Keeping the
balance

Technology is changing the face of plant bakery machinery, but a balance must be struck between sophistication and usability, says Andrew Don

State-of-the-art machinery, with computer chips and touchscreen wizardry, is what 21st century bakery is all about – as it is elsewhere.

Geek jargon, such as programmable logic controller (PLC) and Scada (Supervisory Control and Data Acquisitions), is increasingly common parlance in the trade. Yet not everyone is overjoyed: highly-skilled traditional bakers have finely honed senses when it comes to the manufacturing process and they know how to implement the smallest of mechanical adjustments to ensure their product emerges just right.

John Foster, managing director of Barnsley company Fosters Bakery, says: "Skilled bakers can feel the machine and have tiny little micro-adjustments they have made and developed throughout their careers that keep the product right." He says that, for this reason, highly-skilled bakers hate the way computer technology makes the adjustments for them, but the less skilled like it because they can achieve a little more.

The long-term trend to integrate computer technology in plant bakery equipment has prompted Fosters to go with the technology flow, because "we cannot go backwards and we cannot buy old-fashioned equipment. We have to learn more and start learning different techniques." But Foster worries increasing computerisation will make the company more dependent on suppliers for resolving software issues, even though he is a bit of a computer whizz himself.

"My chief engineer, to some degree, likes to specify some of the equipment and we make sure we don't buy equipment if we cannot buy spares generically. We want to maintain it ourselves and source immediately if there's a hitch.

"Over-dependence on suppliers worries me. It makes them lazy, because they don't have to be keen on price or give service."

Foster says he keeps having to point to the sign on the building when suppliers visit. "We are Fosters bakery, not Fosters computer company," he is quick to remind them. "It's bakery that matters," he says. "When people are wowing you with technology, it is easy to drift from the objective, which is to bake better bread, and we never forget that."

Nowadays, Foster takes several people with him to check out prospective new machinery. "From an operator's point of

User-friendly navigation has enabled many more features to be included in oven design

view I need to know what it is like, from an engineer's point of view about keeping it going and then, from a traditionalist point of view, whether it can bake good bread."

Jonathan Brace, director at Brace's Bakery, in Crumlin, South Wales, believes technology should be embraced. But, as with most other things, having an expert on hand is key to help with problems you are unable to fix yourself. "For Brace's, the PLC has been a godsend in electric panel design in terms of freeing up space and being simpler to replace, with many more functional possibilities also available," he says.

And he notes that the learning curve to use equipment with integrated computer panels and software is similar to any machinery, but with PLC it is possible to build in better safeguards so that the operators do things in the correct order. "The amount of data you can capture from the machine is better – whether data is historical or in real-time. This allows you to have Scada, where a process plant can be monitored continuously and policed to ensure everything is working within given parameters and it is also possible to alter a parameter remotely when required."

Mono Equipment launched a new "state-of-the-art" touchscreen controller on its Eco-Touch range of convection ovens about a year ago. It says the screen is extremely user-friendly and intuitive, incorporating simple, easy-to-navigate menus that utilise a combination of ▣

THE £2M QUESTION

Europe has standardised on the one operating platform on which to support bakery technology – Siemens. This makes life simpler for equipment manufacturers, gives bakers much greater flexibility and cuts costs.

However, the UK market operates using a wide variety of platforms – Mitsubishi, Rockwell and Siemens, to name but a few. One equipment supplier to the baking industry estimates that UK bakers would save £2m per annum if they standardised on the one platform used by the rest of Europe. This would also ensure all equipment used in all bakery plants would be able to talk to each other.

So the question is, why doesn't the UK adopt one standard platform?

icons and text. The icons are all-important when bakeries frequently employ people of greatly varying literacy.

Touchscreen technology has exploded into all our lives in recent years, with the likes of mobile phones and other portable devices, ticket machines, airport self-check-ins and supermarket self-scanning for example. Roy Kitley, senior international sales and marketing manager, says this has made Mono's customers more comfortable using this kind of technology.

However, he says the technology has also enabled many more features and benefits to be incorporated into oven design, such as an energy-saving sleep mode, a seven-day timer, a multi-bake function, an auto-shutdown, voice prompting and a USB programming facility.

"The clever use of product images and graphical elements ensures that even some of these more advanced features are very accessible, simple to programme and easily 'read'," he says.

Mono believes it has got the balance right. "In fact, the use of technology can actually aid and simplify the communication of more advanced functions and opens up the opportunity for added functionality, which may not have been possible before," Kitley says. "Many of the more complex settings and programming parameters are held in password-protected areas, so the standard day-to-day user doesn't even need to know they exist."

Now, networking of machinery is becoming widespread in modern bakeries, so equipment can communicate across a network, allowing bread plants to instruct other equipment such as retarder provers, setting themselves to the correct profile in readiness for the bread product being produced. The provers, in turn, instruct the ovens to pre-heat to the correct temperatures and bake times when the proofing cycle is reaching completion.

Kitley believes that as networking becomes more widespread, wireless communication will replace wired data networks along with more powerful controllers, allowing more intelligent control between equipment with maximum utilisation of bakery machinery. "Smart monitoring" will ensure ovens and similarly high-power equipment are used to optimum benefit to cut running costs. "This will also provide real-time management information on every stage of the baking process," he says.

Rondo says current software packages allow the company to integrate easy-to-follow, but detailed, maintenance and hygiene schedules into operator interfaces. Richard Tearle, general

Above left: Rondo says user interfaces are easier to follow; above right: Mono's Omega Abstract Screen

manager, says: "The gentle processing of the dough band can be precisely adjusted quickly and easily to accommodate changes in consistency, temperature and other important factors."

Tearle says the challenge is to keep the operator interface simple, easy to follow and adjustable, while making sure the integrity of the program is protected from corruption or error. "This is usually achieved by intelligent use of symbols and diagrams. I believe that, in general, we are getting it right."

Peter Raaijmakers, product manager at Rademaker, says current changes taking place in plant bakery machinery are to increasingly reduce the required learning curve for the operators. But how far could development go? Rademaker believes the complexity will increase, which Raaijmaker says is needed to increasingly become more efficient in terms of personnel and manufacturing accuracy "More and more high-tech equipment is going to be needed and we will make sure it can be operated as easily as an iPhone," he says.

Bakery with bytes might be all the rage, but British baking is probably still some way off from fully automated plants and a redundant workforce.

However, Mono says it has worked with a client to integrate its confectionery depositors to run with a robot line, allowing fast handling and loading of trays, removing the need for human intervention. Now that will give businesses food for thought. ☐

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