MITcon 2008

Engineering design & development

FIRST: UAV Engines

UAV Engines, which manufactures 20-130hp Wankel type rotary engines for UAVs (unmanned aerial vehicles), won the Engineering Design and Development category of the MITcon 2008 awards for a web project that was not only truly innovative, but directly contributed to a 53% increase in turnover and a 35% increase in throughput. It also enabled UAV to quadruple its product line, without increasing staff.

Mostly, its achievements have to do with mutually beneficial data sharing and re-use – not just with suppliers, but also customers and even customers' customers and their suppliers.

Operations manager Nathan Bailey explains that UAV used to assemble a huge pack of production, parts, test and service data – all consolidated as a Word document – for despatch with each of its engines. However, over time, that led to problems.

Customers might lose the original, so request a re-issue – meaning administrative work pulling it all together again and then huge faxes and emails. Just as important, as users came to overhaul engines, they would create their own logbooks, which UAV Engines would never see – meaning lost opportunities in terms of performance feedback for engineering design, spare parts revenues, etc, as well as serious problems in identifying in-service parts substitutions when engine queries materialised.

"We decided it would be useful to build a central repository for all documentation, drawings, invoices and so on that we could populate as we build the engines, and that customers could also use in the field – not only to see the original data, but to log service information," says Bailey.

So, working with Exel Computer Systems and its Efacs ERP document management functionality, the company developed a web-based extension to its shopfloor control and documentation system, dubbed Embrace, that now maintains product information control for the lifecycle of each product. "That went live in October last year," says Bailey, "and while it's great for us in production, it's also great for after-sales service.

"Before, we were effectively investing a lot of money on modelling our engines but then those models were just sitting there. Now,

customers' service engineers can press a button on the web page and the system guides them through the maintenance routines they need stage-by-stage, also pausing for them to enter relevant information we both need... Also, the web system allows us to analyse data across engine types and understand, for example, performance problems or improvements we can make."

Its new system effectively hangs off the back of UAV's Efacs ERP system, with a Microsoft SQL database linked to SharePoint Server, providing a secure internet access portal. Internal services are provided via a Citrix access gateway.

SECOND: Numatic International

Numatic International – home of the Henry vacuum cleaner – took second place for its implementation of Jetcam, which now enables prototype parts to be imported, nested and cut in just 20 minutes, and has also cut set-up times, saving more than three hours per week.

The system shaved £30,000 off Numatic's costs in the first year, due to material savings alone, as well as £14,500 from programming labour – and manufacturing manager Andrew Smith says machine cycle times are still falling.

"We cannot forecast too far ahead or hold much stock, because of the sheer breadth of our product range," he explains. "Our MRP automatically downloads up to 300 orders per week for Jetcam to process. We then have a visual of what's left to be cut from within Jetcam and can use it as a scheduler to change priority of parts to be nested."

And he adds: "Our production process is all about mass customisation and short lead-times. Although Jetcam Expert met all of our targets, the MRP facility and integration [with Oracle] has been a greater benefit than we first thought, with the system paying for itself within a few months of purchase."

Highly Commended:

- BMW Sauber, for its use of Ansys engineering simulation software, which enabled the team to analyse and implement design changes fast, in response to CFD (computational fluid dynamics) feedback.
- Gordon Murray Design, for its use of Autodesk Showcase Professional, AliasStudio and Autodesk Maya for what looks set to become one of the most intriguing road car projects of the next few years.
- LFE for its use of PTC Pro/Engineer Wildfire 3.0 3D CAD/CAM/CAE and visualisation software, as well as Pro/Intralink 8.0 product data management (PDM) to eliminate data inconsistencies in its electronics enclosures development. ■