



in Action

AEROSPACE

AF Aerospace gets the right CNC programmes to the right machines at the right time with EdgeCAM DNC Pro.

Meeting the challenge.

O.K; you've invested hundreds of thousands, maybe millions, in the best multi-axis machine tools money can buy. You've added the advanced CNC software to drive them. You've maximised machine utilisation through off-line programming and now you are producing fault-free CNC code as a matter of routine. All you have to do now is get the right programme to the right machine at the right time. So how did AF Aerospace meet the challenge? With an EdgeCAM DNC 5000 networked direct numerical control (DNC) solution. This is why they did it.

"We have a big reputation. We are one of only a very small number of companies ever awarded 'Silver' Supply Excellence status with both BAE Systems and Airbus.

***Tony Beaumont
Production
Engineering
Development
Manager
AF Aerospace***

AF Aerospace.

The company manufactures and distributes precision-machined, safety-critical components to the aerospace industry at two sites in Rugby. Tony Beaumont, Production Engineering Development Manager, points out, "We have a big reputation. We are one of only a very small number of companies ever awarded 'Silver' Supply Excellence status with both BAE Systems and Airbus. This is all about quality, delivery and service, and we are pretty special at it." AF Aerospace maintains quality approvals with all its major customers including BAE Systems and Airbus. Third party approvals include BS EN ISO 9001:2000 and AS/EN9100.

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Losing too much time.

Explaining why AF Aerospace adopted EdgeCAM DNC 5000, Tony says, "Some years ago, we adopted CATIA V5 as a pre-requisite for an Airbus project. We take the Airbus files, design the fixtures in CATIA V5, then generate the toolpath in CATIA V5 Machining or EdgeCAM Solid Machinist, depending on complexity and resource availability. We also use EdgeCAM Part Modeller and the EdgeCAM CATIA V5 loader." He continues, "At our main site we'd had an elementary DNC system for some years to help us control and manage the storage and distribution of our CNC programmes. However, we were finding that drip-feeding large programmes tied up the PC, preventing other operators from getting their programmes and so losing production." To overcome this, the company installed four more PCs but as Tony points out, "It could still take an operator several minutes to walk to the PC, find and then transfer the right programme to the right machine. Multiply that by the number of operators and the number of programmes and you can see how much time we were losing. We had to find a better way and we'd been looking around at DNC options for quite a while."

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Latest generation of DNC.

In 2005, AF Aerospace opened a factory nearby specifically to handle a major new contract. Tony again, "This presented us with the opportunity to review our DNC options. We could have extended our existing system by installing one PC per machine tool or we could have added memory to the machine tool controllers but either option would have been expensive. Instead, we looked at the latest generation of DNC solutions, eventually settling on EdgeCAM DNC 5000." He adds, "This had the functionality we wanted and we trusted the company because we'd been using other EdgeCAM products for quite a while."



Minimal training required.

Jon Tidy is the IT Systems Manager at AF Aerospace. He says, "We installed a 100 Mbps LAN Extension Service between our main site and the new factory to make the two sites appear as one for the phone system, the networking and so on. We extended the network cabling to each of the machine tools, so when it came to installation, all we had to do was connect the machine tools to the network using an EdgeCAM Smart Communication Device (SCD) at each machine. The Mori Seiki and Kitamura machines didn't need these though because they already had built-in network controllers and memory buffers. We plugged the PC in, configured the server and that was it. Training needs were minimal. It took longer to get all the operators together than it did to actually train them!"

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No complaints so far.

Meanwhile, speaking of the main site, Tony says, "The machine shop is not the ideal environment for a PC and in summer 2006 we started to get reliability problems. We needed to act quickly to avoid loss of production. We'd seen the benefits of using DNC 5000 to manage the CNC programmes in use at the new factory and took the opportunity to upgrade the system here." By now, Pathtrace had introduced a wireless version. Tony again, "Although this cost £50 a node extra, we saved well over that by not having to install long network cabling runs. Pathtrace installed the SCD inside each machine controller to avoid accidental damage and we mounted the wireless antennas externally. The router antenna was installed high in the building and in front of a small reflector and the system has worked perfectly. We have a strong and reliable signal with no drop off." As Tony says, "We've not had any complaints so far and believe me, if something was not right, we'd soon know!"

A full range of management functions.

Commenting on the system's ease of use, Tony says, "The operator simply enters the programme specified on the route sheet into a 'runner' programme at the machine tool controller. The runner instructs the SCD to fetch the specified programme from the DNC server and loads the programme into the machine controller memory. By specifying exactly the required programme rather than allowing the operator to pick from a list, the potentially disastrous consequences of choosing the wrong programme or version are eliminated." DNC 5000 provides a full range of management functions and Jon Tidy says, "We can find out what programmes were called, who called them and when, how long they were run for. We already used these logs very effectively to overcome a problem we'd been having with time-outs on drip feed programmes."

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"The biggest benefit by far is time saving. Not only have we made substantial time savings by eliminating the shop floor PCs, we've saved time when moving machines, too."

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Time saving the biggest benefit.

Jon and Tony agree, "The biggest benefit by far is time saving. Not only have we made substantial time savings by eliminating the shop floor PCs, we've saved time when moving machines, too." Jon explains, "We reconfigure work cells from time to time. With the old DNC, each time we moved a machine we had to reroute the cables, adjusting the RS232 data rate if the cable length increased. With the wireless DNC 5000 all we do is move the machine; no wiring changes, no configuration changes." He adds, "The factory is a lot neater, too and we know our customers also associate a neat factory with a neat job."



Compare function eliminates errors.

Tony says, "In proving out the programmes, the operators may make changes at the machine controller before returning it for issuing. Even a fairly small turning programme can involve three pages of code and it's quite a task to identify and validate the changes." He adds, "Previously such changes were made manually and taken somewhat on trust. If, however, something like a tool position change had been missed, there could be serious, expensive and time-consuming problems the next time the programme was used." He continues, "With DNC 5000, we are able to display the original and modified programmes side by side with the differences highlighted. We can then

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validate these, raise the issue and freeze the programme. You can imagine how much time this can save when one current project alone involves over 260 parts with an average of four programmes per part and a further four or five programmes per part for fixtures.”

Running both factories better.

Summing up, Tony says, “We’re satisfied that there is no difference between the way the wireless and wired DNC 5000 operates and it works with any CNC programmes, not just EdgeCAM code. So far, we’ve connected eight machine tools at the new site and eight out of a total of 24 at the main site, setting the investment against the cost of replacing the unreliable PCs and the anticipated time saving. In the future we’ll eventually go fully wireless.” He concludes, “EdgeCAM DNC 5000 has certainly helped us to run both factories better.”

links

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