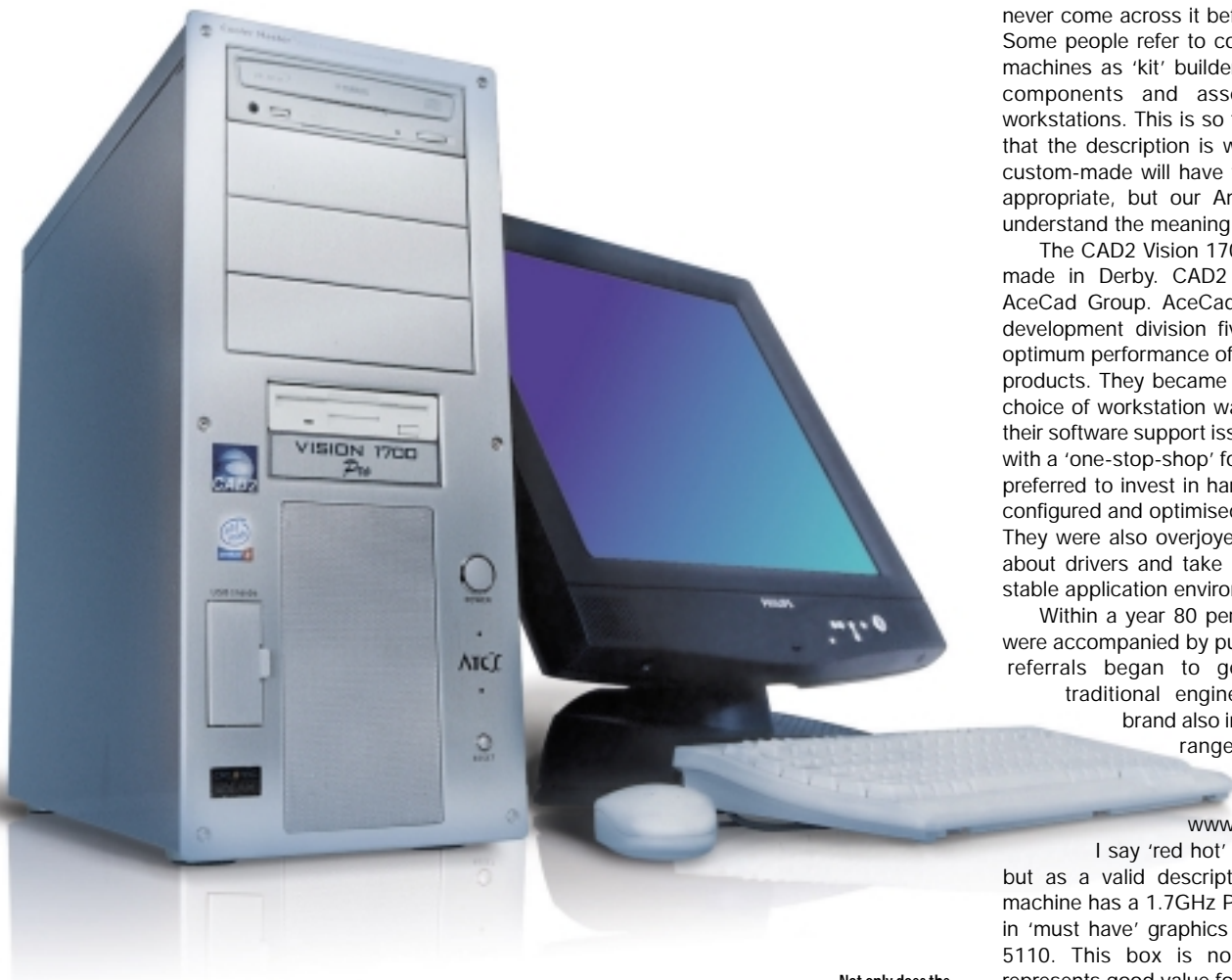


Vision on

CAD2'S VISION 1700 PRO IS A BESPOKE PENTIUM 4-EQUIPPED WORKSTATION FEATURING EXCELLENT BUILD QUALITY AND THE LATEST HIGH END 3D WILDCAT 5110 GRAPHICS CARD FROM 3D LABS. CREATED SPECIFICALLY FOR THE 3D CAD AND DCC MARKETS, THE C3 REVIEW TEAM HAD A HARD TIME LETTING GO OF ONE OF THE HIGHEST SPECIFICATION AND BEST VALUE WORKSTATIONS WE'VE SEEN

By Charles Clarke



Not only does the Vision 1700 Pro look the business it is the business

Some time ago I did a review of a British custom-made workstation and I was surprised that I'd never come across it before. Well here's another one. Some people refer to companies that produce these machines as 'kit' builders who take kits of standard components and assemble them into useable workstations. This is so far from the truth in this case that the description is wholly inappropriate. I guess, custom-made will have to suffice – bespoke is more appropriate, but our American cousins don't really understand the meaning of the word.

The CAD2 Vision 1700 Pro is a 'red hot' new box made in Derby. CAD2 is a brand owned by the AceCad Group. AceCad established its workstation development division five years ago to ensure the optimum performance of its own engineering software products. They became aware that an often arbitrary choice of workstation was the root cause of many of their software support issues. Their clients were happy with a 'one-stop-shop' for hardware and software and preferred to invest in hardware, which was designed, configured and optimised to run specific applications. They were also overjoyed to let someone else worry about drivers and take responsibility for providing a stable application environment.

Within a year 80 percent of new software orders were accompanied by purpose-built workstations and referrals began to generate orders outside of traditional engineering markets. The CAD2 brand also incorporates a comprehensive range of upgrade components, storage devices, monitors, printers and plotters (see www.cad2.com).

I say 'red hot' not to over do the hyperbole but as a valid description of this little flyer – this machine has a 1.7GHz P4 processor and the ultimate in 'must have' graphics cards, the 3Dlabs Wildcat II 5110. This box is not cheap at £4,850, but it represents good value for money as the graphics card alone is worth £2,349.

But is this kind of speed better? Short answer is yes. There are tangible productivity gains that can be measured by merely using a fast workstation. Simply finding out faster, that you've got it wrong is a tremendous aid to productivity. Speed is crucial – the

faster you make the design and manufacturing process the more time you can spend on development.

Is it worth paying so much for outstanding graphics? Again the answer is yes. Whilst performance is increasing significantly and the attendant hardware cost is falling, the most expensive element in this equation is the person looking at the screen. The objective has to be the best overall level of productivity and so performance should not merely be measured in terms of MIPS or SPECmarks – the speed and quality of the application environment is also factor. If you short-change on the hardware you are short-changing the engineer and ultimately the company, because you are affecting the engineer's capacity to make profit for the company. SGI in the

late-1980s came up with the expression 'job enrichment' when referring to 3D computing over 2D – the better you make the environment the more productive the engineer. Even if you look at the situation dispassionately the Wildcat card will have paid for itself in six months just in time-savings for refresh, pan and zoom.

high level of parallelism. This allows the power of multiple 3D graphics pipelines to be combined, which means that the task of drawing an image is split between pipelines and each pipeline processes only a portion of the application's data.

Using multiple pipelines to drive a single display in this manner results in linearly scaled performance

IF YOU TAKE THE LID OFF THE BOX THE QUALITY OF THE ASSEMBLY WORK SPEAKS FOR ITSELF - INTERNALLY THIS WORKSTATION IS LIKE A WELL-CRAFTED SWISS WATCH

CAD2 Vision 1700 Pro Specification

Each CAD2 workstation is custom designed and built according to specific client requirements. The system detailed below is a recent example produced for the DCC market.

- Intel Pentium 4 Processor 1.7GHz
- Asus P4T i850 Motherboard
- 2 x USB, 2 x Serial, 1 x Parallel
- 5 x PCI, UDMA 100, 4 x RIMM
- 512Mb PC800 RDRAM
- 3DLabs Wildcat II 5110 Graphics Card
- AGP Pro, 64Mb
- Adaptec ASC29160 Ultra 3 SCSI Disk Controller
- Fitted with custom Cable Assembly & Multi-Mode Terminator
- Seagate Cheetah ST318451LW 18.4Gb LVD SCSI Hard Disk
- 15,000 rpm, 3.9ms, 4Mb Cache, Ultra 3 Low Voltage Differential
- 3COM 3C905C-TX 10/100 Network Interface Card
- Yamaha CRW2100E-UK IDE Rewriter
- 16 x Write, 10 x Rewrite, 40 x Read
- Sound Blaster Live! Sound Card
- Creative Labs Modem Blaster 56K bps Internal PCI Modem
- Creative Labs - Cambridge Sound Works CSW Digital Speakers 3 piece speaker system includes 2 x 8W RMS Satellite, + 24W RMS Subwoofer S/PDIF Digital connection to SBlive or DVD, CD, DAT, Minidisc ensures the finest quality reproduction of audio with the lowest distortion. Also features standard analogue input for other sound cards and devices.
- 3.5" FDD, PS/2 Mouse, PS/2 Keyboard
- Cooler Master ATC-200 Aluminium Chassis
- Front-Panel USB Access
- Enermax 430W Power Supply
- Windows 2000 Professional

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And the Wildcat card is nothing short of stunning – it trounces the competition in all the benchmarks and the speed of execution of some of the Viewperf benchmarks leaves you feeling giddy.

You can get a feel for the card from the spec included here or by visiting the 3DLabs website (www.3dlabs.com), but the dual pipeline architecture and the SuperScene Anti-aliasing are worth a special mention. Typical 3D graphics architectures are based on the use of a single 3D graphics pipeline. This pipeline is used to take data from a 3D graphics application and display that data on the screen. Wildcat's ParaScale architecture has an extremely

increases ie, two pipelines provide twice the performance and four pipelines provide four times the performance of a single pipeline. One very important point is that the Wildcat graphics driver and the hardware handle this capability, and it is totally transparent to the application and the user. This means that developers do not have to modify their applications to take full advantage of multiple 3D graphics pipelines. Any 3D graphics application using one of the industry standard APIs can immediately benefit from the increased performance provided by Wildcat's revolutionary new ParaScale graphics architecture.

Pipeline

In addition to using multiple pipelines to drive a single display, Wildcat's ParaScale architecture also allows each pipeline to drive its own display. Each screen can display a unique image, including multiple views from the same application or from different applications. Content creators can construct a scene on one screen and display the rendered version on a second screen, or visual simulation applications can use multiple monitors to present a panoramic view.

SuperScene Anti-aliasing is true multi-sampled scene mode anti-aliasing, which results in images with fewer aliasing artifacts (staircase edges or strobing herring bone textures) and much higher visual realism. This sophisticated form of anti-aliasing is extremely important for all types of visual simulation applications. Prior to the new Wildcat family of 3D graphics accelerators, this level of graphics processing was only available on systems such as SGI's InfiniteReality series of proprietary and extremely expensive RISC/UNIX graphics engines.

This is not just another custom workstation, every opportunity has been taken to provide added value. If you take the lid off the box the quality of the assembly work speaks for itself – internally this workstation is like a well-crafted Swiss watch. There are no stray wires waiting to get trapped when you close the lid or get caught on heat sinks – every wire is cut to length or coiled neatly and clipped. There is even a power switch on the back next to the power cable entry!

All the internal components have been selected for their quality and to improve 'the sum of the parts'. Even the SCSI cabling is custom manufactured by

3DLabs Wildcat II 5110 Graphics Card

The revolutionary Wildcat™ 3D Graphics Technology enters its second generation with the Wildcat II 5110 – featuring a full dual-pipeline architecture and new chipset for even faster performance.

The combination of the Wildcat II 5110's dual-pipeline-powered architecture, increased Wildcat chipset speed, and highly tuned geometry engine offers the highest graphics performance for the price.

For scientists, artists, engineers, or graphics experts working in the 3D realm, these features and more translate to the highest level of real-time on-screen performance available at a price that won't hurt your budget.

- Dual-pipeline configuration (supports digital and dual-head analogue displays)
- Dedicated 64 MB texture memory and 64 MB frame buffer
- Stereo Sync (Optional multiview and genlock support)
- 3D volumetric texture support
- Exclusive SuperScene™ anti-aliasing
- AGP Pro 50 - AGP Version 2.0

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Selectronix, the leading SCSI connectivity solution provider in the UK. Their Teflon coated, solid core assemblies are rated to perform at over twice the speed of Ultra III. All cable assemblies employ multi mode terminators, allowing total SCSI flexibility – if required. Coupled with Adaptec’s Domain Validation,

machine only had 512 MB of RAM. Granted, it is fast RAMBUS memory, but once Windows had taken its slice there was only a moderate amount left over for loading large assemblies.

Once models loaded I could feel the combined speed of the processor and the graphics. Assemblies



this guarantees 100 percent error-free data transfer between sub-systems.

How does it perform? Very quick doesn't really do it justice – it is a super quick machine, but I felt application performance didn't really reach its true potential. I was expecting applications to run noticeably faster than PIII machines and they didn't. This is due in large part because most applications are optimised for PIII at present and not P4. Also, Windows 2000 is very memory hungry and this

of over 500 components moved around the screen like a single part – response was instantaneous and there was no clipping or jerking for the transformations to catch up with the graphics and vice versa. If you are used to photo-realistic rendering moving down the screen as if hydraulically damped you're in for a surprise here – rendering happens with this box like pulling down the blind in the bathroom – straight down, no messing.

When you can only nit-pick you know you've found

a winner. My particular nit-picks are as follows: it's a bit noisy – I guess you can't have ultimate horsepower without a little bit of 'engine' noise. The tab on the front panel mounted USB port also sticks out at trouser hem height – it would be nice to have a 'push' release on the USB port panel cover. Also, I don't like the exposed top mounted cooling fan vent – I know it assists 'through flow' ventilation, but it's just asking for a cup of coffee to get spilled down it or for someone to dump something on top and so cancelling out the ventilation effect – this could so easily be cowled and deflected to the rear without affecting the cooling unduly. The Seagate disk is noisy but that's not really surprising considering the spec. The noise is very noticeable in a quiet environment, but in a normal office environment it would not be considered obtrusive.

What I loved about it apart from it's speed and quality manufacture was the narrow keyboard – all the keys have been squeezed into the same 'footprint' as the alphanumeric keys – a function key made the keys on the right-hand side of the keyboard double up as 'arrow' keys and a 'Numlock' keypad. The narrow keyboard allows you to have a mouse and a Spaceball either side of the keyboard and still fall within the shadow of a 21-inch monitor. These are the kind of added value touches of a true custom builder – nice work. **CS**