Smaller companies
become global players

SME engineering companies can make a huge difference to their competitive edge by using modern collaboration technologies. Dr Tom Shelley talks to some

Caterham Cars: managing complexity through its new ERP system

i T can transform even quite small companies into successful global players. Even those right at the bottom of the food chain, trying to compete on cost, can make themselves into global businesses by taking advantage of what technology now has to offer.

Part of the way forward is to focus on building solutions for customers no matter what it takes – using IT to make that possible. For example, it is perfectly possible to take 3D CAD models from a design office in Detroit, source press or mould tools in Taiwan, machined in accordance with the original CAD model, then make some parts overseas and others at home, and assemble them somewhere else, before delivery of the assemblies to a customer plant in Mexico – with the lion's share of the profit being retained in the UK.

The major automotive and aerospace companies have been working this way from some years, but now SMEs are finding a similar road to prosperity via smart IT and the Internet. One such is Kingswinford-based Clamason Industries which, despite having just 100 employees, manages to be an essential part of the global automotive and medical supply chains.

The company makes high tech metal pressings, working with designers wherever they are, and tool makers who may be based in the West Midlands or the other side of the world. Business development director Tim Jones boasts that the firm can cope with CAD files in any format, whether to review and mark-up designs, or work with tool-makers, or program its own Brown and Sharpe coordinate measuring machine.

From an IT perspective, managing director Philip Clarke says his company had got by for years updating its bespoke DOS-based system, but changed to an Efacs ERP system from Exel at the beginning of this year. But that's just part of the story. On the CAD side, one of its problems was that customers all used different packages – which could make interacting an expensive game. Add to that the fact that, as Clarke says, tool-makers and designers are "an incredibly expensive overhead", unlikely to be used 24/7, and it made sense to subcontract out. Which is what Clamason does – to design houses using the same CAD as its customers.

That still leaves a need to view the models produced by the designers, and the modifications proposed by the tool makers. For this, the company now uses Rhino from Robert McNeel (www.rhino3d.com) which, in Jones' words, "Will open up almost anything, and is nice and simple to use." He also praises Webex (www.webex.com) for its ability to allow users to indicate particular areas on a drawing or document to other users in real time, while talking on the telephone using an integrated audio link.

Race collaboration

When I visited Clamason's factory, it was mainly making parts like enclosures for engine management computers for various Tier One automotive customers. Over the last five years, the company has increasingly moved into complex parts, only some of which are pressings, so that large OEM customers can purchase complex subassemblies directly. This has increased the need for online collaboration – and the latest venture, likely to increase it still further, is the planned opening of a satellite plant in Nitra in the Slovak Republic.

Firms similar to Clamason also supply the UK performance and motor sport racecar-building industries. Here, companies are almost all small but profits are usually good, because the customers are performance- rather than price-driven, and the fun factor seems to

appeal to many young British automotive engineers.

Claiming to be the largest of these still in purely British ownership, Caterham Cars, which manufactures road-legal track racing cars at its factory in Dartford, produces about 500 vehicles per year. Managing director Ansar Ali, who led a management buy-in in January 2005, complained recently: "I cannot believe the complexity of the operation. Every part in every car we produce manages to be different."

Configuration control

The company deals with 197 parts suppliers, with a stock ordering and control process that was until recently, "largely manual". One of the major changes that Ali has implemented has been a switch to software from K3 Information Engineering to cover sales order processing, parts processing, WIP and configuration control and the rest, at a cost of some £120,000. He says that he is also implementing a supply chain rationalisation process. Making that work is again all about collaboration throughout the business but also into the supply network. Ali has plenty of top end automotive experience to draw on, having started at Ford and come to Caterham via Lotus.

Meanwhile, the Formula 1 business has been heavily into top-end IT for some time. Most of the leading teams use Catia with the exception only of BAR, according to Dassault Systemes – and real-time collaboration is in evidence everywhere. Attending a Toyota race test session at Silverstone, I saw test data being sent direct back to the design team in Cologne, which was conducting simulations and suggesting new settings to try with the cars still at the track. Incidentally, as well as Catia V5, the Toyota team also uses Enovia as a virtual product development environment in which designers and the production and race teams can share information on the more than 8,500 parts.

Developments at the leading edge here have resonances all over. At Magellan Aerospace, for example, a Tier One/Two supplier of machined parts and assemblies to aerospace companies, a PLM (product lifecycle management) system was implemented last year, in the form of the pre-configured Aerospace Supplier Collaboration version of Smarteam. Consultancy Wavelength's Dr William Magill says that although that resulted in time savings of 30–35%, and profitability improvement of 15–20%, it didn't address all issues.

Hence the implementation this year of 'design maturity information records' (DMIRs), an idea developed in the shipbuilding industry. Magill explains that subcontractors are under constant pressure to reduce lead times, so they want engineers to start programming machining instructions before parts have been finalised. He cites situations where the top part of a component might be fixed, but the bottom is not, yet there's a need to order billets of special alloys with long lead times before exact dimensions have been settled. It is then desirable to start work, but not take it beyond a certain point.

Magill says it's too early to say what the benefits will be in financial terms, but believes the new process will next be applied to the Airbus A380 freighter wing box ribs, a project postponed while loads are re-calculated by stress engineers. The point: collaboration using modern systems isn't only about improving the ability of companies to design better products faster. It's about everything from managing purchasing and supply chains better, to manufacturing engineering, production and providing good customer service.

By the way, Magill has previously consulted on about a dozen other implementations, using Windchill, Optegra, Sherpa and Metaphase PLM systems as well as IBM products. He says that the customer usually decides which PLM system it wants to work with – but if you don't know how to do that, he is currently teaching his latest customer how to select the most suitable system to meet its needs. Worth getting in touch. ◾

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