Lean Thoughts
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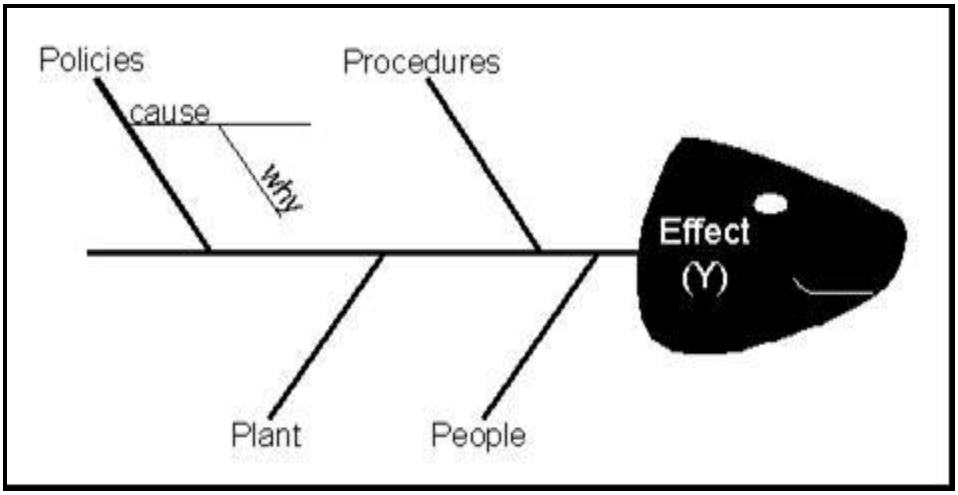
SOME THOUGHTS ON...
ISHEKAWA CHARTS



The Ishekawa Chart is sometimes called a Fishbone chart or diagram. It is a simple yet powerful tool for identifying the potential sources of problems. One form has a horizontal line naming the problem at the right. Four lines branch off at 45 degree angles with major groups of possible causes of the problem. These are labeled "Machine", "Method", "Man" and "Material".

Each of the angled lines has horizontal lines running to the left or right detailing possible causes.

As an example, let us consider a rotary capper such as a Consolidated or Pneumatic Scale. Let us assume that the problem is that caps are not being tightened consistently. The major horizontal line would be labeled "Inconsistent torque".

Branching off the horizontal at about a 45 degree angle would be category lines or "bones". There should be at least 4 labeled Man, Machine, Materials and Method. In some cases there might be more than four, say for environment.

A series of horizontal lines then comes off each of the bones. All possible causes are listed on those lines.

All possible causes of the inconsistent torque would be listed in one of the four categories.

The "Materials" bone will list such potential causes related to materials or components. Examples could include:

-Deformed bottles
-Oversized caps
-Excess mold release on the bottle or other causes
-Poor quality glue

Where Lean Thoughts can become Reality

"Unless you try to do something beyond what you have already mastered, you will never grow."

Ronald. E. Osborn

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"Man" related issues include anything related to or caused by personnel operating the machine. This can include :

-Improper setup or cleaning prior to the production run
-Failure to keep the machine clean during the run
-Improper technique in checking the cap torque. In other words, the torque might be appear to be inconsistent but the problem is that the
operator is not checking it properly.

"Machine" can cover a wide range. It is important to remember that it is not only the capper itself but includes ancillary equipment as well. Machine problems include:

-Damaged or worn parts
-Vibration
-Overheating
-Damaged toque tester. The torque may be OK but the tester may be
indicating a problem.

"Method" includes all problems related to the way in which the capper is operated:

-Speed may not be properly set. This could be a setup problem or it could be a problem of the operator varying the speed during operation.
-The speed of other machines up and downstream may not be properly set
causing problems with the capper
-Over or unde-rfilling the cap hopper can sometimes cause problems.

The above is meant to be illustrative not definitive. Those of you will cappers will probably identify some things I have left out or never experienced some of the things I mentioned. The Ishekawa chart needs to be tailored to each piece of equipment as well as each major problem.

There is also an issue of where to categorize things. Is improper setup an "man" or a "methods" item? It could be classed as either or both. It could even be categorized as a "machine" problem if the machine does not readily lend itself to repeatable setups.

The best time to develop an Ishekawa chart is either before or after a problem occurs. A way to approach this is to develop a blank chart template. A series of templates would be prepared for each machine. To continue with our capper example, a series of blank charts would be prepared with one each for "Inconsistent Torque", "Bottle Jam", "Bottle breakage" and other major problems. Some of the items could be filled in ahead of time simply by talking with the mechanics and operators. To the extent that this can be done, great. The charts should also be viewed as a work in progress. That is, as new problems arise, they should be added to the charts. The charts should be kept in close proximity to the machine to allow ready access when troubleshooting.

In my experience, a lot of time is spent reinventing the wheel in troubleshooting. A tool like the Ishekawa chart provides a means of capturing the information and providing a starting point the next time a similar problem occurs.

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