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The How-To Website for Simple Effective Lean Implementation

S.M.E.D.

Single Minute
(Less than 10 minutes)
Exchange of Dies

Changeover, Setup, Retooling?

- ❖ Whatever we have to do in order to keep a piece of equipment up and running has to be
 - Secure
 - Efficient
 - Safe
 - Timely
 - Competitive

SMED is a Great Lean Tool



- ❖ It helps the better use of our resources
 - Reduces the changeover or setup times dramatically
 - Uses our creativity
 - Makes the operation faster, safer, more productive
- ❖ Just a little common sense.
 - Now we will write down all the operations that would take place should you have a problem like this...

Oooops!

When we are all enthusiastic
about a trip...



But something goes wrong...



Take notes please

- ❖ List all the operations required to get back on the road ASAP!
- ❖ Use your imagination...
- ❖ All the movements and actions should be counted
- ❖ We will discuss the details and think of improvements...
- ❖ How long does it usually take to replace the tire?

Compare to Evaluate



- ❖ We must establish a comparison now with a more efficient way of doing things.
- ❖ You will need to keep using your imagination here
(in the CD Version you get videos in these pages)
 - Please get ready to write again
 - You will have to be faster this time
 - We will all think about the different operations that take place in a NASCAR pit-stop and take notes. Everything takes place in just about 10 to 15 seconds! You have one minute to write and describe the operations...
 - Ready...?

Here we go...

- ❖ Time counts as the car gets into the pit...
- ❖ Imagine all the people in that team and each one's operations
- ❖ The more detailed – the better

(video in our CD Version)



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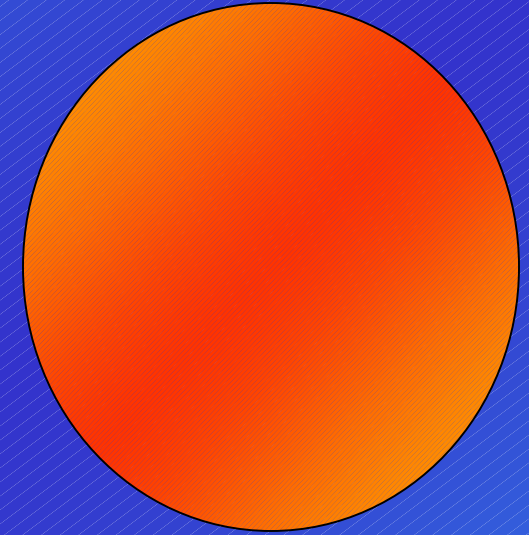
What makes it faster than the Common Way of Changing a Tire?

❖ Write down all your ideas...

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Better ways...



❖ As you probably mentioned...

- Better training
- Team work
- Preparedness
- Right tools
- Simplified process... and many others

But the MOST Important!...

- They are in a Competition environment...!

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The Pit Stop Time is Critical



- ❖ In a Kaizen Event for SMED we all get involved and analyze each operation in detail.
 - What can we do to ease the setup?
 - How can we combine skill and effort to improve results?
 - What should we change in terms of tools, movements, procedures?
- ❖ How does the NASCAR way compare with our way of doing things today?
 - Are we in a competition?

Unexpected complications...

- ❖ We must be prepared for above normal situations that could arise...
- ❖ Some times a “touch” with a wall or another vehicle will demand a repair in the body of the car...
 - This is done with a “duct-tape-patch”
(video in our CD Version)



Thinking and Acting Safe...

- ❖ Safety should Always be our priority
- ❖ No improvement justifies compromising the safety of:
 - The People
 - The Product (its Quality and Integrity)
 - The machine and Plant installations

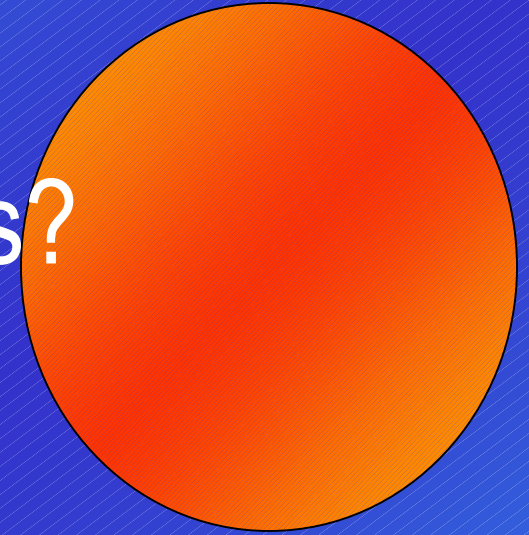
(video of pit accident in our CD Version)

Help Reduce Setup Time



- ❖ Some of our most successful workshops are SMED: set-up reductions.
 - They are really dramatic.
 - Example: From 3½ hours to a total of 28 minutes in just two to three days of team work.
 - The teams keep improving after that. In the case above they are now under 20 minutes and keep improving.
 - They become very competitive.
- ❖ One good project can become the justification and source of all the money and effort needed for any future implementation projects.

Why Reduce Set-Ups?



- ❖ Better Up Time
- ❖ Faster response to customer needs
- ❖ Higher productivity of our equipment and ourselves
- ❖ Higher competitive edge
- ❖ More jobs
- ❖ More sales
- ❖ Better chances for our company to survive!

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At this time we will watch the video of your current setup...

- Popcorn time...
- Feel free to Fast-Forward during the viewing when there are not relevant observations for the team to analyze

Aiming in the Right Direction



❖ Pay attention to these important aspects:

- Lack of preparation
- Unnecessary operations
- Poor ergonomics
- Inappropriate tools
- Lack of creativity
- Unsafe actions – Unnecessary Risks taken
- Insecure operations

Typical Manufacturing Process:

1. Store raw materials in a warehouse.
2. Transport materials to the workplace.
3. Store materials near the workplace.
4. Transform material at workplace.
5. Store the products near the workplace.
6. Inspect the products.
7. Store finished products in warehouse. waiting for shipment to customers.

Only
4
Adds
Value

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Turning Internal Operations into External

- ❖ One of the techniques we apply here is the conversion of operations...

Typical Setup: all the operations begin when the machine stops and they have to end before the machine re-starts

SMED Setup, some operations begin before the machine stops and some end after the machine re-starts

Preparation

Internal Operations

Post Setup

Turning Internal into External

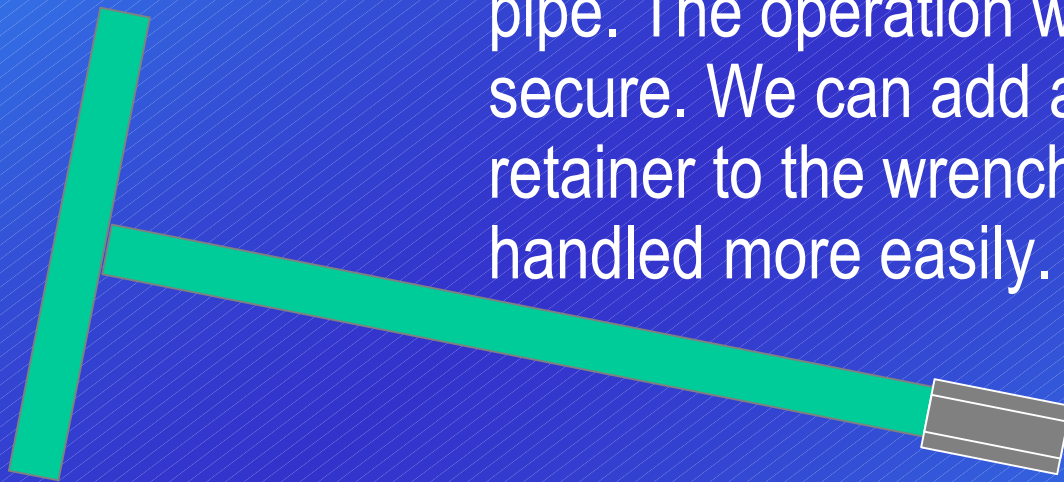
Preparation	Internal Operations	Post Setup
<ul style="list-style-type: none">➤ Get all the tools and materials you need for the Setup process, close to the machine. Check lists are useful for this purpose.➤ Rehearse the process and prevent time loss in concurrent movements.➤ Assign defined tasks for each person.	<ul style="list-style-type: none">➤ Perform all the operations that REQUIRE the machine to be stopped.➤ Make sure they are done quickly, securely and safely.➤ Rehearse the process and prevent loss in duplicated or concurrent movements.➤ Assign defined tasks for each person.	<ul style="list-style-type: none">➤ Perform all the operations that can be left undone until after the machine re-starts.➤ This includes cleanup of the area; removal and appropriate storage of the removed tooling and all auxiliary tools.➤ Assign defined tasks for each person.
Now We are ready to generate the New Process Sheet		

Aiming in the Right Direction

- ❖ Here we see some of the most frequent improvements that can be applied to our current project, made by previous teams.

Examples:

- ❖ A special tool can be made with a very simple “T” handle by welding a piece of Hex Wrench or a socket wrench to a piece of pipe. The operation will be faster and more secure. We can add a magnet or a spring retainer to the wrench for the fixtures to be handled more easily.



Quick Clamps

- ❖ DeStaCo and other suppliers have developed a good number of these accessories.
- ❖ They can be manually operated and also pneumatic and hydraulic.
- ❖ These are just a few examples to turn on our creativity.

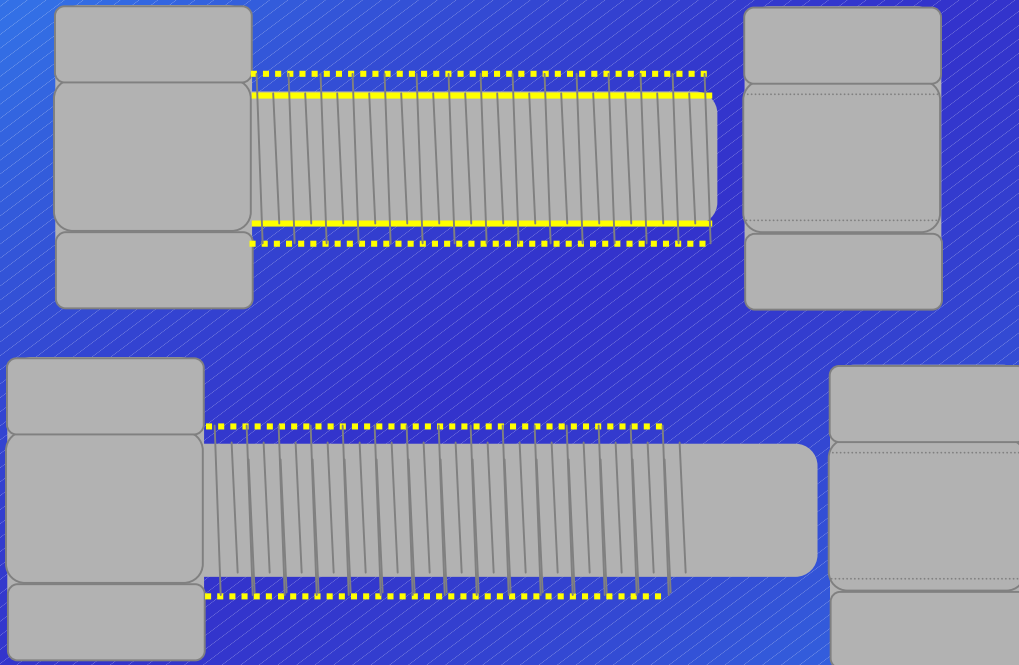


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Guided Bolts

❖ One more idea...



➤ Where a bolt will be used many times to attach a die or tool, extend a non threaded shaft so that you will have a guide that will prevent it from misalignment.

➤ Also think of possible uses of wing-nuts or wing-bolts.

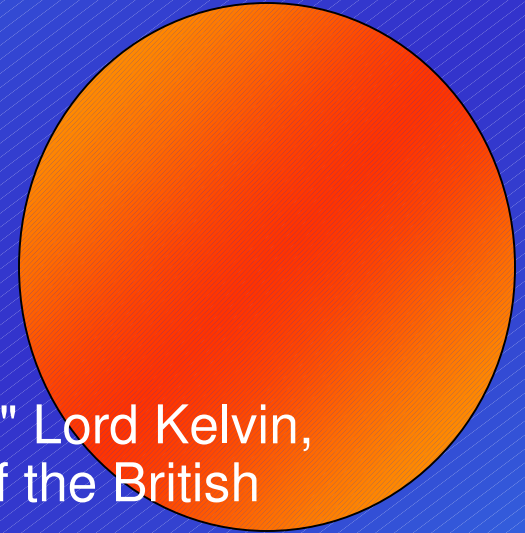
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Heavy Tooling Tricks

- ❖ When heavy tooling is to be changed, think of rail systems that present alternatives to slide and lift with unconventional systems.

True Quotes...



- ❖ "Heavier than air flying machines are impossible" Lord Kelvin, British mathematician, physicist and President of the British royal society, c. 1895
- ❖ "With over fifty foreign cars already on sale here, the Japanese auto industry isn't likely to carve out a big source of the U.S. Market for itself" Business Week, August 2nd 1968
- ❖ "A severe depression like that of 1920-1921 is outside the range of probability" the Harvard Economic Society, November 16 1929
- ❖ "I think there is a world market for about five computers" Thomas J. Watson chairman of IBM, 1943
- ❖ "There is no reason for any individual to have a computer in their home" Ken Olsen, president, Digital Equipment Corporation, 1977

True Quotes...

- ❖ "We don't like their sound. Groups of guitars are on the way out." Decca Recording Co. executive, turning down "The Beatles" in 1962
- ❖ "The phonograph... Is not of any commercial value" Thomas Alva Edison, inventor of the phonograph, c. 1880
- ❖ "No matter what happens the U.S. Navy is not going to be caught napping" Frank Knox, Secretary of the Navy, December 4, 1941
- ❖ "This Setup is supposed to take 8 hours..." A setup expert at a shoe factory TODAY!

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