

COMPANY

Edwards
Innovation Drive, Burgess Hill, West Sussex, RH15 9TW - UK
SOFTWARE
Autodesk Fusion 360 Manufacturing Extension
Autodesk PowerMill

Edwards

Delivering CNC Automation in Production



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Mark Hadlum
Head of CAD/CAM
and PLM, Edwards



How Cadline and Autodesk CAM software helps Edwards reduce time to value and drive efficiencies across CNC machining processes

Edwards, which is part of the Atlas Copco Group, is a leading developer and manufacturer of sophisticated vacuum products, abatement solutions and related value-added services. Its products are integral to manufacturing processes for semiconductors, flat panel displays, LEDs and solar cells. Today, they are used within a diverse range of industrial processes including power, glass and other coating applications, steel, pharmaceutical and chemical, and for both scientific instruments and R&D applications.

Technology and services provider, Cadline, has a longstanding relationship with Edwards stretching back 20 years and has successfully delivered multiple projects with them over that time. Cadline has been Edwards' main partner for the provision of Autodesk mechanical, electrical and data management solutions that are integrated across Edwards' design teams in the UK.

Scoping the challenge

Within the computer aided manufacturing (CAM) side of the business, Edwards had been looking for a way to meet project deadlines more consistently and deliver projects more efficiently. So it started to look for a solution and began working with Cadline to fully understand the challenges it was experiencing in its production facilities.



Platinum Autodesk Partner Cadline had previously typically engaged with the design and engineering functions at Edwards rather than the shop floor. This was now starting to change. In the early days of this new engagement, Cadline worked closely with Autodesk to understand Edwards' specific requirements. This process included a full review of their computer numerical control (CNC) production facilities to establish what machining was being utilised and the manual tasks that were being performed. This included gaining a detailed understanding of their existing software being used at the time, their production set-up and machining workflows.

Working in partnership with Autodesk, Cadline's Advanced Manufacturing team began the process of

helping Edwards automate the programming of its turning and 5-Axis CNC machines. For the turning work, Cadline supplied Edwards with the cloud-based 3D modelling tool, Autodesk Fusion 360, a solution capable of automating CNC machine programming, and providing the flexibility for Edwards to work with automated tools and still input legacy data based on its own CNC code, which has been perfected over the years. For 5-Axis work, Cadline provided Edwards with the 3D CAM solution, Autodesk PowerMill®, which can automate both CNC machine programming and tool path templates.

To help ensure Edwards optimised its use of these two solutions. Cadline provided user training to ensure the successful adoption of the new technology and workflows.

Mark Hadlum, Head of CAD/CAM and PLM at Edwards, said: "This is complex software, so you need a good support structure to back it up. We were lacking in support on other software we had. We needed someone who could sit with us as we learnt it or at least someone on the phone that you could ask: 'I'm trying to do this program and use this software, what support can you give'?"

"Whilst we had direct relationships with Autodesk we decided to work with Cadline for the provision of the software we needed" he added. "They were already supporting us with the CAD software so it was an intuitive extension of our existing partnership and working with Cadline streamlined the process of communicating with Autodesk for us.

"Cadline conducted the initial training and they provide ongoing support. We have a service contract with them which we have had for many years as they support us globally as well."

"Cadline is always responsive whenever there has been an issue," continued Hadlum. "We can absolutely rely on them. If someone has a query, we can quickly raise a support call and we can always guarantee that Cadline will step in and answer."

Gauging the benefits of the software

Cadline has helped to transform the CAM process at Edwards. As Scott Woolven, Commercial Director, Cadline stated: “One of the big areas of benefit we identified was that Edwards was spending a lot of time taking parts and manually programming them into machines. This involved extracting the part information directly from a CAD file and generating the NC code on the machine tool controller which is now provided automatically as part of that workflow. This has significantly shortened the process for Edwards, saving the company many person-hours in the process.”

“It also allows them to repeat the process so if they reproduce that part in the future, they can just call up the code they used last time. They don't have to reprogram it again,” added Woolven. “So there's lots of downstream efficiencies from them using that particular application.”

Over and above this, the automation supported by the Autodesk software streamlines the tool pathing and templates process enabling Edwards to prove designs out and prove how its machines are going to operate in a simulation before committing to production and consuming materials. Using the Autodesk software also helps Edwards ensure there are no clashes with the tool heads, the moving parts of a CNC machine that can cost tens of thousands of pounds to replace.

The software's flexibility is key here also. Edwards wanted to automate as much possible but as they have legacy code that they have had for 30 years they needed to keep that USP in the marketplace. That meant they still needed the ability for someone to type the code in and layer it over the top of the automation. Working with the Autodesk software, Cadline was able to facilitate this for them.

Edwards has also benefitted from the software's ease of use. The Autodesk software supports a MultiCAD environment but also delivers high-quality automation in production. With PowerMill and Fusion 360, Autodesk

has shown itself to be an influential player in the CAM and CNC machining space.

Autodesk software has proven industry interoperability and at Edwards, the team can bring CAD files into the manufacturing workflow seamlessly, not just from Autodesk design software but from the design solutions of other vendors also. PowerMill and Fusion 360 can also integrate well within Edwards' existing CAM environment and operate in tandem with Edwards' existing systems rather than needing to replace them.

Key members of the Edwards team can now program a simple part and the team believes that the intuitive nature of the software has made it faster at executing CAM work and is helping to deliver completed projects to its customers on time. It recognised there was a risk it would not be able to do that over the long term with the other software it was using.

Cadline's Woolven sees huge benefits in the two software solutions working in tandem. As he states: “Over time, Fusion 360 will be the technology platform that most people operating in this space will go to first, as it does the basics so well, but there is also a place for these higher end PowerMill solutions because of the nature of what they deliver and the complex surfacing finishing capabilities. These two technologies can live in parallel. Businesses need to buy the right technology to do the right job: Fusion 360 to do the turning jobs and other routine CAM tasks, and PowerMill to help achieve success in complex five axis machining.”

Looking ahead

Moving forwards, Edwards is looking at how it can best leverage Autodesk software to support other functionality such as 3D generative design and 3D printing. It also has plans to expand the use of Fusion 360 CAM to other countries outside the UK, including to global production facilities, where it has potential to be used to standardise working practices across the group.