What is considered a poor quality code?

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Introduction

In our previous article we talked about how coding equipment in factories is fundamentally reliable, but people, the environment and other fairly random production line events can result in one or a number of badly coded products in a production run. Depending on the markets you operate in, or who your customers are, this can be a serious legal or commercial problem.

Not only is the event that causes the problem to occur often random, but the consequences to print quality of that event are also quite unpredictable, resulting in perhaps

- No code
- The code printed in completely the wrong place
- A partial code being printed
- Deformation of the code – squashed, stretched, slanting or small sections missing

Real life examples

Now let's check that list again alongside some real-life examples:
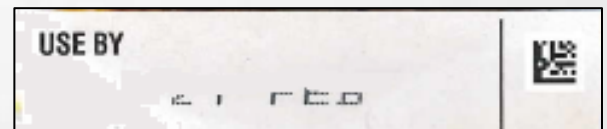
NO CODE:
that's the easy one

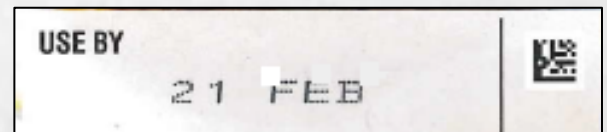CODE IN THE WRONG PLACE:
probably unacceptable

But what about this one….
CODE PARTIALLY OUT OF THE BOX:

A PARTIAL CODE:
Unacceptable

But what about this one….
PARTIAL CODE, BUT LEGIBLE:

DEFORMED CODE:
Squashed but legible

What is acceptable?

Maybe you can start to see the problem here? Sometimes it's obvious it's a bad code and you would want to do something about it. However, very often, like the deformed codes, our brain can clearly see they are not really 'right' but many would also say they are perfectly acceptable to go to a customer. Afterall they are legible and there is no doubt what they actually say. Maybe so, but I would lay odds that you could put six QA managers in a room and watch them argue about whether some of these examples are OK to go to their customer. And therein lies one of the problems – Quality is often a subjective judgement and sometimes even humans will not agree on that judgement.

Last time we concluded that an automated system was needed to 100% inspect printed codes, but how do we write a rule book (aka software) for a machine to decide whether to pass or fail a product when a group of humans can't necessarily agree on what is good or bad – or at what point does good become bad ? Finding a method and practical working solution to this dilemma is obviously going to be critical.
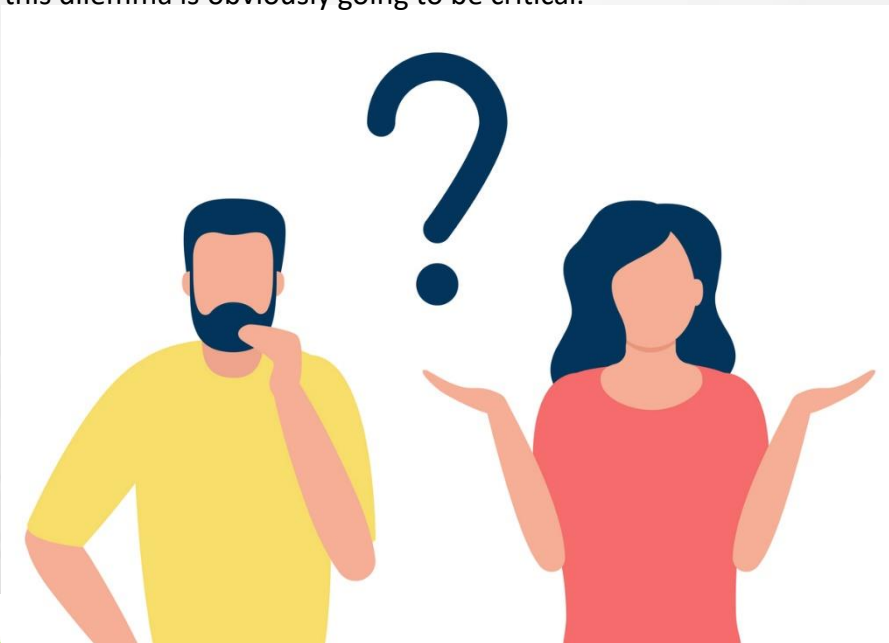
Is a bad code better than no code?

Very often our first engagement with a customer on the subject of bad print quality detection goes something along the lines of 'I just want a system to tell me there is something in the date code box'. Trying to simplify the problem is understandable, but in engineering or technology those pesky, irritating details and nuances of a problem have a habit of returning to bite us. When we really understand the causes of the coder problems and the effect they may or may not have on the way the print looks, what's required is a lot more subtle than just saying there is something in the date code box. Just imagine for a moment, standing in front of a major retailer, your customer, trying to explain that the blob of ink in the box which resembles no recognisable characters was passed by your automated quality checking system because there was 'something' in the box. That sounds like a difficult conversation doesn't it ? However, low cost, entry level print mark detection systems will do just that and very little more than that.

When you look at all the possible manifestations of a 'bad code', it is really important to assess whether the capabilities of an inspection system adequately cover the bases you are most concerned about before settling on the low cost, 'easy' solutions that may be on offer.

Nuisance stops

Now let me introduce you to the phenomenon we call the 'Nuisance Line Stop'. Picture this, your line is running just fine and then suddenly your in-line print quality verification system starts filling the reject bin with product or stops the line. Your operator investigates and picks up a few packs – they look fine, perfectly legible, maybe a bit squashed up but not worth stopping the line for. They reset the line and carry on – you just had a Nuisance Line Stop caused by your automated quality checking system.

If you are familiar with production lines, especially high volume ones, you know they don't just switch on and off instantly without a hitch, like a light switch. Every time you stop it you might need to coax it back up to full speed again and endure other unrelated stoppages – a kind of domino effect of unintended consequences. If nuisance line stops become a habit, production is severely impacted and if the reason for the stop makes no sense to the people on the line, the quality system soon gets turned off. Don't blame the technology – it's just working to its rulebook and it saw something that broke its rules. It doesn't have human discretion, but that doesn't help solve our problem.
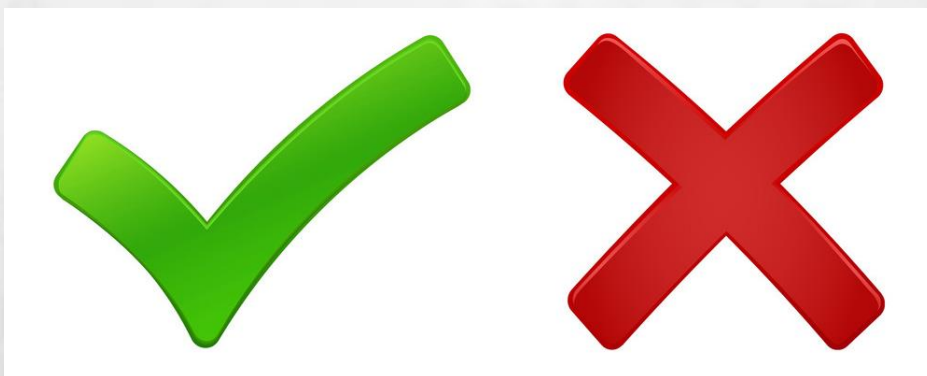
Next steps

We will come back to the nuisance line stop next time, as we start to explore how technology can tackle the issues raised in our first two articles. You may feel we have raised more questions than answers, and you would be right – deliberately so. Too many times the technology solutions to this problem are promoted as 'simple', 'cheap' or 'easy' by technology vendors. In our experience, none of these adjectives should apply but some customers only find this out after their money is spent.

A less financially painful approach is to understand the issues first and make a proper assessment about whether the solution really meets the need – which starts off with asking the right questions about what you really need it to be able to do.

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