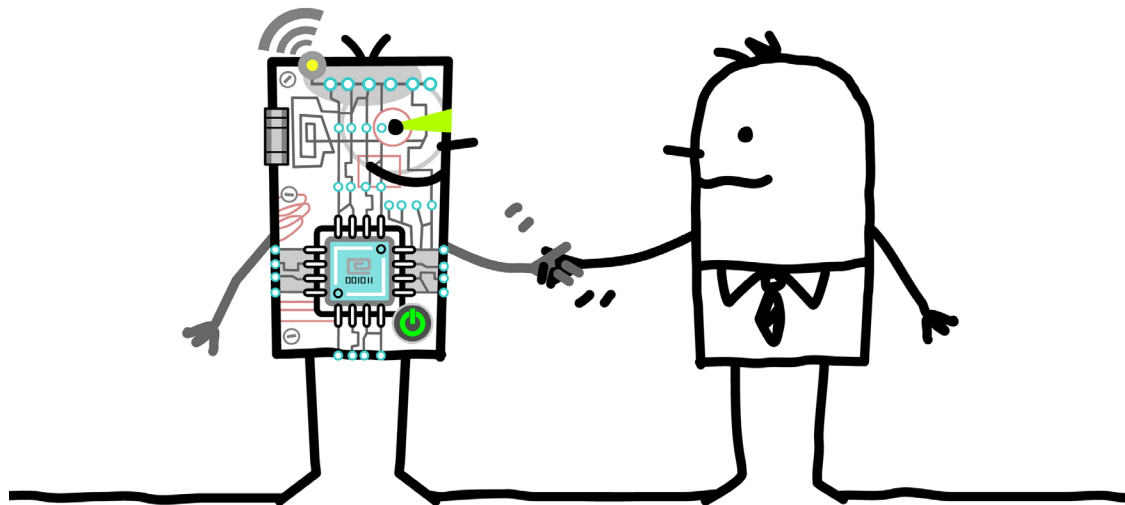


JIDOKA



DEFINITION

- A Japanese word pioneered by Sakichi Toyoda meaning “autonomation with a human touch.” Also known as “intelligent automation”
- A quality control process that allows for work to be autonomously and immediately stopped when a problem occurs
- The separation of human work from machine work
- One of two pillars of the Toyota Production System (along with JIT—Just in Time)

Jidoka, and the elements of 5 Why’s, Andon, and Poka-Yoka, create an environment where workers are empowered and machines/processes are automated so that problems are immediately detected, stopped, corrected, and for which countermeasures are created. This leads to a more efficient workplace as workers’ roles shift from manually feeding and monitoring machines to more value-added activities.

Automation vs. Autonomation – note the distinction:

Think of Automation as a sort of precursor to Autonomation: with *automation*, work is still being monitored by an operator and error detection and prevention are not foolproof. With *autonomation* (Jidoka), work is a “self-controlled” process, with minimal human involvement and preventable errors.

[Click here](#) for a recent Industry Week article on *Automation*, to see how it’s gaining in popularity as businesses (such as 3M) are seeing it as a benefit not a threat.

4-STEPS OF JIDOKA IMPLEMENTATION

The main purpose of Jidoka is to transfer human capabilities to automated machines that automatically detect and stop a machine/process when a problem occurs. The 4 basic steps of Jidoka are:

1. **Detect the problem/abnormality** as soon as it occurs (i.e., via built-in sensors) to prevent it from moving to the next step
2. **Stop the equipment/process** as soon as the problem is detected
3. **Correct the immediate problem** to get the process back up and running ASAP
4. **Investigate and correct the root cause of the problem** and establish countermeasures/standards to prevent it from reoccurring

Several key systems (below) are built into the Jidoka process to allow people or machines to automatically halt production once an abnormality is detected. Countermeasures are then put in place to solve underlying problems vs. simply applying a quick fix.

Andon:

Andon is a simple and easy warning system built into a process that allows workers or the machine to stop a process as soon as a problem is detected. The signal can be activated manually (operator pulls an Andon cord above the line), or automatically (i.e., light or sensor).

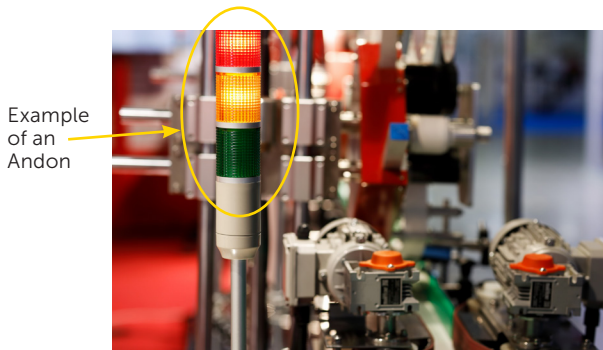
5 Why's:

5 Why's is a simple yet powerful method of root cause analysis that focuses on resolving the root of the problem vs. addressing the symptoms or short-term firefighting. By asking why 5 times, workers uncover the real underlying problem.

Poka-yoke (Error-Proofing):

A Poka-yoke is a device that is integrated into a process to prevent errors from becoming defects, which would then be passed on to the next process creating parts that need to be reworked or scrapped.

([Click here](#) to read WOM on Poka-yoke. And stay tuned for future WOM's on Andon and 5 Why's)!



BENEFITS/RESULTS OF IMPLEMENTING JIDOKA

- Reduced/eliminated defects and waste, and improved quality
- Eliminated need for operators to manually supervise machines/processes to focus on value-added work
- Reduced labor costs as workers are able to monitor multiple work stations
- Improved visibility and transparency in production process
- Reduced downtime and interruptions in flow
- Improved cycle time, productivity, and efficiency
- Increased flexibility and customer responsiveness and satisfaction
- Engaged/empowered workers and improved morale

JIDOKA IN THE NEWS

Jidoka isn't just applicable in manufacturing. [This video](#) illustrates how the principles of Jidoka (and Andon) can be applied in a healthcare environment.

FOR REFLECTION

Consider the value of automation in all aspects of daily life. Now more than ever "human intelligence" is becoming part of both our professional and personal lives.

- Auto stop on copy machines when a problem occurs (i.e., paper jam)
- Alert on patient monitoring equipment in hospitals when vitals are out of normal range
- Red lights on screens in call centers indicate a queue of incoming calls (Andon in action)
- Digitized/automated order entry forms to avoid manual intervention

JIDOKA...NOT TO BE CONFUSED WITH

Jokester. As a world traveler and recording artist, Paul was dismayed when the scale beeped at check in indicating there was a problem: his bag exceeded the weight limit. Forced to leave his custom bongos behind, he worried his bandmates would think he was some kind of jokester when he arrived at the gig with the makeshift drum he crafted out of coconut shells. If only he played the harmonica....

FAMOUS QUOTES

"The ideal conditions for making things are created when machines, facilities, and people work together to add value without generating any waste."

Kiichiro Toyoda, son of Sakichi Toyoda and founder of Toyota Motor Manufacturing

"Automation applied to an inefficient operation will magnify the inefficiency."

Bill Gates, Microsoft Founder and CEO