Testdrive

READER'S NAME: Nigel Bailey
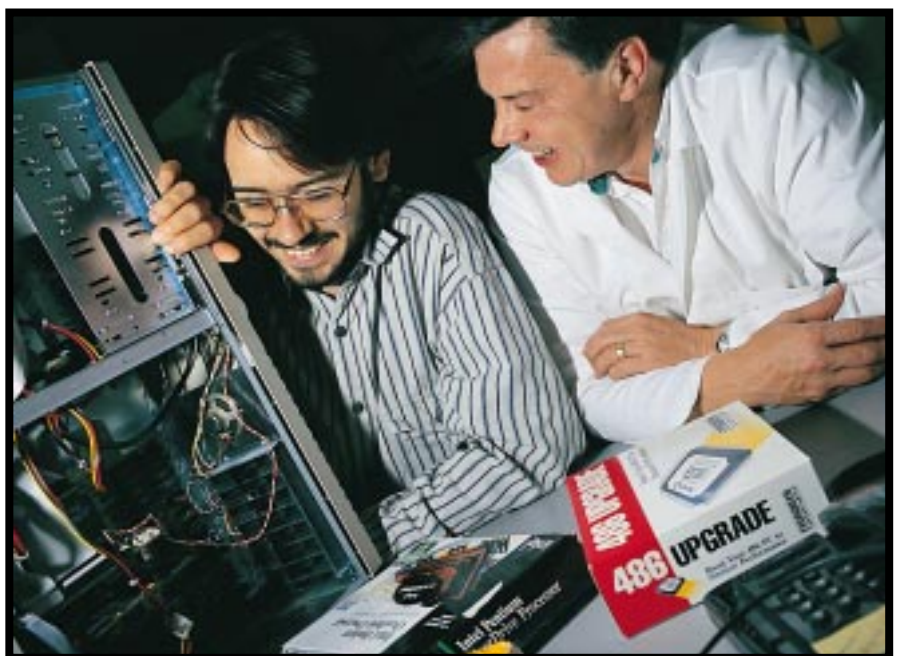**QUESTION:** Should I upgrade my existing 486 processor, or buy a completely new system?

Welcome to the first Testdrive. In this new regular feature we'll be helping readers to make important buying decisions by bringing them into the *What PC?* Labs where they'll help testdrive the products they're interested in, talk to the experts about them and, hopefully, decide which one to buy.

If you're looking for a new computer, printer or PC accessory and you've already made a shortlist of choices, why not give us a call? If your purchase is likely to interest other readers we'll have your shortlisted products delivered to *What PC?* for testing and you'll be invited to spend the day with us, see the products in action and try them out.

This month Nigel Bailey of London is trying to decide whether to upgrade his five-year-old 486 PC with a faster processor, or splash out and buy a brand-new computer. Nigel works in an office where he uses a Pentium PC, but his home computer is an Olympic 486 33MHz machine, which he bought five years ago while studying for his law degree. Now it's used mainly for letter writing, keeping track of Nigel's finances and occasionally playing games.

What Nigel wants

Nigel would like to have enough power to be able to run Windows 95 effectively and to be able to use reference works such as Encarta 97 World Atlas. He currently runs Windows 3.11 on a 200Mb hard disk.

Fortunately, Nigel's computer already has a generous 20Mb of memory and, technically, he could install Windows 95 without having to upgrade the processor. However, because most reference software includes a number of multimedia elements, it makes sense to maximise the power of the processor in order to compensate for a slow hard disk and to help with the processing of large graphics and sound files.

Nigel had made a shortlist of three upgrade processors from Intel, Kingston and Evergreen. Unfortunately, the Intel 486-to-Pentium upgrade is not suitable for Nigel's PC because it requires an OverDrive socket, which his computer doesn't have.

The other two are both built on AMD 5x86 133MHz processors, although the approach varies slightly in each case. Because Intel 486 processors use a 5V power source and the AMD chips have 3.3V circuitry, Kingston and Evergreen mount the AMD chips on printed circuit boards which take care of the necessary voltage conversion. The Kingston TurboChip is fitted with a self-powered electric cooling fan, whereas the Evergreen 486 Upgrade uses a passive metal heatsink glued to the top of the chip. Both keep the processor cool, but make the complete assemblies bulkier than the original Intel

What PC? reader Nigel Bailey (left) investigates his upgrading options with a member of our Labs team.

socket and motherboard in use but the Evergreen 486 Upgrade has three sets of jumpers that have to be set according to the host machine. The factory settings were perfect for Nigel's PC.

486 chip, which could be a consideration in cases where the processor is mounted in a restricted position.

Fitting the new chips

Fortunately, in Nigel's PC there was plenty of room to fit either chip so the

question was one of performance and ease of use, rather than design. Nigel managed to install the chips himself by removing the existing 33MHz processor using the chip extraction tools provided and slotting in each of the replacements in turn. The Kingston TurboChip responds automatically to the type of

How the chips performed

Both upgrades managed to quadruple the PC's internal processing speed to a nominal 133MHz. In terms of instructions processed per second, the increase was less dramatic, but still almost a threefold improvement. There was a knock-on effect on the performance of the memory, graphics and hard disk systems (see charts below), with the Evergreen 486 Upgrade providing a slightly bigger boost than the Kingston TurboChip.

Both upgrades delivered recognisably faster performance than the original 486 processor in the Olympic, and Nigel was quick to notice the improvements, but the slightly faster performance of the Evergreen chip could only be detected in lab tests.

Decision time

When we installed Windows 95, it ran perfectly with either upgrade. Nigel said it didn't work as smoothly as the 90MHz Pentium he uses at work, but that he could easily live with it. However, when we looked at his choice of a potential
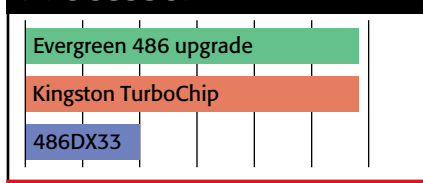
replacement machine – a Dan Technology Home PC similar to the machine we judged to be Best Budget Buy in our June awards issue – Nigel was impressed. 'There's no comparison between this and my old PC,' he said. 'It's really fast, and even with a TV tuner, a modem and a whopping hard disk it costs less than I paid five years ago for my old PC.'
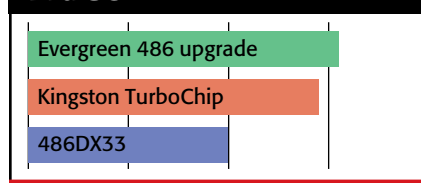
So will he buy one?

'No, at least not yet, I'm going to go for the Evergreen 486 upgrade. It costs exactly the same as the Kingston TurboChip so I might as well have the little bit of extra speed that it gives, even if I can't see it. I like the Dan, it's great, but I don't really need such a powerful machine right now. On the other hand, I'm not willing to spend any more money on my old PC after this upgrade, so when I eventually run out of hard disk space or if I start doing more work from home, then I'll buy the Dan or something very like it.'

We think Nigel made the right decision in terms of deciding to upgrade his PC and squeeze a bit more useful life out of it. However, if his computer hadn't already been equipped with plenty of memory, a decent graphics card and a 15in monitor, it would have been a different story. We'd have advised him to struggle on with his old kit until he could afford a replacement. ●

Processor

Evergreen 486 upgrade	
Kingston TurboChip	
486DX33	

Video

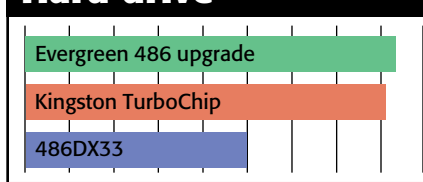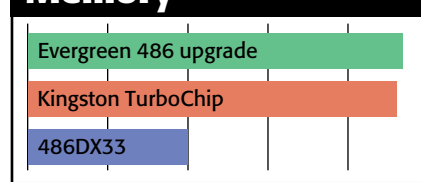|	
Evergreen 486 upgrade	
Kingston TurboChip	
486DX33	

These charts show the effect of both processor upgrades on the test PC's performance, relative to the original processor (which scores '1'). A longer bar = better performance.

Hard drive

Evergreen 486 upgrade	
Kingston TurboChip	
486DX33	

Memory

Evergreen 486 upgrade	
Kingston TurboChip	
486DX33	

Be a Testdriver

If you would like to appear in Testdrive, simply write to:
Testdrive,
***What PC?*,**
VNU House,
32-34 Broadwick Street,
London,
W1A 2HG