

TONERmiser

An independent assessment

Delivering a radical and transparent reduction in printing costs through optimal toner usage

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A compelling need to Reduce the Cost and Impact of 'Out of Control' Printing.

In the current market, whether public sector or private, doing more with less resource, cutting costs and following a green agenda are all major drivers.

Where these three objectives can be met without the need for costly consultative support and without impacting the organisation's user community then there is surely a compelling reason to sit up and take notice.

Within any Organisation printing is a vast user of resources

Industry analysts including Gartner and IDC have recently sent a remarkably consistent message to CEOs: "The total cost of printing can amount to between 1% and 3% of turnover and are increasing fast. Print is the last out of control area of cost in most companies". Clearly this figure covers all aspects of print rather than just toner.

Typically organisations spend from £200 to £700 *per user per annum on office printing the single largest cost component of which is toner, which can represent up to 75% of this figure.ⁱ

A recent survey commissioned by Lexmark showed that board-level managers are alarmingly ignorant about the cost of print. Overall, 61% of finance directors had no idea at all of the cost of document production in their business. This increased to 71% for firms with a turnover of more than £20m. As a result, many finance directors have no plans to cut print costs, nor do they see document production costs as critical to financial budgeting.

Health Risks

As a fine powder, toner can remain suspended in the air for some period, and is considered to have health effects comparable to inert dust. It can be an irritant to those with respiratory conditions such as asthma or bronchitis. An unpublished study at the University of Rostock in Germany is reported to have found that the microscopic particles in toners are carcinogenic, similar to asbestos. Several technicians who had been working with printers and copiers on a daily basis were observed for several years. They showed increased lung problems.

However much strength you place on this issue (and clearly printers themselves are in reality very safe), it's clearly helpful to eliminate the potential for these particles to get airborne and potentially ingested by your staff. The less toner used the less this risk.

The Carbon Footprint

It takes almost a third of a gallon of oil to make a laser toner cartridge, which is why Governments, private companies and the print and cartridge manufacturers have implemented sophisticated toner replenishment schemes to reduce the need or desire to buy a new cartridge every time. But there are of course multiple associated costs involving energy use as well as the cost of the paper itself.

What Can You Do to Counter these issues and reduce the cost of printing?

You can follow best practices but don't rely on staff

Some things are obvious. If you have any desire to get a hold on these costs you will follow these practises.

- **Make use of shared procurement and managed print services** - to take advantage of economies of scale and focussed attention on cost effectiveness. The Government has strong policies on collaborative procurement and the introduction of shared facilities that both reduce costs by taking advantage of economies of scale eliminating inefficiency.

- **Printer Consolidation** – the fact that bigger printers are generally more efficient than small personal ones is true, and in general rationalisation makes some sense. But at the same time don't underestimate the impact of changes to the users' way of working and their own effectiveness. Printer optimisation after a careful review is likely to lead to the best, most balanced result.

Canon's recent research⁵ into green attitudes showed that organisations expecting their staff to take individual responsibility for reducing environmental impact are likely to be disappointed.

Whereas recycling and energy efficiency is common practice at home, just 5% of workers questioned said that they were as environmentally conscious at work and only 48% believed that protecting the environment during office hours was their responsibility. 33% felt that bosses should shoulder the burden and 9% even went as far as saying that it should be the government, not them, who should be held accountable for polluting practices.

In the light of these results it is clear that any organisation serious about change must enforce it at a strategic level. For example, it is no use expecting individuals to choose the double-sided setting each time they print – they may not. It is far more effective to make such settings the default.

Technical Approaches to Print Cost Reduction

Relying upon the printer manufacturers to provide ever more efficient technology is another option and over the years they have done that to a degree. For example:-

Recovery of waste toner

In early printers, as much as 20 to 25% of feed toner would wind up in the cleaner sump and be discarded as waste. Improved printer efficiencies have reduced this waste stream to lower levels. Some printer designs have attempted to divert this waste toner back into the virgin toner reservoir for direct reuse in the printer; these attempts have met with mixed success.

Duplex Printing

According to Gartner, organizations can reduce annual paper costs by at least 30% by selecting duplex printing as the default setting across the output fleet. A 1,000-person organization could eliminate up to 1.6 million pages and save £22,500 per year by eliminating banner page printing.

Clearly there are times when this is a good option to enforce, but generally users resent this approach preferring a choice, and in many circumstances Duplex printing is inappropriate.

Use economodes

Printer manufacturers provide modes on their printers that allow the user to set a reduced print quality to reduce toner. According to Gartner, reducing the density of toner by 10% - 20% can reduce per-page costs by 5% - 10%, or \$4 to \$7 per user, per month. There is one major problem with this and that is that the economodes show a visible reduction in the quality of print and for many purposes this is not acceptable. It is also worth noting that economodes only affect mono toner. This is of course partly related to the fact that the printer manufacturers gain significant revenues both directly and indirectly through the sale of toner and it's not in their interest to undertake sophisticated print optimisation.

Print Management Systems

The management of distributed PCs and servers would be much harder without centralized systems management technology for monitoring performance, delivering updates and diagnosing and fixing problems remotely. With printers this provides remote deployment and diagnostics, firmware updating, supplies status reporting, group access management and usage reporting. Tools can manage access to print facilities at a group or policy-level, controlling access to features such as colour printing or binding. Security capabilities can ensure specific types of documents or users' printouts are held in memory until a PIN code is entered by the authorised user at the printer. Enhanced reporting also provides print job tracking by user and application, and the ability to view all the attributes of any 'rogue' printers that users have attached directly to their PCs.

In a well run organization a print management solution of some sort whether from HP, Microsoft or a specialised company will form part of your infrastructure management strategy. The problem is that it's not trivial to set-up and manage all the usage policies that will result in the saving of printing costs such as toner without diminishing the users' choice and perceived quality of print.

The Ideal Answer

There is little doubt that following all the good technical advice and best practices would result in a cost reduction in print costs, even if in getting these there was some disruption and probably the need to involve consultants and technical support staff. In an ideal world what we need is a transparent, seamless solution based on predefined policies that requires no complex technology changes and no intervention by users or print management staff.

TONERMiser professes to deliver this and so in the next two sections we will offer the briefest of explanations as to how it achieves this goal followed by our assessment of the truth of its claims and our advice on its usage.

Key Features of TONERMiser

There are really only two key features of TONERMiser that really matter here. One is if the transparency and simplicity from the users' perspective means that it does not impact their work in any way. The second is whether it delivers much higher quality print results than standard printer economodes with significantly greater toner savings.

Transparency and Simplicity

TONERMiser has absolutely no impact on the users' work. Its small driver sits between the application generating the print job and your normal print driver. Users print as normal but the toner optimisation settings, set centrally, are applied at time of print. Installation is also completely transparent from the users' perspective and can be undertaken through Active Directory Group Policy a log-on script or manually, and takes only minutes to accomplish. The Active Directory holds all the policies and user information and is administered centrally with no impact on the users. Once installed the user just prints normally and TONERMiser works out when and how much toner savings should be applied. The toner saving can be set for different groups, individuals and printers and where the settings vary a clever prioritising system works out the optimal setting to use.

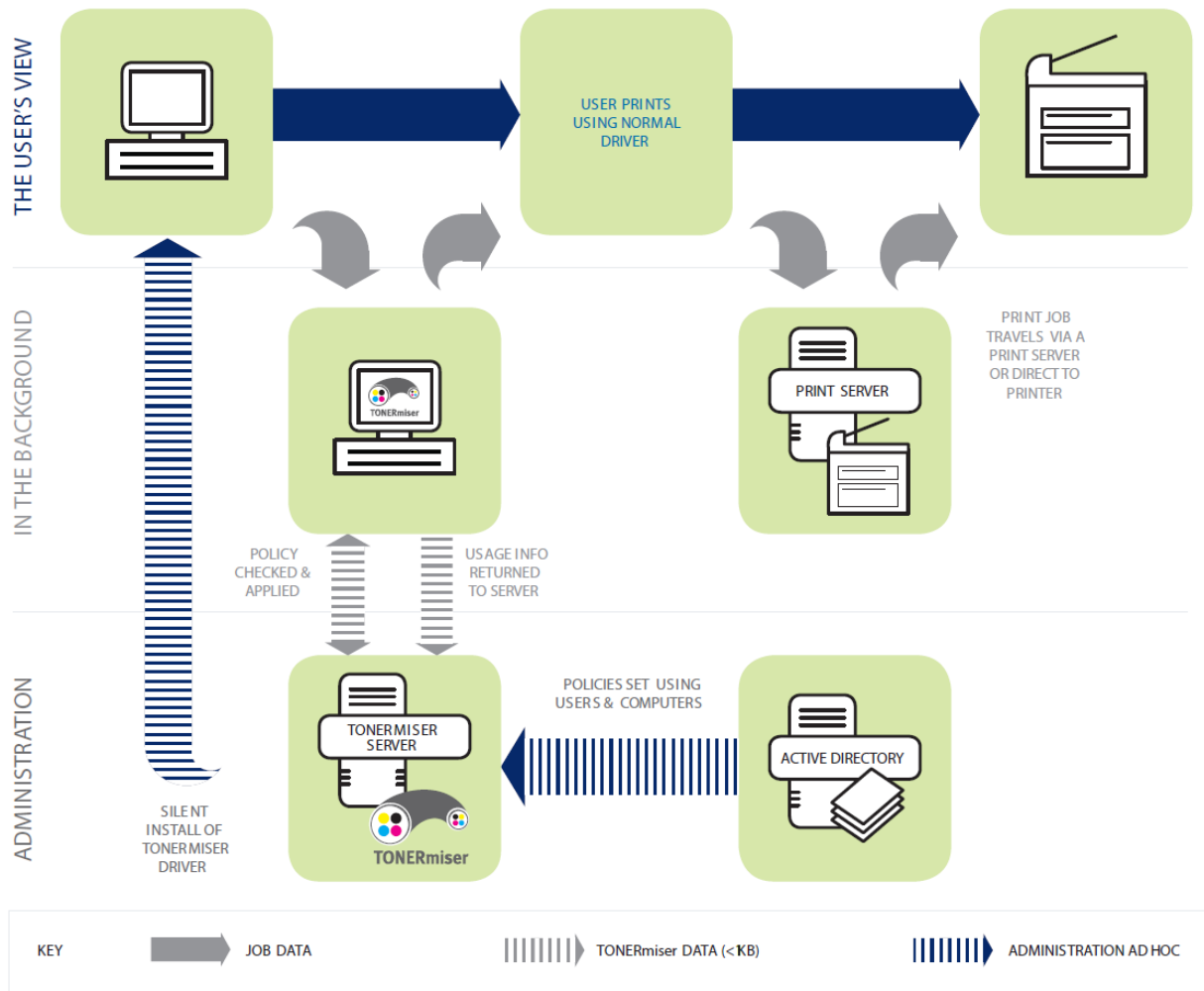


Figure 1: TONERmiser working transparently

Figure 1 shows the flow of a document and the control process. When a user initiates a print the TONERmiser server is notified by the TONERmiser client and checks with Active Directory to determine the toner savings policy for that user and the chosen printer. The TONERmiser server adjusts the print accordingly and sends the print through to the standard printer driver which then prints to the chosen printer using its normal print server.

Quality of Output

TONERmiser uses algorithms covered by 11 international patents to preserve quality even on a maximum toner optimisation setting of 50%. Quality is maintained through the preservation of edges and sensitive graphical components such as thin lines. So does it work?

Independent Assessment of TONERmiser

Figure 2 shows example prints with varying degrees of toner savings applied. The quality of what's printed here is obviously slightly worse than the real result due to the reproduction in this document, but it serves to offer a relative illustration of the legibility of the printouts with different savings applied.

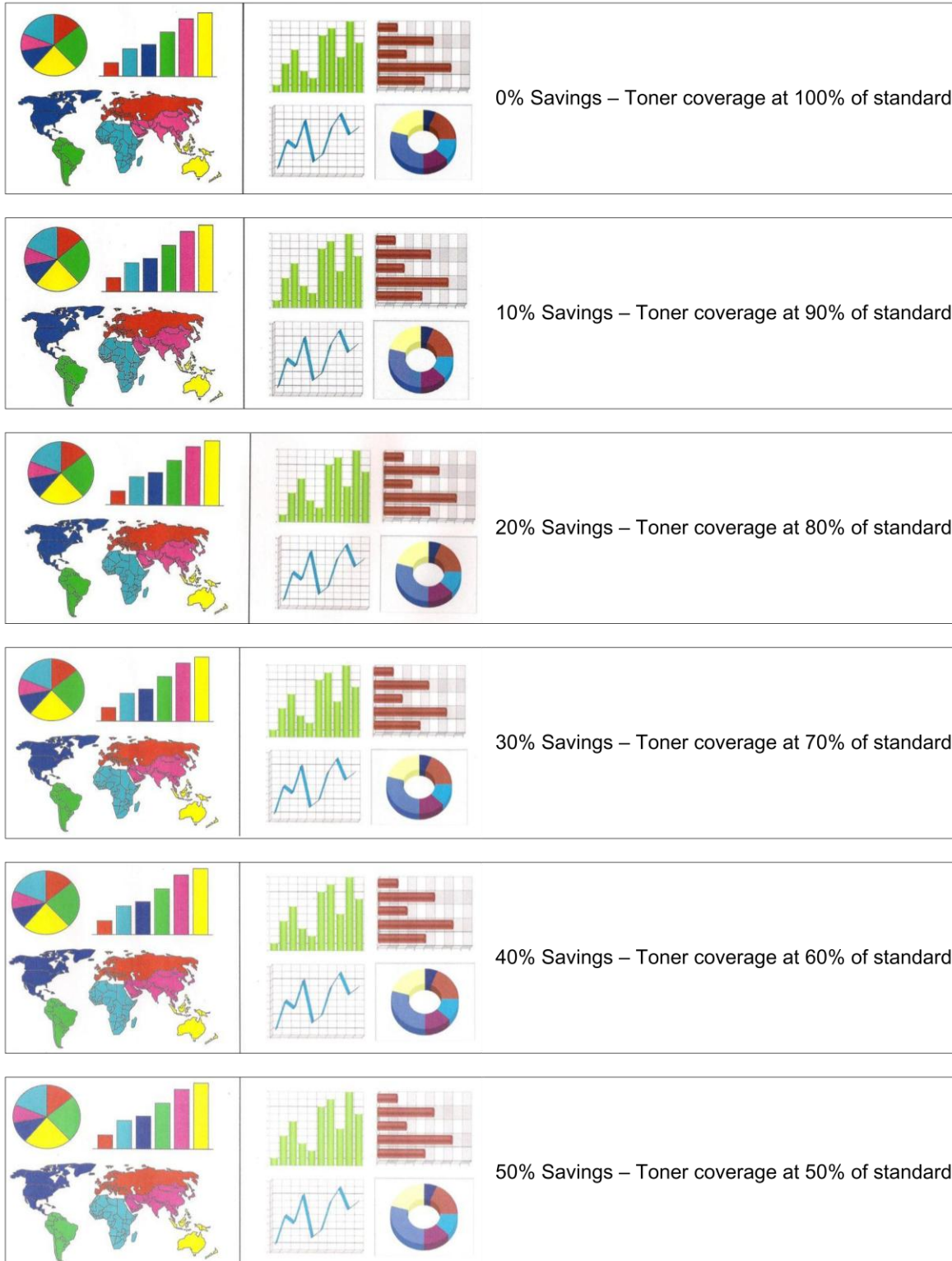


Figure 2: Sample prints

To assess the value of TONERmiser we asked ourselves a number of questions.

1. Are the results better than using the standard economodes provided by the printer manufacturers?
2. At what point would users notice any degradation in print quality?
3. At what point are prints too poor to read comfortably?

The answer to question one is a resounding yes. The print quality at 20% is much better than anything we have seen on an economode setting.

The second question is clearly relative and would depend on the type of user. A hawk-eyed marketer might not accept even a 10% reduction in quality whilst an admin assistant in accounts might not notice a 30% saving. Experience in a number of organisations has shown that implementing TONERmiser with a 25% setting is often possible without the users noticing.

The third point is also judgemental, but we would suggest that in everyday use where the result was for internal consumption then even the 50% level offers an acceptable quality. For external work it might be sensible to limit the saving to something like 25% or 30%.

If we could reduce the cost of Toner what would we actually save?

We have a number of ways to look at this.

Typically organisations spend from £200 to £700 per user per annum on office printing the single largest cost component of which is toner, which can represent up to 75% of this figure.

Again lets be cautious and say that we spend £400 on each person on printing that can be optimised by TONERmiser and that 75% of the cost is on toner where we can make a saving of 25%. Let us also assume that we have 1,000 staff*.

Total Saving = cost per person*no of people*percentage of cost for toner*percentage saving on toner* using TONERmiser

Total Saving = £400*1,000*75%*25%

Total Saving = £75,000.00

Of course you have to take off the cost of purchasing TONERmiser but no matter how you look at it there are clearly very significant savings possible.

Let's now look at 3 vertical sectors and the average paper and print usage per sector and the savings that can be achieved in each vertical:

Example Calculation UK Government

On average a UK Government sector worker print 8,424 mono and 840 colour pages per annum. Also based on research average cost of consumables for laser printing is 1p mono and 5p colour. Therefore for a 1,000 user* UK Government organisation the annual toner cost would be £ 126,240.

Savings based on the average 25% of toner reduction as a result of implementing TONERmiser would equate to:

£31,560.00 per annum

Example Calculation Education Sector (Further & Higher Education)

On average a UK Education sector user (staff & students combined) print 10,332 mono and 2,124 colour pages per annum. Also based on research average cost of consumables for laser printing is 1p mono and 5p colour. Therefore for a 1,000 user* UK Education organisation the annual toner cost would be £ 209,520.

Savings based on the average 25% of toner reduction as a result of implementing TONERMiser would equate to:

£52,380.00 per annum

Example Calculation Financial Services Sector

On average a UK Financial sector user print 6,900 mono and 1,200 colour pages per annum. Also based on research average cost of consumables for laser printing is 1p mono and 5p colour. Therefore for a 1,000 user* UK Financial Services organisation the annual toner cost would be £ 129,000.

Savings based on the average 25% of toner reduction as a result of implementing TONERMiser would equate to:

£32,250.00 per annum

***pro-rata savings can be made on any number of staff or users ranging from 100 upwards**

Conclusion

Looking at the evidence of the print quality possible with even savings of up to 50% and the ease of implementation we would have to say that this is an opportunity to reduce print costs that appears to have very little negative impact and a great deal of positive benefits. It will enforce the introduction of best practise, contribute to your green credentials and save you a considerable amount of money. It is certainly something that should be looked into very seriously by all but the smallest organisations.



About the author

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ⁱ Intellect – “Managed Print Services – Tools for the Information Age”