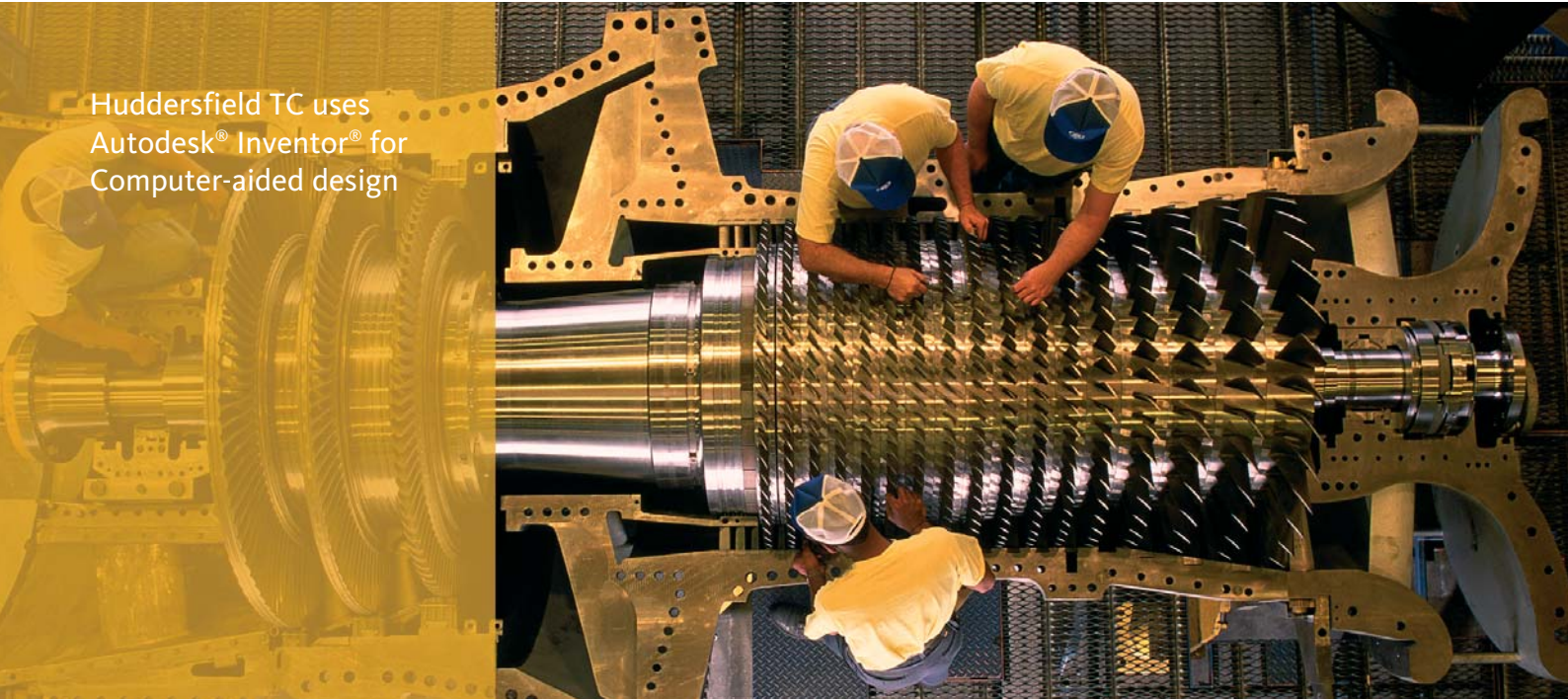


Huddersfield TC uses Autodesk® Inventor® for Computer-aided design



## Huddersfield Technical College uses Autodesk® Inventor® to Power CoVE for Computer-aided Design and Manufacture.

**Centre of Vocational Excellence.** CoVEs are Centres of Vocational Excellence, specialist areas of vocational provision characterised by close links between colleges, other providers, business partners, other employment interests and communities. Centres of Vocational Excellence have an important role to play in the Learning and Skills Council's drive to create a workforce that matches the best in the world. CoVEs are designed to make sure that training provision in this country meets the skills needs of business and industry. They focus on meeting employer demand for level three skills, which are roughly equivalent to A-levels. Only half of the UK's 19-28 year olds hold ten qualifications, yet the National Skills Task Force report suggested that seven out of ten jobs would require level three qualifications many in craft and technical subjects - by 2010. Huddersfield Technical College's Computer Aided Design and Manufacture section, managed by Dave Nichols, has now been awarded Centre of Vocational Excellence (CoVE) status and was officially opened in November 2003. The CAD, CAM and CNC machining facilities at the College are now amongst the best in the country. The College has recently added a water jet cutter with a 3000 mm by 2000 mm bed as well as new CNC lathes and milling machines. As well as supporting the College's mainstream courses, the CoVE provides a number of additional services to industry. These include prototyping, co-ordinate measurement, reverse engineering and specialist machining. This highly popular centre is the result of many years hard work and a significant investment in staff, skill, manufacturing machinery and IT systems, including a 60-seat installation of Autodesk® Inventor® Series 3D solid modelling software.

### Meeting industry needs

The catchment area of Huddersfield Technical College includes a large swathe of West Yorkshire and beyond. The College attracts students from as far afield as Leeds, Wakefield, Halifax and East Manchester. The College caters for a wide range of age groups from 14 to 90 and provides 'taster sessions' for under 14s as well as running a GCSE Manufacturing course. The College supports Edexcel, City & Guilds and EMTA Awards Limited (EAL) VRQ qualifications. Courses include the City & Guilds Computer Aided Draughting and Design 4351 range and both BTEC and EAL Engineering certificates and diplomas. John McCallum is Senior Co-ordinator and Lecturer for Design and Manufacture at the College. He says, "We were providing City & Guilds 4351/013 and /09 courses using the 3D capabilities of AutoCAD®. However, our field workers discovered a need from industry in Huddersfield and farther afield for training in 3D parametric solid modelling. Since AutoCAD does not operate in that way, we decided to look for an alternative."

### Inventor: professional 3D parametric solid modelling

The College initially invested in a specialised training suite equipped with seven seats of PTC Pro/ENGINEER, running on Sun workstations. This first small-scale entry into 3D parametric solid modelling served to alert staff to the potential benefits of 3D and encouraged them to search for a more realistically-

priced and easy-to-use solution that could be extended cost-effectively to many more users. John McCallum first discovered the potential of Inventor when he was invited to an educational seminar run by a local Autodesk System Centre. John takes up the story. He says, "We attended an intensive two day Inventor training session along with other prospective educational users. I followed this up by going on a five-day training course to get a deeper understanding of Inventor." John continues, "We were provided with a demonstration copy for me to evaluate. I used it to work through our City & Guilds course exercises. Once I was familiar with Inventor, I found I could complete the exercises much more quickly, more neatly and with fewer errors than in AutoCAD." Previous versions of the qualifications mandated use of AutoCAD, but this changed some years ago with the introduction of an updated syllabus. However, John did confirm with the City & Guilds organisation that the use of Inventor was acceptable in this context. John says, "It made sense that where the course required the use of 3D, we used Inventor, a professional parametric solid modelling package already used extensively in industry."

### Remarkable value-for-money

But why choose Inventor in particular? John says, "When the College first moved into CAD using AutoCAD, Autodesk was very supportive. The only CAD systems we had used prior to that were down at

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the University on the mainframe and they were large and systems that no way could we have afforded. Autodesk represented an affordable way of getting into CAD." He confirms, "Inventor really met our requirement, so we decided to buy an initial 30 education licences." John clearly believes that Autodesk is still very supportive of the education sector. Indeed, the very latest Education version of Autodesk Inventor Professional comprises three products: Inventor, Autodesk Mechanical Desktop® and AutoCAD Mechanical®. Educational users can also take advantage of the Autodesk Subscription Program to ensure that they have the latest version of the software for a controlled annual outlay. John says, "The value-for-money is remarkable. It has cost me less to equip the whole centre than it would have cost to buy one commercial licence. I think we have got a really good deal." A deal that John believes is strengthened by the Inventor Student Edition. This is a low-cost version of Inventor available to bona-fide students for not-for-profit use in connection with their courses. John says, "There is a clear demand for this. On average, of around 100 people studying for CAD qualifications this year, over 20% have bought the student edition to enable them to continue their studies away from the classroom."

#### A smile on students' faces

Inventor is now in use across the whole spectrum of CAD courses at the College. John says, "Across the entire age range, within 10 or 20 minutes you see a smile on the students' faces as they get their first solid model on screen. It's the realisation that having perhaps struggled previously with 3D, it is in fact easy with Inventor. They start asking me how to do specific things and before long they are driving the class because they want to be able to do more." John adds, "Our oldest student was in fact a retired engineer of 78 who wanted to keep his skills up-to-date." There are now 60 seats of Inventor Series at the College, five of which are for staff use, the remainder being in classrooms. John says, "For the City & Guilds and NVQ courses, we have two main computer suites, each with 20 networked computers, 17" monitors and a classroom video projector. We have a smaller specialised training suite with 14 computers where we can accommodate local companies coming in for specific training courses." The College does cover other software in its extensive repertoire. John adds, "We have the Radan and CAMTEK suites of manufacturing software. We also use Denford MillCAM and VR Milling so that secondary school pupils can create and machine simple solid models." The impact of the introduction of Inventor at the College has been quite remarkable. John McCallum again "We explained to the staff why we had introduced Inventor and then trained them in its use. They were so enthusiastic about it they wanted to switch from teaching AutoCAD to teaching Inventor completely."

#### Inventor reduces design time

Talking about the overall benefits of Inventor John says, "I would certainly say that using Inventor reduces design time. You can build a design the same way that you would make it out of metal. You can start with what is in effect a block of metal and add or remove material to create the shape you want. For someone

who has no previous experience of CAD, it is an advantage to move straight to Inventor, since everything they are going to make is going to be 3D." John adds, "We do show the students how to produce 2D drawings from the 3D Inventor models but we don't focus on this. Rather we focus on producing a good 3D model that can be rapid prototyped or machined, and can be compared with the finished article using our CMM." The College has developed most of the course material itself because it had the experience and skills to generate exactly what it wanted. According to John, "People are very satisfied with our material. We now have a member of staff exploring the advanced features of Inventor including i-mates and i-parts to meet the requirements of a particular customer." John adds, "Our own IT support people installed Inventor. It was quite straightforward."

#### Try the software yourself

John has this advice for others in education or in industry. He says, "If you are thinking of implementing any CAD package whether in education or in industry, think about what it is you want to produce. Evaluate the options and try the software yourself, or get the vendor to demonstrate how the software will meet your specific needs. Take along a sample design and ask them to show you how it could be done using their software." John adds, "The first thing I did when evaluating Inventor was attempt the work we would be asking the students to undertake. There would have been no point in getting Inventor if it would not do the job."

#### They keep coming back for more

John is plainly very satisfied with Inventor. He says, "Inventor really does meet our needs. It can do everything that I wanted to do and could do on the high-end system we had. Of course, I always want to do more and I am always waiting for the next release. But when I see what we have paid for it then I am very happy." John concludes, "Our objective in making this investment is to meet the skills development needs of local industry. We believe that in this way we are playing our part to increase the uptake of modern technology by British industry in small to medium enterprises. With Inventor Series, we have responded to industry's need for education and training in 3D solid modelling. This technology gives me a real buzz and I hope I communicate this to the students. If that means their enthusiasm then is taken back to work, it has to be a good thing." Huddersfield Technical College is one of the biggest of its kind in the country. Well-known engineering companies such as Sellars Engineering, Holset Engineering and David Brown have recently used the College's services and, as John points out, "We have an excellent reputation, so much so that we do attract people from outside the area, too. And they keep coming back for more, so we must be doing something right."

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College

links

[www.autodesk.co.uk/inventor](http://www.autodesk.co.uk/inventor)  
[www.autodesk.co.uk/education](http://www.autodesk.co.uk/education)  
[www.manandmachine.co.uk](http://www.manandmachine.co.uk)  
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