



# Bridging

*Any TPM programme stands or falls by the relationship between maintenance engineers and machine operators. Annie Gregory asks how you can undo the animosity of generations*

**W**hen Richard Wild-Jones was a young engineer at British Steel, his team used to call the meeting between maintenance and production 'the morning mauling'. Years later, as the Manufacturing Institute's TPM lead practitioner, he still remembers the feeling of stepping into the lions' den to be ripped to pieces. I, too, recall something akin to guerrilla warfare where each side made

lightning raids from deep cover to stick a knife into the other's credibility and competence.

Bluntly, the relationship between engineers and operators has never been easy. It may explain why so many manufacturers have fought shy of TPM (total productive maintenance) even though champions like MCP's Peter Gagg can prove that it regularly brings productivity improvements of 20-30% with immediate benefits to the cost base of

any business. Gagg defines TPM with deceptive simplicity: "A commonsense approach to continuous improvement with the aim of maximising equipment efficiency by creating a sound and lasting relationship between people, processes and equipment." He points out that it is all about encouraging operators to take greater responsibility for equipment by keeping it clean, attending to minor faults and taking action to increase

performance. It is not just about passing maintenance activities to production or keeping the workplace tidy. Note that reference, however, to 'sound and lasting relationship'. Industry is pretty comfortable handling tangibles like process changes. It is, however, notorious for putting intangibles like feelings, resentments, and – most of all – cultural divides on the 'too difficult' pile. Yet if these are ignored, no TPM programme stands an earthly. It takes time and sustained patience to change attitudes.

So how do you get TPM right? Let's take a look at two companies which met the difficulties head on and found different, but equally effective, ways of solving them.

#### Pivotal role

Dave Fishwick is operations engineering leader at Johnson & Johnson Wound Management, a division of Ethicon, based in Gargrave, North Yorkshire. He played a pivotal role in the site's introduction to TPM, as part of a successful company-wide drive for accreditation under the ME2 (Manufacturing Excellence<sup>2</sup>) benchmark. Previously Fishwick had been with MCP for five years, implementing TPM at sites UK-wide. Even more importantly, however, he himself began as a fitter and has years of shopfloor

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*Dave Fishwick, Johnson & Johnson Wound Management*

knife and it would work, then I could get on with what I am supposed to be doing'. But it gave many opportunities for quick wins. "You don't like the colour of the machine? Paint it. You can't see through guards? We'll put a clear one on. You haven't got the right tools? We'll put a shadow board up – what tools do you want?" Simple things like quick release units and steel rule bars for machine settings allowed operators to do safe line changes without tooling. Tradesmen merely had to be on-hand at start up. "It was about getting them working and thinking together – and believing this isn't a bad place to work. It brought respect to both sides."

The most unusual aspect was Gargrave's decision to put tradesmen and operators in key areas through the same NVQ Level 3 qualification in operator asset care (OAC). Much of it was as new to the technicians as it was to production. "They were looking at

handling preventive maintenance (PM). Tradesmen, section leaders and operators now arrange the release of assets among themselves: "It gives everyone more ownership." The operators also take more responsibility for the long-term efficiency of the machinery. While they run through start-up and health and safety checks, they are also looking through new perspex screens for potential problems like frayed drive belts and oil leaks. The check sheets now include fields for visible wear of machine parts. The section leader accumulates the data weekly for maintenance to investigate when machines are not in production.

PM is scheduled on a new Maximo maintenance management system and every operator uses it to log jobs. Fishwick and the engineering administrator trained them all: "We have Maximo surgeries so they can raise issues or ask for more training." There was no reluctance to learn, but a little fear from those who hadn't used a computer before. "We made it as simple as we could and they have taken it up brilliantly." Tradesmen were more sceptical; they had doubts about Big Brother knowing the time spent on each machine. "But we assured them it was simply to capture what is happening to build a complete history of the machines."

A major part of TPM's success comes from a no-blame culture throughout its introduction. "If they need to stop the machine, it's not

# the divide

experience as both team leader and manager. He understands the Great Divide: "They are working rapid machines and we are there to fix them. From their point of view, we are in blue overalls, earn loads of money and do not do a lot." To him, the only way to help people change is to get them working together.

So the first step at Gargrave was to form process improvement teams (PITs) drawn from both production and maintenance. At the weekly meetings "ideas soon came banging off the wall". Initially, they tended to be "whinge lists": 'we can never get a fitter or an electrician', or 'we don't have enough tools or material', or 'all he needs to do is clean the

operator issues, and the flow of product." It ended the attitude of 'I'm a fitter – I fix the machine and I don't want an operator touching it'. Today, every asset has what he calls a 'Haynes manual', containing detailed photographs and procedures. Both tradesmen and operators have had input and the former trains the latter in their use (right). It means the layman can set the machine up and change it over, referencing pictures of good and bad output. In this highly regulated environment, everything is documented and updated on a regular basis

Fishwick says the whole working atmosphere is better. Notably, it shows in



their fault. An operator is running that machine constantly – they know when it isn't right. In the old days, they might have been told 'It's OK – just get on'. Now technicians listen: "Operators may well be giving valuable input to fixing the problem. We have built respect and seen a lot of changes because of it." OEE (overall equipment effectiveness) and productivity have gone up significantly but, even more importantly, Fishwick feels morale is higher, too. Currently 14 technicians and around 150 manufacturing people have been involved in TPM. Now the NVQ programme is gradually being widened and operators are being given a chance to add to their skills and move on into team or section leaders' roles.

### The cornerstone

As we reported in *WM* Jan (p31), TPM has also been the cornerstone of Blackburn MicroTech Solutions' (BMS) drive for performance improvement. In one complex process alone, OEE has climbed from 52% to 68%. This Lancashire division of LP Displays, which makes and develops cathodes ray tubes and LCDs, laid the foundation for TPM through extensive lean activity including 5S. It worked with the Manufacturing Institute to mount an initial programme of workshops. Operations manager Chris Wright says much good came from it, but BMS probably tried to take the whole thing too fast. "If you ask too much, people start to switch off." BMS faced the same old attitude problems that both Fishwick and Wright recognised from numerous other places. "It took time to get them to see we were all in this together," he explains. "It's getting the confidence, credibility and the trust – and if you haven't got that, you cannot build on the journey. It's a culture; it's a

lifechange – not a mend. TMI was good on the hard parts – the 'how to' – but we needed the softer skills, too." So the whole programme was broken down into small, manageable

**Left: Dave Fishwick, operations engineering leader at Johnson & Johnson's Gargrave site**  
**Above: the 'Haynes manuals' are detailed work instruction files**



chunks. This technique is finding wider favour. MCP, for example, has developed what it calls 'a quicker and gentler approach' to TPM. It is based on small engineering/operator teams changing practices in their own areas rather than relying on site-wide, management-driven processes like formal TPM. Gagg says it eliminates the one-size-fits-all approach.

At BMS, Wright took three people out of work to act as full-time facilitators: the Six Sigma champion, an engineer and a process engineer who had good teambuilding skills. "Between them, and teams of operators and technicians, they gradually tweaked and adjusted. The framework is the same but they modified it to a process that works for us with full buy-in." Like Fishwick, he says the key was taking small irritants that were maybe not even measurable, "but everyone could see the change made their lives easier, and it was common sense rather than over complication."

BMS also used its engineering skills to design its way out of problems, looking for simple things like indicator lights so operators could see at a glance when something was running out. Operators took photographs so teams could work together on basic things that needed changing. Wright had a swift answer to the normal engineering fear that deskilling maintenance posed a job threat: "If we can't pass this down and have confidence it will work, how can I progress you to do the things that really interest you, instead of your firefighting?" A few small things were fundamental in changing attitudes. BMS ran a mini ideas scheme with a recognition voucher, driven by a 'go do it and give me solutions' ethos. So the operator that spots something spilling on the floor and buys a plastic tub from B&Q to catch it fits the bill. "Of course we

need to look at the root cause," explains Wright, "but in the meantime, he's containing the problem, making it visible and improving the environment. That's the kind of responsible, problem-solving attitude that BMS is trying to engender."

The main cultural change, however, came through making the operator the customer of engineering. It reverses the normal factory floor hierarchy but it is actually not as one-way as it sounds. Technicians are now running their own teams. They are the process owners and, for appraisals, they are reviewed against established measures. Wright says they will get whatever training and skills they need to help them, including Six Sigma, lean and kaizen. But the operators are developing standard operating procedures under their guidance, which they verify so they are working together in a customer-supplier relationship. "If it is done right and the operators are trained, they are not coming back to fix things that are broken," explains Wright. From the operator-customer point of view, there is redress for the things that really frustrate them. The engineers have a duty to sit down with them, listen to their issues and come up with a technical solution. "So it's not 'us and them' any more," says Wright. "It's a respect for what the technicians are really doing and there is also a respect from the technicians about the frustrations the operators have endured. It's teamwork."

Operators and technicians have a stand up meeting with Wright and the TPM manager every week and they are audited on OAC and conformance to OEE. More and more is being passed down to the operators doing the checks. Technicians are accountable and responsible for TPM sigma projects and they report back to Wright on critical projects. These are also reviewed on a daily basis with the TPM manager and filtered down to the shopfloor for the teams to work on together. Wright says management's key role is to make sure there are no roadblocks to the teams' solutions.

It all comes down to two simple words, 'respect' and 'teamwork', yet together they hold the key to bridging the Great Divide. ■

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