The background of the top section is a photograph of dark ink swirling in clear water, creating intricate, organic patterns. The overall color palette is a mix of dark brown, black, and light tan.

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Hewlett-Packard wakes up and makes a noise about cost-efficiency with new Officejet range.

Hewlett-Packard has built serious business inkjet devices with individual ink tanks since 2003, and arguably since 1994 when the DeskJet 1200c was produced. And yet, despite the fact that its Officejet range (those with four individual ink tanks) has always demonstrated a hugely superior Total Cost of Printing for small businesses (with fairly low print volumes) to any other inkjet device on the market, and to any laser printer you care to name, historically there seems to have been a reticence to marketing the range with vigour.

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that the company is responding by taking marketing of the Officejet Pro to a new level to show hard-pressed customers that there is a way to save money on colour office printing.

It is a good move – and it is a move Hewlett-Packard should have made several printer generations ago.

Part of the driving force is that volumes of print within small companies (Hewlett-Packard defines SMBs as up to 99 employees) are projected to continue rising,

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## Four-function inkjet AiO for up to 65% less than four-function laser AiO

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No doubt, some of this reticence comes from the fact that the Officejet Pro range competes directly against Hewlett-Packard's own range of low-end laser printers – and the company does not like to promote competition within itself.

However, the current financial situation is having such severe repercussions within small businesses

amounting to a CAGR from 2006 to 2010 of 9.5%. This, combined with a renewed concern to save money, means that low-cost inkjets are well placed to fulfil the need – as long as they are technically up to the job and capable of demonstrating that they provide adequate print quality.

Hewlett-Packard's newly announced Officejet Pro range consists of four

models - comprising single function printer and four-function All-in-One. Each is available as either a wired or wireless version.

Officejet Pro AiO models, in particular, present users with a range of features that leaves nothing out in terms of mid-range AiO capabilities. In fact, features are included that many users may never touch.

For our comparison, we have included the other obviously business-oriented inkjet All-in-One devices (i.e. including fax functionality and network interface) and added in the four most competitively-priced laser All-in-Ones to emphasise the supreme cost-



*Brother MFC-6490CW*

effectiveness of appropriate inkjet devices against laser devices. Brother's MFC-6490CW is included specifically to demonstrate that inkjet technology offers users the

opportunity to engage in A3 printing, copying, scanning and faxing (A3 fax in mono only) at a cost that is still lower than the cost of running a low-end A4 laser AiO.



*Hewlett-Packard Officejet Pro 8500*

We will see later in this article that there is only one instance where a user will have spent less on a laser device than on one of these business inkjet devices. That situation arises because the Xerox Phaser 6110 MFP has a very low purchase price whereas a user could take advantage of the A3 format and wireless interface of the Brother MFC-6490CW, which, of course, has a relatively high purchase price.

However, from that point on, no laser printer will ever cost less than an inkjet. And, it should be noted most strongly that the Phaser 6110 MFP goes on to become the most expensive option.

Let's begin, though, by looking at the capabilities of the various machines in the line-up.

In the table on page 6, we see that these business inkjet devices are highly specified and, in many instances, match or exceed the specification of the laser devices.

Print speed is the logical starting point and it is here that a comparison becomes slightly awkward because inkjet print speed is quoted differently from laser print speed.

Often a colour laser printer can claim some degree of superiority because its black print speed is faster than a business inkjet, even though its colour speed is significantly slower. However, where the Officejet Pro 8500 is concerned, any laser superiority is so minimal as to be not worth considering within a purchase evaluation.

Hewlett-Packard makes this as clear as possible by quoting figures for these Officejets in a manner that is similar to the way in which laser speeds are quoted. These come in at 15ppm in black and 11ppm in colour using an ISO standard, while draft speed is quoted as 35ppm and 34ppm. The previous generation of

Officejet Pros, using the same base engine and achieving the same draft print speeds, were quoted at 12ppm and 10ppm for 'laser quality' printing.

Real-life testing (by CharisCo Printer Labs) tends to show that correspondence quality inkjet colour print speeds will be lower than this in reality.

So far the fastest inkjet tested has returned a print speed of 2.81ppm for an office colour document, whereas the four-pass laser engine used in the Phaser 6110MFP returned exactly 4ppm.

Please note, however, that the Officejet Pro engine has not been tested to date and these results do not imply that 11ppm in colour is not achievable. This would need to be proved by testing.

However, on the face of it, we should be able to reckon that colour correspondence quality of these business inkjet devices should be comparable with (and could exceed) the print speed found on these four-pass laser devices.

Black print speed on the four-pass laser printers, on the other hand, cannot yet be matched by any inkjet device. The only instance where black inkjet print speed is likely to exceed laser print speed is where the single-pass Colour LaserJet CM1312nfi is concerned, with its 12ppm black printing.

As indicated, all AiOs used here have wired networking as standard but only inkjet devices (half of them!) offer wireless networking as standard - Brother MFC-6490CW, Epson Stylus Office BX600FW and Lexmark X7675. Aside from this group, there are also many other inkjet models from these manufacturers that include wireless networking. The most notable of these is a superior model of the Hewlett-Packard Officejet Pro 8500, costing a little under €90 more - i.e. still only a few Euros more than the Xerox Phaser 6110 MFP.

Paper handling between the two technologies is entirely comparable, with paper capacity typically being

150 sheets. Only the Officejet Pros offer a higher capacity on the inkjet side, while only the magicolor 1690MF offers more on the laser side. These same machines, joined by the A3 Brother device and the Xerox laser device permit the addition of a second paper tray.

Whereas manual duplex printing is found on all the laser devices, auto-duplexing is only found on the magicolor. By contrast, auto-duplexing is a standard feature on two of the inkjet models and is optional on a third.



*Epson Stylus Office  
BX600FW*

All Officejet Pro printers and AiOs from here on will have both network interface and auto-duplex printing as standard features. Wireless printing will not be standard for the foreseeable future because many organisations still have concerns over security.

Automatic Document Feed capacity of the inkjet devices easily matches that of the laser devices, with a capacity of 50-sheets available on most of the machines.

Brother MFC-5490CN	Print speed Network Paper input ADF Supplies Software	35ppm black / 28ppm colour Wired 150 sheets 50 sheets 450-page K; 325-page C/M/Y PaperPort
Brother MFC-6490CW	Print speed Network Paper input ADF Supplies Software Other	35ppm black / 28ppm colour Wired & Wireless 150 sheets Optional 250-sheet feed 50 sheets 900-page K; 750-page C/M/Y PaperPort <b>A3 Print/Scan/Copy/Fax</b> <b>Borderless printing to A3</b>
Epson Stylus Office BX600FW	Print speed Network Paper input ADF Supplies Software	38ppm black / 38ppm colour Wired & Wireless Paper handling not quoted ADF not quoted 995-page K; 815-page C/M/Y Presto PageManager
Hewlett-Packard Officejet Pro L7680	Print speed Network Paper input ADF Supplies Other	35ppm black / 34ppm colour Wired 250 sheets Optional 350-sheet feed 50 sheets 2,450-page K; 1,700-page C/M/Y Auto-Duplex - optional
Hewlett-Packard Officejet Pro 8500	Print speed Network Paper input ADF Supplies Other	35ppm black / 34ppm colour Wired 250 sheets Optional 250-sheet feed 35 sheets Pigment inks 2,200-page K; 1,400-page C/M/Y Auto-duplex standard
Lexmark X7675	Print speed Network Paper input ADF Supplies Other	32ppm black / 27ppm colour Wired & Wireless 100 sheets 25 sheets 500-page K; 500-page C/M/Y Auto-duplex standard
Hewlett-Packard Colour LaserJet CM1312nfi MFP	Print speed Network Paper input ADF Supplies Other	12ppm black / 8ppm colour Wired 150 sheets 50 sheets 2,200-page K; 1,400-page C/M/Y Manual Duplex
Konica Minolta magicolor 1690MF	Print speed Network Paper input ADF Supplies Other	20ppmm black / 5ppm colour Wired 200 sheets Optional 500-sheet feed Duplex ADF – sheets not quoted 2,500-page C/M/Y/K Duplex print and copy
Samsung CLX-3175FN	Print speed Network Paper input ADF Supplies Software Other	16ppm black / 4ppm colour Wired 150 sheets 15 sheets 1,500-page K; 1,000-page C/M/Y SmarThru Manual duplex
Xerox Phaser 6110 MFP/X	Print speed Network Paper input ADF Supplies Software Other	16ppm black / 4ppm colour Wired 151 sheets Optional 250-sheet feed 50 sheets 2,000-page K; 1,000-page C/M/Y PaperPort Manual duplex



*Toner mess*

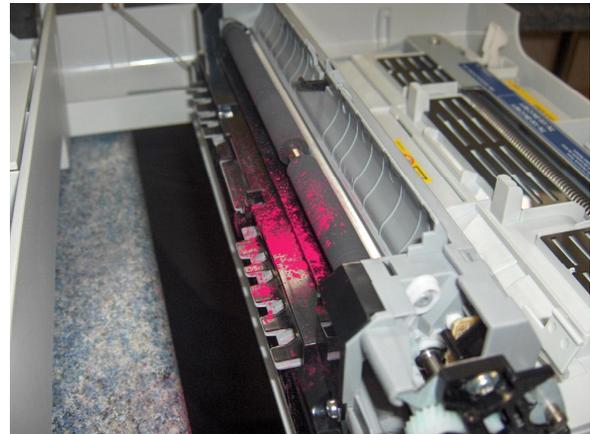
Supplies yield is one area where inkjet has typically fallen short against laser. However, we see yields well in excess of 2,000 pages for the black cartridges of the Officejet Pro devices and around 900 pages on the Brother MFC-6490CW and Epson Stylus Office BX600FW. Black toner yields range from 1,500 pages to 2,500 pages.

Colour cartridge yields for the same inkjet machines also compare favourably with the laser AiOs. Maximum colour ink yield is 1,700 pages (Officejet) against the typical toner yield of 1,000 pages. Only the magicolor 1690MF has a higher colour toner yield but, in balance, there are inkjet machines with colour yield as low as 500 or 325 pages (needless to say, these are the more costly devices to run!).

In terms of usability features, the two sets of AiOs are wholly comparable and a user is just as likely to receive document management software with an inkjet as with a laser.

For those concerned about print quality of inkjet against laser, inkjet

*Toner mess*



and media technology have improved so much that there should be very little cause for concern. Inkjet prints can be smudge and water resistant and there is no issue with the colorant being dislodged from the paper as can occur when laser prints are folded. In fact, print quality from some of the low-end laser printers can leave a lot to be desired. If in doubt, prospective buyers should obtain print samples from both technologies to compare.

Also, some laser printers can be every bit as messy – actually, more messy – than inkjet printers. See examples above.

And so, we move on the costs involved. The following table and charts show the cost situation from several perspectives.

What we find is that the Officejet Pro 8500 is, entirely understandably, the most expensive of the A4 inkjet machines. At a slightly higher price is Brother's A3 device. Even this,



though, costs less to buy than three of the four laser devices. As we have already seen, Xerox's Phaser 6110MFP is the only laser device to undercut any inkjet devices on hardware purchase.

Before we get too deeply into costs though, we should consider the durability implications of hardware cost, indicated by the quoted monthly duty cycle.

Pushing upwards, Hewlett-Packard has doubled the duty cycle of the Officejet series in these new releases from a maximum monthly throughput of 7,500 pages to 15,000 pages, thus justifying its higher purchase price along with its high specification. While creeping ever closer towards the level seen for the

laser AiOs, where maximum duty cycle starts at 20,000 pages, the Officejets are now more than well ahead of any other inkjet device - though it has to be said that there are no figures available for the Brother or Epson machines.

Our usual picture of nominal CPP being the inverse of purchase price holds for the laser devices here but, within the inkjet grouping, there are dynamics at work that change this picture somewhat.

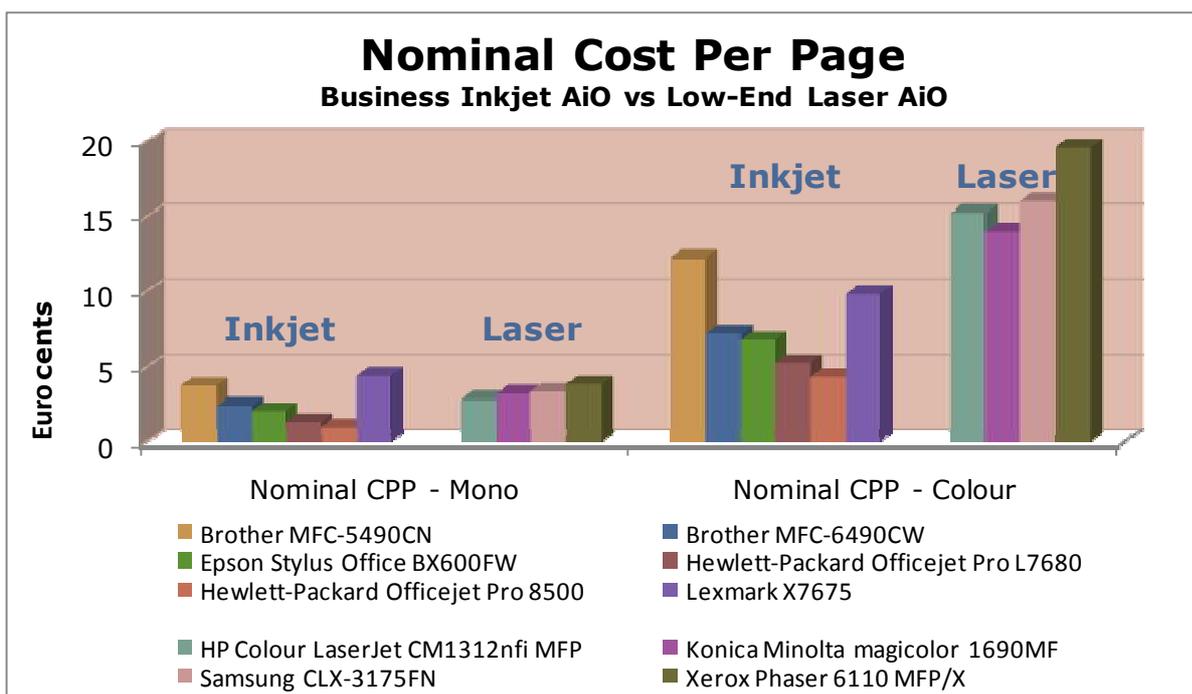
Firstly, Brother's MFC-6490CW is a high level A3 device, so displays a slightly different pricing model to the others where nominal CPPs look to be on the high side against the purchase price when compared to A4 purchase prices and ink supplies.

	Purchase / Duty Cycle	Print Speed		Nominal CPP	Mixed mono/colour CPP over 3 years
Brother MFC-5490CN	€146.48 Not quoted	Mono	35 ppm	3.76 pence	7.27 pence
		Colour	28 ppm	12.24 pence	
Brother MFC-6490CW	€388.79 Not quoted	Mono	35 ppm	2.44 pence	6.00 pence
		Colour	28 ppm	7.24 pence	
Epson Stylus Office BX600FW	€218.07 Not quoted	Mono	38 ppm	2.09 pence	4.58 pence
		Colour	38 ppm	6.81 pence	
Hewlett-Packard Officejet Pro L7680	€354.95 7,500 pages	Mono	35 ppm	1.35 pence	4.41 pence
		Colour	34 ppm	5.32 pence	
Hewlett-Packard Officejet Pro 8500	€258.13 15,000 pages	Mono	35 ppm	1.01 pence	3.47 pence
		Colour	34 ppm	4.37 pence	
Lexmark X7675	€184.36 5,000 pages	Mono	32 ppm	4.44 pence	7.11 pence
		Colour	27 ppm	9.84 pence	
Hewlett-Packard Colour LaserJet CM1312nfi MFP	€393.64 30,000 pages	Mono	12 ppm	2.86 pence	8.85 pence
		Colour	8 ppm	15.27 pence	
Konica Minolta magicolor 1690MF	€434.30 Not quoted	Mono	20 ppm	3.21 pence	8.30 pence
		Colour	5 ppm	14.04 pence	
Samsung CLX-3175FN	€373.43 20,000 pages	Mono	16 ppm	3.34 pence	8.69 pence
		Colour	4 ppm	16.02 pence	
Xerox Phaser 6110 MFP/X	€336.00 24,000 pages	Mono	16 ppm	3.85 pence	10.02 pence
		Colour	4 ppm	19.59 pence	

Note that for this level of machine, the mixed mono/colour CPP over three years shown in the accompanying table and charts is calculated on the basis of 500 pages per month; 70% pages in mono and 30% pages in colour; is based on the use of maximum capacity supplies; takes into account any standard, or starter, supplies shipped with the device; and also includes the cost of purchase. All prices are median street price sourced in Germany and include tax.

And secondly, Hewlett-Packard's new Officejet devices are being offered at a considerably lower hardware price than the previous generation but with supplies pricing that is falling below the level of the previous generation. This is testimony to Hewlett-Packard's determination to present the low end of the business market with a low-cost solution at a time of financial trouble. The company would prefer to make sales of less expensive equipment and supplies than risk losing the sales and customers to competitors.

Printers where the familiar trend definitely holds firm to the consumer model are the Brother MFC-5490CN and Lexmark X7675. Epson's Stylus Office BX600FW falls somewhere between the two business models with a very keen hardware price combined with a better-than-consumer level of nominal CPP. It does look to be on the high side but that is looking at the picture against the Officejets rather than against consumer levels. In reality, the Epson competes very well on cost against Hewlett-Packard's Officejets ...



... which leads us very neatly into looking at the Total Cost of Printing for these multifunction machines.

But, not before commenting that the nominal mono CPP for the new Hewlett-Packard Officejet Pro 8500, at just 1.01 cents, is as low as many high-end mono laser printers and well under half of the cost of most low-end mono lasers. This makes the Officejet, with not only its multifunctionality but also its colour capabilities a very attractive option as an alternative to mono laser.

Needless to say, nominal CPP on the laser AiOs is very much higher than experienced with the inkjet machines, except that the two inkjets that are more closely allied to a consumer oriented business model than to a business oriented business model are more expensive in mono than the laser machines.

Wrapping all the costs together gives us a dramatic picture of the cost-efficiency of business inkjet devices against laser devices. Leaving the

Brother MFC-5490CN and Lexmark X7675 aside, we see that all of the serious business inkjets are very significantly less costly to run in the long-term than any laser device.

At the bottom line though, not a single inkjet device – consumer oriented Brother and Lexmark devices included – will cost a user as much as running even the least costly

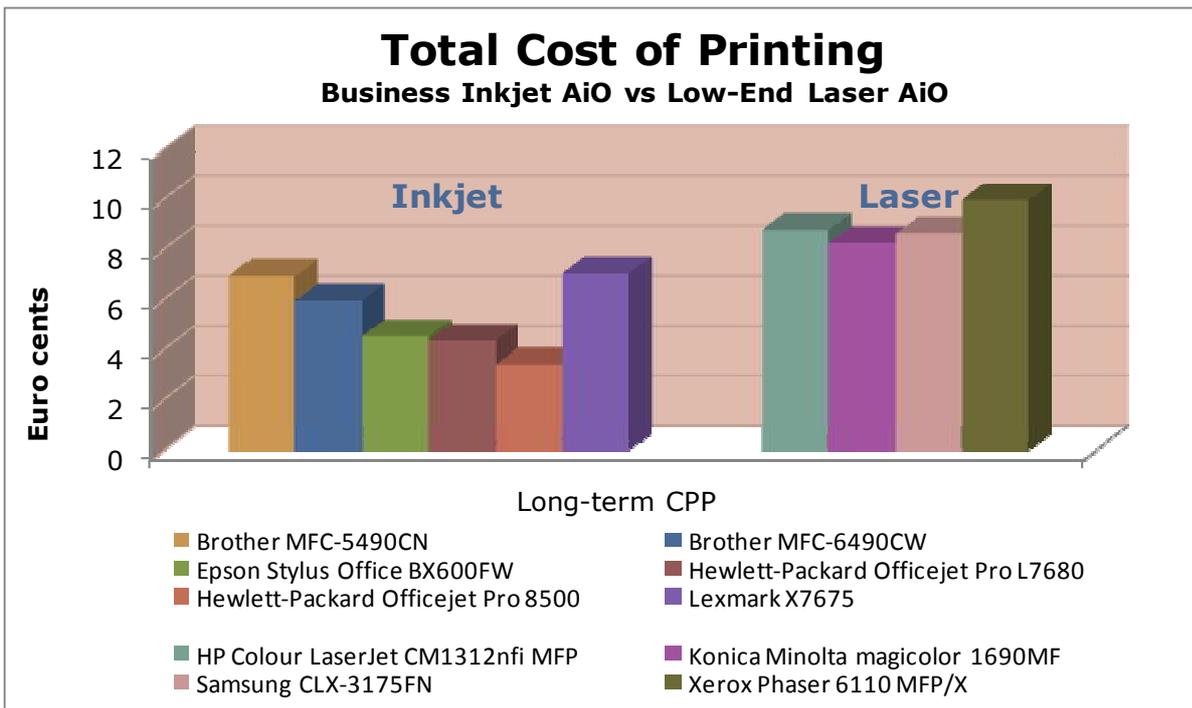
laser device, Konica Minolta's magicolor 1690MF. Even Brother's A3 AiO costs 28% less over three years than the magicolor.



*Konica Minolta  
magicolor 1690MF*

Looking at extremes, the new Hewlett-Packard Officejet Pro 8500 ultimately costs a massive 65% less than the Xerox Phaser 6110 MFP!

In its own marketing activities, Hewlett-Packard carefully avoids making a comparison with the Colour LaserJet CM1312nfi. Comparison is made against the CLX-3175FN from rising-star competitor Samsung. Here, Hewlett-Packard claims a cost

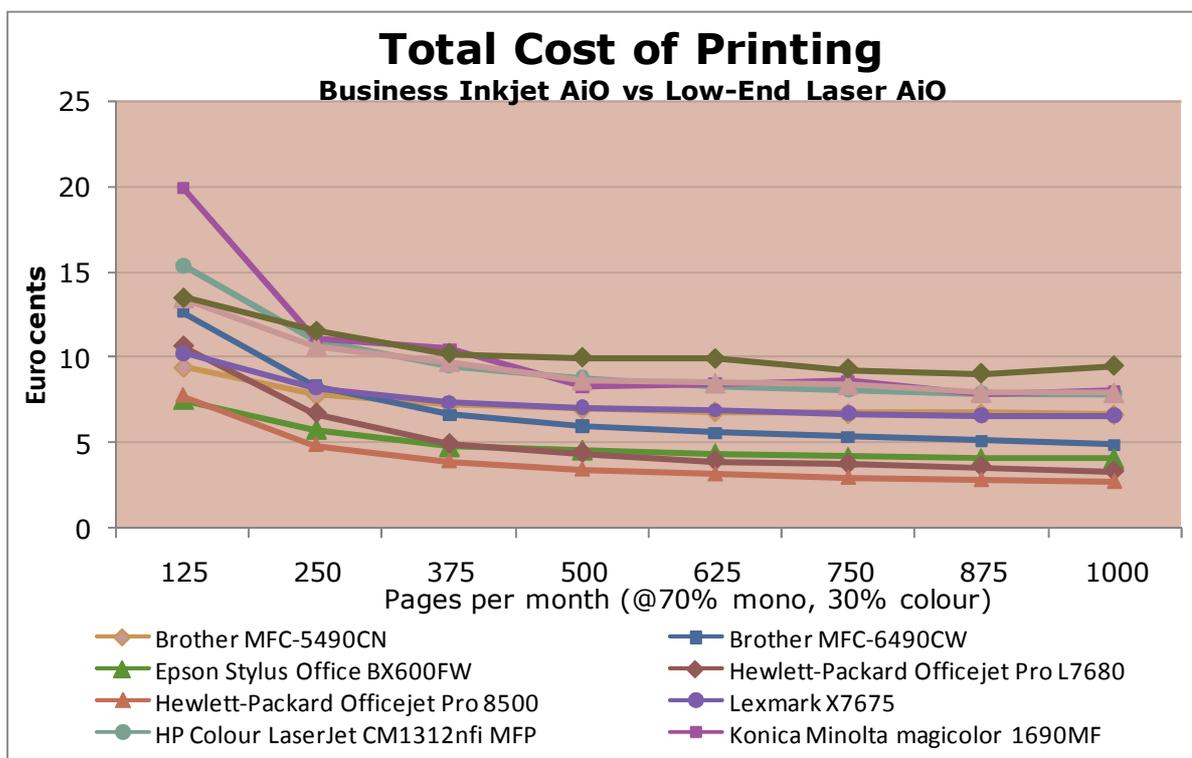


advantage of only 50% for the Officejet Pro 8500 when these figures show that a 60% advantage can be claimed!

Taking Total Cost of Printing over a range of monthly page volumes, we see in the chart below that there is no point at which any inkjet device costs more to run over a three-year period of ownership than a laser device. Furthermore, the Officejet Pro 8500 is a clear winner right from the very lowest of volumes. The much lower purchase price of the Epson Stylus Office BX600FW just allows it to

creep in with a fractionally lower Total Cost of Printing than the Officejet Pro 8500 at 125 pages per month but, even then, it is very close.

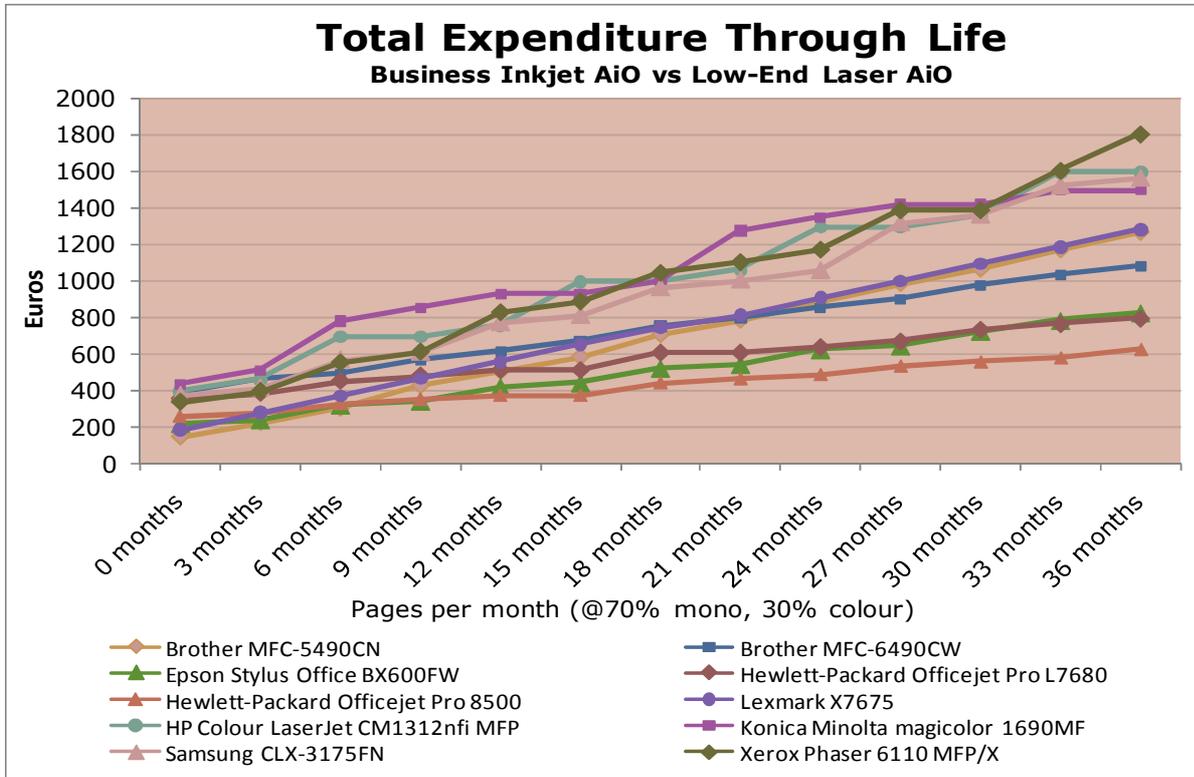
If we consider these All-in-One printers in terms of the actual expenditure on a quarterly basis over three years, we find that there is only one instance where an inkjet user will have spent more than a laser user after the initial purchase. This is at the three-month mark where the very high cost of supplies for the Xerox Phaser 6110MFP has not yet offset its very low purchase price, meaning that



the relatively high purchase price of Brother's A3 model results in a slightly higher expenditure. From six months onwards, however, there is no competition - all inkjet users will have spent less money than laser users.

Expenditure on Hewlett-Packard's Officejet Pro 8500 will be lowest after only 12 months, and that is compared to the Epson Stylus Office BX600FW! It is cheaper than all the lasers right from the outset.

From an ecological standpoint, the Officejet machines also cannot be touched by any laser machine. For instance, over a three-year period of ownership, printing 500 sheets per month with 70% in mono and 30% in colour, an Officejet owner would have used eight black cartridges and four each of the colour cartridges - total number of units, 20, each of which is small, light and responsible for minimal packaging. The user would not even need to replace the



print heads under normal circumstances - i.e. unless print volume was particularly high.

By contrast, the Samsung CLX-3175FN user would have used 12 black cartridges, five each of the colour cartridges, one imaging unit and three waste toner collection units - total number of units, 31, with each cartridge including a developer roller and associated mechanics, which need complex disassembly and recycling along with the imaging unit and



*Samsung CLX-3175FN*

require a much higher level of protective packaging than the inkjet cartridges. The impact and cost of manufacturing these items in the first place is also much higher, of course.

Thus, we can see without a shadow of a doubt that business inkjet technology is a far more cost-effective and ecologically friendly route to hard copy than laser technology for small businesses, home offices and even small departments in enterprise situations.

As always, the precise choice of device technology, type and brand depends heavily on page volume and page coverage - to make a decision

without considering all of these elements very closely would be foolish. Some users will need to overcome the traditional prejudice against inkjet technology but, if they do their research thoroughly, they will find that their pocket will benefit while their pride does not need to suffer.

For those needing the highest levels of functionality, the Officejet Pro 8500 WLAN version offers wireless networking, a 50-sheet ADF, a touchscreen user interface reminiscent of high-end laser MFPs, and Direct Digital Filing for workflow productivity.

~END~

TCPglobal - News, Views and Issues surrounding your Total Cost of Printing

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