

Plant lifecycle management seemed a grandiose idea, applicable only to the few, just a few years ago. But as manufacturers begin to realise the benefits of integrating elements of their PDM, ERP and maintenance systems, it's heading for mainstream. Brian Tinham reports

Where does asset management meet maintenance management? It's not an abstruse question. If you're in oil and gas, chemicals, the utilities – any sector where the plant infrastructure is large, complex, has a long lifespan involving considerable change and interactions from different departments (just one of which will be maintenance) with different agendas along the way – total asset management is just that. And it's critically important: put simply, plant lifecycle management, because that's what it is, brings order and efficiency to an otherwise chaotic and very expensive engineering world.

Karl Venter, business development manager at asset information management (AIM) IT firm Quillion, which to date has specialised in oil and gas, transport and the utilities, says we must remember this distinction. And, he argues, it's not the same as product data

The most underrated killer application?

management (PDM) systems, or their derivative product lifecycle management (PLM) systems. Whereas these are focused on "engineering and manufacturing from the perspective of detailed BoM (bill of materials) explosions," AIMS achieve their more holistic objective by focusing on products "only at the gross level. The emphasis is on commonality, defining aspects of products and plant infrastructure unambiguously through standards to facilitate data sharing and interchange."

He points to Railtrack, for which Quillion has been implementing a major AIM system under a five-year contract, to help it with its "desperate problems of information sharing in the shattered industry that emerged from privatisation." Starting with the West Coast Rail Modernisation project, Quillion has been building a data model and data repository designed to capture all asset data, through which every agency can have traceable, auditable access and participation.

It's all based on standards, notably ISO 10303 and STEP for exchanging product model data ("with a family of Application Protocol 'flavours', like AP214 for aerospace and defence and automotive") and ISO 15926 for data sharing. Quillion took these and developed a "hub and spoke" IT infrastructure founded on an

asset data repository into which everything else connects, with workflow, triggers and so forth. The point is to enable sharing and management of all asset data across the divides of discipline, systems and lifecycle phases – "design, analysis, assembly, commissioning, operations and management, to disposal".

So how relevant is this to the broad swathe of manufacturing? "Saab Aerospace is using an AP214-based collaborative engineering environment with the same fundamental attributes of STEP," says Venter. "And we have an electronics industry client making disk drives that's using our data models." OK, but this is big-ticket stuff. "We're focused on the E1 million-plus projects," he agrees, and he concedes that, for many, their ERP and maintenance management packages "are perfectly capable". His only caveat: "almost never in a complex engineering environment does nothing change."

That being the case, could Quillion scale down costs and scope? "Of course we could," says Venter, "using standard data models and allowing the users to do most of the configuration..."

Actually, 'scaled down' asset management of sorts is happening all around us, and BAE Systems provides an excellent example. In June 1999 the firm went live





with a system from Datastream at its Warton site – in addition to its existing maintenance management IT (also Datastream) – to look after tooling and equipment used for aircraft component manufacture and aircraft testing. Its objective was to track and manage the tooling lifecycle, from acquisition, through receipt, on to use and finally disposal – the key point being to ensure absolute aircraft safety through total accountability.

Right every time

In this it has succeeded 100%. According to Steve Frost, BAE Systems' logistics manager responsible for tooling, the system "ensures the right tool is in the right place at the right time and in the right condition." Datastream's MPSi system on Oracle provides the hub, running via BAE's NT site network, with barcode readers monitoring tool movements, condition, calibration, transfers between departments and so on. The system has already been rolled out to the whole Warton site, and is now being extended to BAE Systems Salmsbury, with completion expected mid next year, while it's also integrated with BAE's Baan ERP system.

Keith Hartley, senior logistics planner for asset management, says, "the benefit is we now have a total picture of all tooling on the site." And compared with Warton's earlier mix of CTMS, multiple independent databases, spreadsheets and legacy systems, that's a major move forward. But that's far from all: Frost points also to its cost avoidance. "We've saved literally thousands of man hours that would otherwise be wasted when you can't find the right tool – and when you do it's out of calibration and you can't use it."

Meanwhile, at the other end of the spectrum – disposal – having such a tight handle on tooling has

Financial Management

Operations

Maintenance

"allowed us to reduce tooling inventory in one area from 120,000 tools to 30,000," says Frost, "and we've closed down a complete warehouse". That's a serious piece of additional cost justification for anyone. Indeed, Frost and Hartley, while conceding that BAE is something of a special case, both insist asset management like this applies every bit as much to the vast majority of mid to large scale manufacturers. As Hartley says, "for lean manufacturing you need this."

Integration is a key word here. But Michelle Hoy, technical services manager at MRO Software (formerly maintenance management IT firm PSDI whose Maximo systems are used throughout manufacturing), says integration projects to date are still relatively few. Additionally, whereas the vision might be integration of maintenance management with production systems via



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ERP, actually those remain extremely rare.

"Most of the integration work we do is with their financial systems, so companies can see what those assets are actually costing them, and with their materials procurement side," she says. Although Maximo also tracks machine downtime, product quality and the rest, and schedules maintenance, materials requisitions and so on, there's virtually no call for links into production. "I know of only one client that's doing this."

She's right. Everyone I speak to agrees this is important, but few are doing it. Ian Farquhar, for example, business improvement and IT director at Rolls-Royce Combustion Systems' Hucknall site, says, "Integration with production, procurement, inventory management and quality systems, as part of the ERP system, is certainly the way to go." But while it's clear that maintenance itself is taken very seriously, with a huge emphasis on everything from workplace TPM (total productive maintenance) to facilities management powered by MRO's Maximo, full integration is yet to happen. Says Farquhar, "At the local level SAP R/3 capacity planning is fed by maintenance scheduling, so production can plan around it [but] it's not linked to production in any automated way."

So many benefits

David Scott, business resource planning manager for Kings Lynn-based pharmaceutical dispensers manufacturer Bepak, is another who agrees it makes sense, but hasn't done it. "It means that maintenance planning is visible, so you can plan production better; you can link spares into materials ordering; you can almost do Kanban with it so you don't have such a large spares inventory; you can plan spares stock and turn-round based on history. I could go on."

And he does: "If you integrate with the quality systems you can see problems that might be down to maintenance of the machines, and ways of resolving them quickly. You can also put on all equipment calibrations – and plan when all that's needed. And there's another aspect: customers can gain confidence where their machines are concerned."

For Scott visibility of capacity is particularly impor-



tant for customer service. "We need to know availal capacity not today or tomorrow, but certainly next week. We have S&OP (sales and operations planning) meetings with Glaxo and we need to declare the next three months capacity – and that means machir down, everything." Integration, he says would help keep the company informed yet flexible.

So why hasn't Bepak done it yet? Scott says it's simply a matter of priorities. "We'll do it," he says. "We've already got all the software in [SAP] R/3; it's just not configured. And in consulting terms it's not a large sum of money: £30–40k. We'd get ROI (return on investment) quite easily in a couple of years."

Simon Rothwell, MRO's alliances director observes, "As with most things, ideas and vision are running ahead of implementation. You know, asset management started in the late '80s as work management packages – being more intelligent about scheduling jobs. In the '90s that evolved to asset and work management to provide better visibility of lifecycle costs with MTBF assessment and a better understanding of 'first time fix' rates, and more information to engineers about tools and parts.

"Then we saw integration of these with financial systems, inventory systems, purchasing systems through ERP. Now the vision is 'asset supply chain linking externally for e-procurement.' Where are we today? "70% are still doing work management on 27% are starting to move towards asset and work management. No more than 3% are starting to look at asset supply chain integration." As for integration with production, he says: "It's 18 months to three years away."

For him, 'asset supply chains' are the here and now and he insists there are tangible and immediate benefits. "Blue collar MRO (maintenance, repair and operations) work is very different to white collar e-procurement," he says. "Contract compliance is a real problem in maintenance parts purchasing; it's less than 20%. We thought it could be taken for granted, with purchasing departments having identified suppliers and set up best price deals so that organisations could realise the benefits. But on the plant floor it's still the biggest headache. Companies may deny it, but we've seen it."

Maintenance people, he says, order what they want from whom they want because mostly the order metric is keeping that machine going. "It's very different to purchasing negotiating pan-European deals for production MRP materials. Maintenance by its very nature is dealt with by local distributors who keep critical parts in stock and can make them available fast."

And he continues, "Procurement systems generally haven't been used because they're not adequate; they need the BoM (bill of materials) to be visible and linked to preferred vendors." Needless to say, MRO Maximo does this, and the promise is control, with the right material from the right suppliers at the right time, the right tools and the right work orders.

Sounds like your site? ■