Quick Changeover - SMED
Facilitator’s Guide

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 step by step guide to presenting Gemba Academy’s 5S course to lean learners in all positions. This guide includes key points, discussion items, quiz questions and answers, and helpful tips. Using Gemba Academy’s online learning content, any facilitator can teach teams of people how to reduce changeover times by incredible amounts.
Quick Changeover, Parts 1 & 2

Preparation and Lesson Plan
Use this page to prepare for each training session.

Resources
• Gemba Academy videos
• Online quizzes

Prepare for a Successful Training Session
• **Watch videos and complete quizzes** on your own at least one day before the training session.
• **Read this guide thoroughly** and become familiar with the course content before presenting to others.
• Prepare a suitable **training room** for your participants.
• Prepare a **computer with internet access** and a projector or large screen. Test all equipment before the training session.
• Have your Gemba Academy **username and password** ready.

U: ________________
P: ________________

• **Choose your quiz style.** The most popular option is to use the online interactive quiz, answering questions as a group with open discussion. Another option is to print the PDF version and have participants complete the quizzes individually.

Training Session Outline
• **Step 1: Introduce** the session topic and content to the participants.
• **Step 2: Play a video.**
• **Step 3: Lead a group discussion** using this guide. Review key points, ask prepared questions and have participants fill in the blanks in their workbooks.
• **Step 4: Take the quiz** and review responses.
• **Step 5: Apply** what has been learned in your workplace.

**Choose Your Quiz Style**

When questions come up, encourage other participants to answer. Responding to questions with "What does the team think?" goes a long way to build engagement.

**Helpful Tip**
Step 1: Session Overview

- **Introduce** the training topic.
  - These modules explain what Quick Changeover is, what SMED is, why to use quick changeover, and the 8 steps to Quick Changeover.

- **Explain** what to expect during this session.
  - In this session we will:
    - Watch “Quick Changeover, Part 1” (10:30)
    - Watch “Quick Changeover, Part 2” (7:48)
    - Discuss what we learned from the video using the workbook
    - Review the content with a quiz and talk about the results.

- **Before you begin…**
  - Ask your participants if they have heard the term “quick changeover” before. If so, can they explain it?

Step 2: Play “Quick Changeover, Part 1”

Step 3: Review Key Points

**What is Quick Changeover?**

- A changeover is 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 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 not complete and the downtime is wasted.

**What is SMED?**

- SMED stands for Single Minute Exchange of Dies. 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 80% of the improvements from SMED are related to basic 5S concepts.

Why Use Quick Changeover?
- QC reduces lead-time and increases velocity. 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 lot sizes, which reduces lead-time; much of the lead-time through processes is nothing but waiting or queue time.
- QC improves on-time delivery 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 inventory. 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.

Step 4: Play “Quick Changeover Overview, Part 2”

Step 5: Review Key Points

Why Use Quick Changeover? (Continued)
- Instead of arbitrarily increasing order sizes, some companies use the Economic Order Quantity formula, which looks at the relationship between the cost of holding material and ordering or producing 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 reduced, the impact of increased lot sizes decreases as well.
- QC also enables production leveling (heijunka).

8 Steps to Quick Changeover
1. Document reality
2. Separate internal and external tasks
3. Shift internal tasks to external ones
4. Streamline all external tasks
5. Identify parallel tasks
6. Streamline all internal tasks
7. Practice the new setup
8. Document the new standard
Step 6: 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

Step 7: Reflection
Give your participants 10-15 minutes to fill out the reflection questions at the end of their workbooks. When they’ve finished, have a short discussion with them. 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 it benefit you personally? Spend 5-10 minutes discussing.