

Private Advice

FROM THE WORLDWIDE MANAGEMENT CONSULTANCY OF

**KEPNER®
TREGOE**

How to make process control work

BY CRAIG SUTTON



*Craig Sutton, BE,
a consultant with
Kepner-Tregoe*

Process control is back in the news again, this time under the guise of Six Sigma. Many organisations have had disappointing results in the past and one ponders the possibilities this time around.

Kepner-Tregoe has developed a protocol which will deliver quality results. The course of development uncovered some surprising and confronting reasons for the failure of process control in the past. Here are a few of them:

- Poor understanding of the basics of process control. Try this simple test: Ask a cross section of engineers, supervisors, manufacturing managers, and shop-floor personnel what quality is? What is variation and how does it impact quality? What's a Cp and a Cpk and how do you calculate them? What is the difference between special cause and common cause?
- Lack of understanding of what delivers the key product attributes. Ask the same people for the critical variables and what their settings should be? When should they be checked? What needs to be done when they move out of spec? Variation has to come from somewhere and detailed knowledge is required of what the variables are and how and why they impact critical product attributes.
- Minimal understanding of exactly which product attributes satisfy the true customer needs.
- Not having a process to follow. Some organisations know what

process control is but don't have a documented path to achieve it. Not knowing enough about how the process and its machinery works.

- Failure to standardise the process. Before anything is done one needs to standardise a One Right Way to run the process.
- Not having effective tools to remove special-cause problems.
- Not having people competent to use such tools.
- Not involving the right people. You must involve the people who possess or have access to the right technical and operating data. They might work outside the department or organisation; even be former employees or suppliers. They include those who ensure commitment such as team leaders and operators.
- Not ensuring that the performance environment supports progress achieved. Maintaining results achieved and improving on them needs ongoing technical training, clear and commonly understood expectations, immediate quality feedback and the use of positive and negative consequences.

It's a confronting story, isn't it? For detailed discussion of our approach to installing process control or to find out how our Manufacturing Excellence Practice can help your organisation, please contact Craig at Kepner-Tregoe, on 02 9955 5944.

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Getting people to do what you want

BY DAVID BYRUM



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Common questions and comments one hears asked are along the lines of ...

- Why did so-and-so do that?
- Why do different people do the same activity differently?
- How many times must something go wrong before we learn?
- Would I have done it differently?
- How do I get people to do what I want?

If you too are asking these questions, consider this: No person at any level in an organisation comes to work with the express intent of making their day more difficult and frustrating – Given the resources and the opportunity, most people will excel.

If one can accept this statement and take actions that demonstrate this belief then one is a long way along the road to where more people do what you want more often. The key lies in understanding the special definitions of Resources, Opportunity and Excelling.

- **RESOURCES** are the knowledge, skills and tools required to perform at the highest level.
- **OPPORTUNITY** is the positive learning environment where feedback is regular, specific, accurate and expected.
- **EXCELLING** means performing above expectations.

Give your people the knowledge, skills and tools in a positive learning environment and they will meet all expectations.

The importance of people cannot be overestimated in today's economy when competitors have access to similar technology and compete for the same

dollar. When one's equipment is no longer a competitive advantage, your people are your organisation's key distinction and the challenge is to make them your competitive advantage.

In our experience organisations which truly believe in the importance of their people ensure that the following activities receive detailed attention:

- Regular and planned technical training by qualified experts for all employees.
- Specific skill development matrices for every employee and role.
- Development of critical thinking skills.
- Information and access to data to make decisions at the source.
- Encouragement to ask questions and challenge what they are told.
- Involvement based on commitment and information rather than politics or seniority.
- Understanding that **WHY** is more important than knowing **HOW**.

If your people don't do what you want, consider the possibility that they don't know what you want or how to do it. By ensuring that all employees have information to operate at the highest standard an organisation will not only meet but exceed its expectations.

Problem solving – A case of good detective work

BY MICK COOPER



*Mick Cooper, MBA.
MBus(HRM)
Kepner-Tregoe associate*

A major client's continuous sheet steel processing line was experiencing recurring trip-outs on a high-power induction oven used to cure a resin coating applied to the steel just before entering the oven.

Whenever the induction oven tripped-out, the resin applicator rolls would open and allow un-resined steel to go through. This created defective (non-prime) product.

The trip-outs were triggered by thermistors used to sense the temperature of the oven's de-mineralised cooling water.

The cooling water runs through the DC electrical busbars and silicon controlled rectifiers and controls the temperature of the high power electrical system. The quality of the water is very important for safe and efficient operation of the oven.

Several trip-outs over about three months were attributed to faulty thermistors which were replaced.

But Kepner-Tregoe's consultant and the client's electricians began to suspect a more sinister cause lurking in the oven and launched a more thorough investigation.

A problem specification was developed which revealed the need to gather additional data on the temperatures throughout the cooling system.

This additional data allowed several possible causes to be tested against the problem specification, pointing to contamination of the cooling water itself as the most probable cause.

Tests showed the de-mineralised water was in fact severely contaminated, causing deposits to form on the inner walls of the cooling tubes,

hence reducing flow rates, particularly through the smaller tubes where the thermistors had operated.

Problem solved. But not quite. The next question was: "Why was the cooling water contaminated?"

Answer: Instead of using de-mineralised water, the maintenance team topped up the system with ordinary tap water. They didn't know it was necessary to use de-mineralised water and had turned off the automatic de-mineraliser because it frequently broke down.

The good news is that chemical flushing removed the build up of contaminants; the maintenance people were trained on the need for de-mineralised water and how to maintain the make-up supply system.

If this problem had not been identified, serious damage could have occurred resulting in costly repairs and extended downtime for the oven and resin coater.

It was a lesson on the benefits of thoroughly investigating seemingly minor recurring problems, and on the importance of extending cause to uncover the root cause of a problem in order to implement a true fix.

How do YOU perform?

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SNAPSHOT SURVEY

Your Organisation's Process Control IQ

This is the first snapshot quiz of a series being conducted among our readers. We're interested in how you score so fax your answers – anonymously if you like – to Kepner-Tregoe and we'll collate everyone's results and publish them in a later newsletter. Any questions, phone 02 9955 5944.

When complete,
please fax to
02 9955 1625

Or

mail to
**Kepner-Tregoe,
Management
Consultants
PO Box 1333
North Sydney 2060**

QUESTIONS	SCORE	QUESTIONS	SCORE
1 How many different ways is your equipment operated?		5 How do you identify problems?	
<ul style="list-style-type: none"> <input type="checkbox"/> One 12 <input type="checkbox"/> More than 1 0 		<ul style="list-style-type: none"> <input type="checkbox"/> Monitor trends 6 <input type="checkbox"/> Rejected product 2 <input type="checkbox"/> Formal pre-control procedures 8 <input type="checkbox"/> Customer complaints 0 	
2 What % of your operational staff can explain Cp & Cpk?		6 How confident are you that direct line staff could tell you critical variables on your line(s)?	
<ul style="list-style-type: none"> <input type="checkbox"/> 0-50% 0 <input type="checkbox"/> 50-75% 1 <input type="checkbox"/> 75-90% 2 <input type="checkbox"/> 90-100% 4 		<ul style="list-style-type: none"> <input type="checkbox"/> Very confident 8 <input type="checkbox"/> Confident 6 <input type="checkbox"/> Not confident 2 <input type="checkbox"/> No idea 0 	
3 If things are operating below expected what do you do?		7 How many variables do your people control for each product attribute?	
<ul style="list-style-type: none"> <input type="checkbox"/> Go on gut feel to fix 0 <input type="checkbox"/> Use experience to fix 2 <input type="checkbox"/> Collect data & analyse to fix 6 <input type="checkbox"/> Consistently use formal problem solving tools to fix 8 		<ul style="list-style-type: none"> <input type="checkbox"/> 1 8 <input type="checkbox"/> 2 6 <input type="checkbox"/> 3 4 <input type="checkbox"/> >3 1 <input type="checkbox"/> Don't know 0 	
4 How much technical training does your organisation do?		8 What % of people know what the critical product attributes are?	
<ul style="list-style-type: none"> <input type="checkbox"/> Once/month 12 <input type="checkbox"/> Twice/year 6 <input type="checkbox"/> Once/year 2 <input type="checkbox"/> Never 0 		<ul style="list-style-type: none"> <input type="checkbox"/> <50% 2 <input type="checkbox"/> 50-75% 4 <input type="checkbox"/> 75-100% 8 <input type="checkbox"/> Don't know 0 	

Snapshot Survey continued

When complete, please fax to 02 9955 1625

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North Sydney 2060

QUESTIONS

SCORE

- 9** What is the average Cpk for your operation?
- <1 2
 - 1-1.3 4
 - 1.3-2 8
 - >2 12
 - Don't know 0
- 10** How do I know that I need to use DOE techniques?
- Whenever I have a problem 0
 - All special cause removed 4
 - Reject rate going up 0
 - Don't know 0
- 11** What proportion of line(s) have documented procedures that are followed?
- All 8
 - Most 6
 - Some 2
 - None 0
- 12** How do your line staff receive feedback about performance?
- Real time 8
 - Customer complaints 2
 - Supervisor 6
 - They don't 0

How you scored:

- **75 – 100:**
 Excellent result –world class or well on the way there. Most of your processes probably exhibit Cpk's of 1.33 or greater and customer complaints are rare.
- **50 – 75:**
 Well done – Your team understands what's involved in process control but you probably still need to achieve consistency across your operation.
- **25 – 50:**
 You're on the way – but have a long way to go. Your processes, if being measured, probably have Cpk's of 0.5 – 1 and rejects and high variation are common.
- **0 - 25:**
 A low existence of basic process control principles. Make an effort to build understanding of the process and equipment and remove special cause variation.

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Kepner-Tregoe helps management to meet critical business needs with solutions which our consultants have proven to be successful all over the world.

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How to cut costs without cutting people

BY ANDREW SLIMMING



*Andrew Slimming, B.E.
(Chem) Hon, a team leader and
partner with Kepner-Tregoe*

Quality is taken as a given these days with customers expecting on-time delivery and excellent service while their reduced willingness to pay for it all relentlessly erodes profit margins.

Repeated headcount reductions, outsourcing and cost cutting exercises have typically seen costs reappear. How then does an organization significantly reduce cost in a way that does not allow it to creep back somewhere else?

One answer is to address the cause of the spending rather than its symptoms. In our experience there are two significant types of cost incurred by a manufacturing organisation – structural cost and operational cost.

Focusing on the savings opportunities in an organisation's structural cost we find it is driven by three factors:

- The products it makes
- The customers to whom it sells
- The systems and procedures that it uses

Clearly, an organisation with fewer products in a tighter range, fewer customers, and that is focused on critical activities will have a lower cost base than an organisation that encourages a wide variety of products, a large number of customers, and many non-critical activities.

Focusing on setting up an organization with a lower level of structural cost can allow an organization to either compete more aggressively on price, or to significantly increase their returns with the same market conditions.

A current example in Australian retailing is the arrival of the Aldi supermarket chain in Sydney. This chain has been very successful in Europe and is bringing its business recipe to Australia.

Aldi competes on costs and its structural cost base is kept very low by doing several things.

FIRSTLY, it is reported to stock only 800 items, most of which are available in a single size only. Compare this with a typical supermarket which stocks some 16,000 items.

SECONDLY, because it has limited the number of items, it can structure the rest of its business to take advantage of all possible savings. It stores items on pallets or stacks boxes rather than using shelving; display cabinets are not needed because items don't compete for attention; computer systems are simpler; inventory management is simpler, allowing easier stock replenishment, and lower inventories.

Most organizations appreciate that the 80/20 rule applies to their business and they often try to focus on the high volume end. However, the empirical extension of this, is the rule of 50/5 - the lower 50 per cent of an organisation's activity generates less than 5 per cent of added value but causes 20 to 30 per cent of non-material cost. Aldi has come to grips with the cost of this lower 50 per cent. What about your organization?

It's not easy to substantially change product offerings, customers, or internal systems to drive out structural cost, but it can achieve significant improvements in cost performance and still leaves the people in whose capability one can continue to invest.

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