December 2011

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# John Henry's Lean Changeover Newsletter

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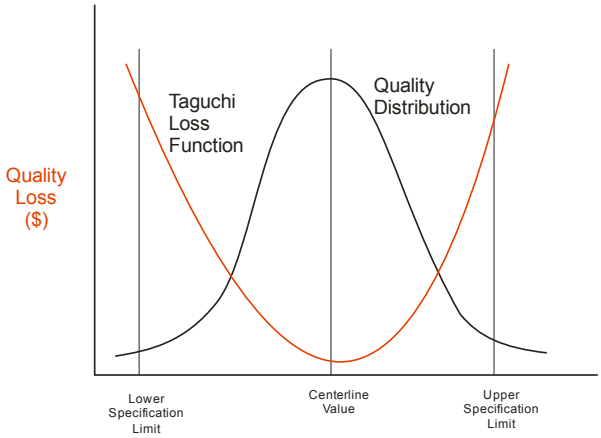
## SOME THOUGHTS ON…
## QUALITY: THE ABSENCE OF VARIATION

Quality, as used in manufacturing, is usually defined as "meeting specifications", within tolerance or something similar. That was the definition I learned back in the 70's, taught in the 80's and discarded in the 90's when I learned a more useful one.




John McConnell in his book Safer Than a Known Way defines quality as the absence of variation. I hear you saying "John Henry has gone off his rocker. All processes will have variation." Of course they will. I am the first be the first to admit that under the McConnell definition one can never have a truly quality product. That does not make the definition any less useful. There are a number of benefits to adapting this definition:

- It bakes in the idea of continuous improvement. Under the traditional definition there is an implication that, as long as the parameter is within limits it is acceptable. Yes, you are probably working on shrinking limit delta but how important is it? You may have other things calling more urgently for your attention.
- Your customer wants your product to be exactly the same way every time. As the Holiday Inn tagline used to say "The best surprise is no surprise". We humans are conservative by nature, we do not like change. Your customer is probably less interested in exactly how your product is than in it being the same every time they purchase or use it.

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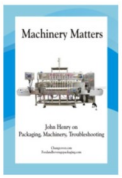
**You must read this book**




Machinery Matters collects over 40 of my best articles from Food & Beverage magazine.

Articles include:

Nine simple ways to cut changeover time
5 Steps to better capping
Conveyor basics: Keep the line running
Eight tips for more flexible packaging lines
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OEE and changeover
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***And more...***

The book is available in paper and Kindle at Amazon.com or use the discount code at www.changeover.com to receive 15% off.

TIP OF THE MONTH INSIDE

## SOME THOUGHTS ON… (cont)

- Your manufacturing machines want the materials and components to be exactly the same every time. When they vary, your process varies and will drive you crazy trying to keep it going. In applying proper torque to a bottle cap, one key parameter will be cap's internal diameter. If it is in spec but small, it will be too tight. If at the large end of the spec, it will be too loose. The machine can be adjusted to compensate but only if the size is consistent. When they vary randomly (But all in spec!) it is impossible to compensate.

- In some cases it may be even worse. A cylinder/piston combination may have a specified diameter of diameter of 4" with 0.002" clearance between them. Ideally, the piston should be 3.96". There will be manufacturing variance so the cylinder is specified as 4" +/-0.002". The piston is specified as 3.996" +/-0.002". You see where this is going, don't you? If the piston is 3.998" and the cylinder is 3.998 both are in specification but cannot be assembled.

The Taguchi Loss Function (TLF) allows us to apply a cost to quality. You know what the cost is for products that are out of spec. Or at least I hope you do. What about the quality cost of products that are in spec but not perfect? Taguchi, a Japanese statistician, developed models that show that quality costs start dropping off as quality moves away from the centerline. As mentioned above, an in spec, non-rejected, component will have a cost to make it fit correctly. A finished product that varies from what is expected will result in reduced customer satisfaction. Even very subtle variations can cause sub-conscious concerns to the user. The Taguchi Loss Function shows that there are increasing quality costs beginning the moment a parameter begins moving from the centerline.

So how do we eliminate variation from manufacturing processes?
The first and obvious answer is Statistical Process Control (SPC). If you are not doing it, start now. SPC will measure how far you are from the ideal and if you are not measuring, you are not controlling. SPC by itself is simply a measuring tool. It will help decide where to focus but it makes no improvement itself.

After identifying the areas for improvement, you will need to decide how to improve. Usually, for each issue, there will be several possibilities. These need to be identified, evaluated and the best one selected. "Best" can have several dimensions. It might be the cheapest. It might be the fastest to implement. It might be one that complies with company policies. There may be other dimensions. "Best" covers a lot of ground and you will need to decide what it means in each case.

Once an improvement has been identified, it must be implemented. A plan without implementation is nothing more than a good intention. Part of implementation must include training. Everyone who comes into contact with the improvement must be trained on what was done and why. It is not enough to just assume that they will get it via osmosis. Sometimes the training may be minor and

It is true that no process Will ever get to zero variation. That is no excuse for not working continuously toward it.

## SOME THOUGHTS ON… (cont)

informal. Other times it may be major and formal. Whatever methodology is used, the training must be done.

Finally, make sure a feedback loop is in place. Once the improvement has been made, monitor it to make sure that it accomplished its objective. If not, start the cycle all over.

It is true that no process ill ever get to zero variation.

That is no excuse for not working continuously toward it.

**What do you think? Please let me hear from you at johnhenry@changeover.com**

**Effective Troubleshooting**

Do your mechanics and technicians practice effective troubleshooting?

Would you like them to?

E-mail info@changeover.com for information about our Effective Troubleshooting workshop

## TIP OF THE MONTH.,, ELECTRIC SUCKERS

Many processes use suction cups to grip products, materials or components. Up to now, these have always required a vacuum source. One issue with vacuum suction cups, especially in a dusty environment is that they suck in dust which accumulates in the vacuum hoses and especially in the venturis of the vacuum generator causing loss of vacuum. This can be addressed with maintenance but may be neglected.

De-Sta-Co, who I have long recommended for toggle clamps and other fastening devices, has come up with a nifty idea. It is a suction cup without vacuum.

The rubber suction cup is mounted on an aluminum shell with a solenoid magnet inside. When 24v power is supplied, the cup is pulled back, creating a vacuum. Kill the power and the cup releases.

Full info and video at http://destaco.com/ecocup.asp

## Where I blog

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## Changeover/SMED Assessment

Unless you are running dedicated lines and processes, you are spending too much time on setups and changeovers. I would be willing to bet money that we can show you how to reduce your changeover times by 50% or more. Usually this can be done with little or no capital expenditure.

In an assessment we visit your plant and spend time on the floor observing how you perform changeovers. We look at the mechanical part, machine adjustments, cleaning, changes, of course. But we also assess the operational part of changeover. Are materials on hand when needed? Are they of good quality? Are the operators and technicians adequately trained and supervised? Are the products adequately designed for changeover?

Of course each assessment is based on individual plant needs. Below are some of the areas we typically examine::

- Personnel training and expertise
- Availability of SOPs
- Proper use of changeover SOP's
- Elimination/externalization of changeover tasks
- Tool usage & elimination
- Measurability & repeatability of setup adjustments
- Simplification of setup tasks
- Movement by setup personnel
- Storageand availability of changeparts
- Delays caused by others
- Causes of post-startup adjustment
- Waiting times for materials
- Waiting times for personnel
- Issues caused by component variability

We provide a detailed report of observations and recommendations for improvement. Post assessment we work with you to assist in implementation.

If you are ready to start reducing changeover time in your plant, call John Henry, the Changeover Wizard at 787-550-9650 or email him at johnhenry@changeover.com

You have nothing to lose but your losses.

**For a free copy of the Changeover.com changeover loss calculator email info@changeover.com**