David Trowell’s sunny outlook for manufacturing software company Seiki Systems, of which he is general manager, is in keeping with its location. He has a fantastic view of Brighton Pier and the sea from his office window. And on the day Machinery visited him there was a cloudless, blue horizon.

But it’s not just the weather and the view. Part of his bonhomie is down to the fall-out from MACH (see Machinery, 4 June, page 27). “We’ve seen twice as many sales leads compared to the previous two MACH events,” he reports enthusiastically. “Senior people were asking us searching questions because they were choking to death on paper,” he says. “Companies realise they can’t compete because they are not responding quickly enough to customer demand, or are not quoting accurately.”

And Manufacturing Execution Systems (MES) offer an answer. These connect the shopfloor to production management/planning software packages, such as Enterprise Resource Planning (ERP), providing a closed-loop information system. Seiki Systems has been delivering shopfloor-based information via its products for years, but now it has collaborated in the development of software that ties this together with ERP software.

**GOOD TIMING**

This upturn in interest for integrated MES is good news for a software vendor in the machine tool business and vindication of the decision to invest in a product demonstration area, shown for the first time at MACH and now dominating an entire floor of Seiki Systems’ office. Mr Trowell reckons that there’s a huge potential market for true, integrated MES at the SME level. “70 per cent of SMEs do not have it,” he laments.

And, on the face of it, Seiki Systems has come up with an answer in the form of an international three-way partnership between itself, Munich-based Fauser AG and JobPack of Chicago in the US. This has created a pool of 16 manufacturing software development engineers that have produced a totally integrated manufacturing execution system (iMES), for any production company using CNC machine tools. Mr Trowell describes the tie-up as a meeting “of like-minded people.” Indeed he claims that preliminary discussions on interfacing the companies’ various systems “took just an hour.”

Such collaboration is not unusual in the software world, but what sets this apart, according to Mr Trowell, is the creation of one integrated database shared by the ERP system and a scheduling tool. Up until now “there had been no real-time scheduler in the UK.” And it operates at the operational, component or assembly activity level.

There is some history between the three companies. JobPack is in fact the US distributor for Seiki US, while Mr
Trowell claims personal friendship with Michael Fauser, head of the German contingent responsible for business software development and which essentially supplied the ERP and contributed towards development of the real-time scheduling software. JobPack’s role was to develop the core communicating engine and the manufacturing data viewing module to meet the specific requirements of the US market. The result is an iMES that can be configured to cater for the world’s largest market of installed high-technology machine tools.

GRAPHICAL SCHEDULING
So what is iMES and what does it do? Workloads across CNC machines can be graphically scheduled, thanks to direct integration with an existing MRP system or, for SMEs, by Seiki Systems providing an ERP capability within the software package. iMES enables real-time feedback and true, live dynamic predictions of machine workloads creating direct information, such as projected completion dates and performance reporting, in a paperless environment.

And of course it’s configurable. iMES boasts complementary packages and modular software programs that can be fully integrated depending on the level of sophistication and the manufacturing solution required (see diagram, left).

This can be as diverse as the provision of a planning system to help with quotation costing, control of production, via a real-time scheduler, display of manufacturing data and DNC for operators, or shopfloor data collection through to final dispatch and management reporting.

“In the past manufacturers lost sight of orders once they entered the shopfloor,” Mr Trowell says. So companies spent money on software peripherals, MRP and CAD for instance, but all this did was to lead to islands of automation. “Previously it was a disjointed effort.” What we had was only partial integration. And it’s not real-time.

He explains further, instancing the typical installation of a manufacturing resource planning system (MRP). “Larger companies use an MRP system to load the machine shop with a ‘requirements’ list which generally has no concept of any machine loadings, capacity or working patterns. Often it assumes infinite capacity and does not operate in real time.

Mr Trowell can wax lyrically and persuasively on the state of MES and MRP/ERP in typical job shop environments. “Production managers complain all the time about MRP but data collection is even worse. In many shops, it is still manual,” he says with exasperation, which leads to poor record keeping. “Updating and reporting is essentially corrupt” because job sheets are filled in at the end of the week.

In contrast, the iMES scheduler integrates to any existing MRP to provide a simple-to-understand, real-time graphical view of the work requirement set against the actual working capacity of the machine tools. For SMEs without MRP, iMES contains an ERP module, which provides control from estimating through to process planning and feeds the real-time scheduler with new work. It can also take information from the scheduler for progress reporting and dispatch information.

As the scheduler module within iMES works in real time it can portray the roll-on effects of changes in production through data captured by Seiki Systems’ Networked Manufacturing Systems (NMS) which is directly integrated to the scheduler. The NMS module also provides ‘up-to-the-minute’ feedback on machine tool operations, collation of data, CNC program control, display of manufacturing data and production work queues. NMS also provides remote status of the activity of each machine, activates alarms and provides performance reports.

“Say a customer wants to delay component delivery,” elaborates Mr Trowell. “You can make a change in ERP which automatically feeds through to a change in the scheduler and then work queues on the shopfloor.” And Fauser’s ERP can support the entire order management process from quotation costing to work planning, scheduling, stock management, purchase dispatch and final costing.

In terms of applications, Trowell cites the example of gearboxes, requiring multiple components that could be made either in-house or outsourced. With OEMs increasingly demand that machine shops project manage in an effort to reduce their supplier bases, managing such a process could be drastically simplified with iMES.