Quick Changeover - SMED Workbook

Quick Changeover Overview, Parts 1 & 2
Learn what Quick Changeover and SMED are and why they are extremely important lean concepts for producers of any product or service.

A workbook intended to accompany the Facilitator’s Guides for this course. This guide includes the Key Points from the video, discussion items, quiz questions, and helpful tips. Using Gemba Academy’s online learning content, any participant can use this workbook to facilitate learning in all courses.
Quick Changeover, Parts 1 & 2

Review

What is Quick Changeover?

• A changeover is the amount of time taken to change a piece of equipment from producing the ________________ good piece of a production lot to the ________________ good piece of a production lot.
• To see a fast changeover, watch a pit crew at a Formula 1 or NASCAR race: the ability to get a car back on the track as quickly as possible can mean the difference between winning and losing.
• Producers have similar goals: we need to get our equipment or value-added processes up and running as quickly as possible.
• If a new production lot produces a bad part, the changeover is ____________________________ and the downtime is ________________.

What is SMED?

• SMED stands for S_________________ M_________________ E_________________ of D___________. It is a system focused on dramatically reducing the time it takes to perform changeovers or setups.
• SMED was developed 50 years ago by Shigeo Shingo, who worked for Toyota as a consultant. Toyota needed to reduce the inventory of automotive stampings and began looking for ways to perform changeovers more efficiently. Shingo collaborated with Toyota engineers to reduce a four-hour changeover on a thousand-ton press to less than 3 minutes.
• This example was documented in Shingo's book, “A Revolution in Manufacturing: The SMED System”.
• Most of the focus of SMED is on basic workplace organization and planning. It's estimated that ____% of the improvements from SMED are related to basic 5S concepts.

Why Use Quick Changeover?

• QC reduces ____________________________ and increases ___________________. You’re able to create value faster when your machines are running, not sitting idle, allowing you to
• increase customer satisfaction and grow your business.
• QC reduces ________________ sizes, which reduces lead-time; much of the lead-time through processes is nothing but waiting or queue time.
• QC improves on-time ________________ performance. If companies have long changeover times, they’re more likely to keep one machine running for longer. If companies have shorter changeover times, they’re more likely to make more machines run more frequently.
• QC also reduces ________________. Companies often determine lot sizes by looking at the total operational time per item they produce, which leads to massive inventories that may not be purchased.
• Instead of arbitrarily increasing order sizes, some companies use the Economic Order Quantity formula, which looks at the relationship between the cost of ________________ material and ________________ it.
  • “This concept (EOQ) conceals an enormous blind spot: the unspoken assumption that drastic reductions in setup times are impossible.” -Dr. Shigeo Shingo
• When setup times are dramatically ________________, the impact of increased lot sizes ________________ as well.
• QC also enables production leveling (heijunka).

8 Steps to Quick Changeover

1. Document ________________
2. Separate ________________ and ________________ tasks
3. Shift ________________ tasks to ________________ ones
4. Streamline all ________________ tasks
5. Identify parallel tasks
6. Streamline all ________________ tasks
7. Practice the new setup
8. Document the new standard
Quiz

1. Formally defined in manufacturing terms, a changeover is simply the amount of time taken to change a piece of equipment from producing the last good piece of a production lot to the first good piece of the next production lot.
   - [ ] True
   - [ ] False

2. “SMED” stands for Single Minute __________ of Dies.
   - [ ] Excess
   - [ ] Examination
   - [ ] Externalize
   - [ ] Exchange

3. _____ was the first to discover the power of SMED as a consultant to the Toyota Motor Corporation.
   - [ ] Shigeo Shingo
   - [ ] Sakichi Toyoda
   - [ ] W. Edwards Deming
   - [ ] Taiichi Ohno

4. Most of the focus of SMED is focused on purchasing new fixtures and equipment.
   - [ ] True
   - [ ] False

5. Please select all the benefits of quick changeover.
   - [ ] Improves on-time delivery
   - [ ] Enables heijunka (production leveling)
   - [ ] Helps reduce the number of people needed
   - [ ] Reduces inventory
   - [ ] Reduces lead-time
6. External tasks are tasks that can only be done when the machine is NOT running.

☐ True
☐ False

7. The eighth step in the changeover roadmap presented in the video and PDF summary document is:

☐ Have a pizza party
☐ Report results to management
☐ Practice the setup
☐ Document the new standard
Reflection

Now that you know better what quick changeover is and what goes into it, how do you think it will benefit your company?

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________

How would using quick changeover benefit you personally?

___________________________________________________________________________
___________________________________________________________________________
___________________________________________________________________________