get input from the finance team. It seems that this non-performing inventory is still sitting on the books at full value. Therefore, we cannot simply scrap it, because that would negatively impact the financial statement if the inventory suddenly were removed. Even though the team knows the inventory is not an asset to the business (in fact, in Lean all inventory is seen as a liability), the team cannot remove it for fear of damaging the company’s financial position with creditors and investors. So, how long should we let obsolete inventory accumulate? It will depend on how long you can stand the sound of

“Tick...tick...tick”. One thing is certain: everything needs to be reconciled sooner or later. And the longer we wait, the bigger the bomb will be when it goes off!