



Switch to the sustainable choice

Epson Business Inkjet Technology

Fleet optimisation report: Sustainable printing:
a comparison between your current printers
and the Epson inkjet alternative

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This report has been formulated using print device information, print volumes, job length, consumable changing times and hourly rates supplied in consultation with the end user. This brochure is produced and published by partner name in accordance with Epson.

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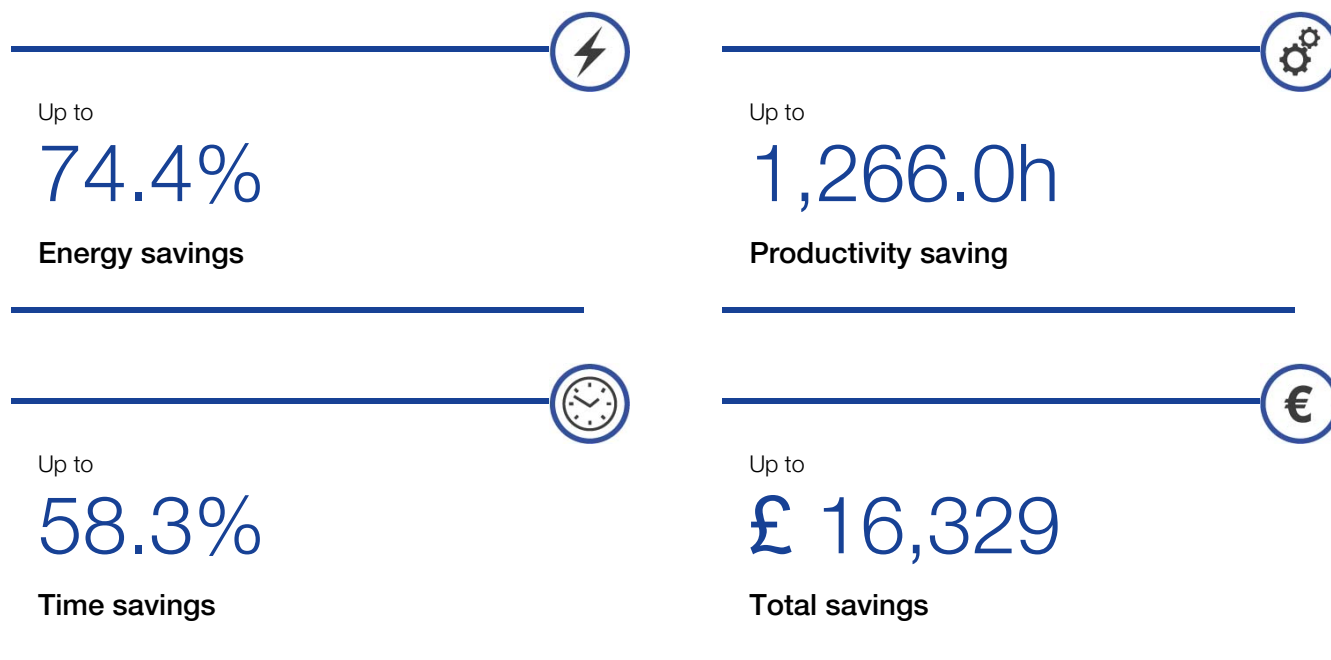
Contents

- 1. Your summary (estimate)**
- 2. Current situation**
- 3. Epson proposal**
- 4. Epson and sustainability**
 - 4.1 Epson's ecological vision
 - 4.2 Sustainable Development Goals (SDGs)
 - 4.3 Approach to climate change adaptation
 - 4.4 Sustainability in our supply chain
 - 4.5 Key sustainability highlights
- 5. Inkjet technology**
 - 5.1 Inkjet is the future
 - 5.2 Heat-Free Technology
- 6. Save time with highly productive inkjet technology**
- 7. Sustainability**
 - 7.1 Using fewer consumables
 - 7.2 Fine dust and ozone
 - 7.3 TEC values
 - 7.4 CO₂ reduction
 - 7.5 Waste production
- 8. Boosting efficiency by managing consumables**
- 9. Cost savings**
 - 9.1 Epson alternative
- 10. Detailed overview**

Manufacturers' data used in Optimisation Calculator provided by DataMaster Lab / Printer-Benchmark.com. Epson calculation methodology for Typical Energy Consumption (TEC) has been independently verified by DataMaster Lab / Printer-Benchmark.com.

1. Your summary (estimate)

Based on your data inputs, here is a summary of the many ways your business can benefit by making the switch to Epson business inkjet printers, featuring Epson Heat-Free Technology.



Advantages of Epson Heat-Free Technology compared to laser technology

Less power consumption saves energy and money

Epson's Heat-Free Technology uses up to 83% less energy than laser printers¹, because it does not use heat to warm up. As inkjets have no fuse unit to heat, this results in significantly less power consumption.

Save time with consistent high-speed printing

Heat-Free Technology requires no heat to warm up, when it is switched on or awoken from sleep. This means you can start printing immediately, making it up to 50% faster from ready compared to laser printers

Less power consumption saves energy and money

Laser printers typically have more consumables and require periodic replacement of the drum, transfer belt and fuse in many cases. Thanks to Heat-Free Technology, our inkjet printers produce up to 96% fewer used consumables than laser printers²



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2. Current situation

The print equipment below is included in the print optimisation calculation

	Current laser models	Technology Profile	Speed (ppm)	Number	Mono volume (Month per printer)	Colour volume (Month per printer)	Average job size (pages)	Mono volume (Total in contract)	Colour volume (Total in contract)	Total volume (In contract)	Time printing (hours)	Supplies changes required	Supplies maintenance (hours)	Power cost	CO2 generation (kg)
1	Kyocera TASKalfa 3252ci	A3 MFP Colour 31-44 ppm	32	5	1,553	1,920	3	465,750	575,850	1,041,600	2,116	165	55	683	459.58
				Total	5			465,750	575,850	1,041,600	2,116	165	55	683	460

After analysing the data you provided relating to your current equipment, it results in some challenges for your business, as follows:

Sustainability

- High waste production by periodically replacing parts (drums, fusers, developers)
- Higher number of consumables
- High energy consumption
- Large CO2 footprint of the current machine fleet

Operating expenses

- High energy costs
- More actions due to higher number of toner changes
- Higher level of inventory management

User-friendliness

- Less user-friendly due to warm-up time
- Heat production in the workplace

Print environment management

- High management burden due to smaller content toner cartridges that need to be changed more frequently
- Toner cartridge inventory management inefficient
- More "downtime" due to wear and maintenance of drums, fusers, developers etc.

3. Epson proposal

The Epson alternative consists of the following models and print volumes:

Current laser models		Technology Profile	Speed (ppm)	Number	Mono volume (Month per printer)	Colour volume (Month per printer)	Average job size (pages)	Mono volume (Total in contract)	Colour volume (Total in contract)	Total volume (In contract)	Time printing (hours)	Supplies changes required	Supplies maintenance (hours)	Power cost	CO2 generation (kg)
1	AM-C4000	A3 MFP Color Inkjet 31-44 ppm	40	5	1,553	1,920	3	465,750	575,850	1,041,600	877	85	28	175	117.88
			Total	5				465,750	575,850	1,041,600	877	85	28	175	118
*based on manufacturers' FPOTs and print speeds															
Saving											15,488		338	508	342
% saving											59%	48%	49%	74%	74%

Your potential savings



Save up to **58.6%**
Time printing (hours)*



Save up to **48.5%**
Supplies changes required



Save up to **49.1%**
Supplies maintenance (hours)



Save up to **74.4%**
Power cost



Save up to **74.4%**
CO2 generation (kg)



4. Epson and sustainability

Better Products for a Better Future™



4.1 Epson's ecological vision

Epson has pledged to reduce its total emissions in line with the 1.5°C scenario by 2030 and we have announced we will become carbon negative and underground resource-free by 2050.

Our new Environmental Vision 2050 sets out our target to reduce direct emissions by 19% (scopes 1 and 2) and indirect emissions (scope 3) by 44% before the end of 2025. We estimate our efforts will enable us to reduce greenhouse gas emissions in the supply chain by more than two million tonnes. We have already committed to achieving 100% renewable energy across the entire Epson Group by 2023.

4.2 Sustainable development goals

Established in 2015, the UN Sustainable Development Goals (SDGs) are a blueprint for creating a more sustainable future by 2030 and have been adopted by 193 countries worldwide.

Epson has addressed its commitment by aligning all its operation and activities to the 17 SDGs.

For more information about the SDGs and Epson' deployment, see https://global.epson.com/SR/csr_initiative/sdgs.html





SCIENCE BASED TARGETS

DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

4.3 Approach to climate change adaptation

Our Environmental Vision 2050 sets out our global environmental goals for 2050, and this year we renewed those goals in line with the acceleration of global efforts to combat climate change.

Epson is actively working to reduce environmental impacts throughout the value chain by leveraging our efficient, compact and precision technologies to improve the environmental performance of our products. Through our technology innovations we seek to minimise the environmental impacts incurred by our customers when using Epson products.

4.4 Sustainability in our supply chain

As a sustainably responsible business with our own production facilities, we strive to reduce our environmental impact across all aspects of the value chain. To achieve our carbon negative goal at a global level by 2050, Epson is dedicated to implementing a sustainable approach - from our operations, products and services to our business relationships and supply chains.

We believe all our suppliers should abide by our Supplier Code of Conduct which aligns with the code of conduct created by the Responsible Business Alliance (RBA) and the UN SDGs.

4.5 Key sustainability highlights

- All our European offices, our factory in Telford and our European Central Distribution Centre in Bedburg, Germany, are all powered with electricity from renewable sources.
- We have reduced truck usage for the journey from Rotterdam port to our Central Distribution Centre. Transportation is now rail (70%), barge (28%) and trucks (2%)
- Epson has been placed for the first time on the prestigious corporate sustainability A list by the globally influential environmental non-profit CDP for leadership in tackling climate change and water stewardship.
- Epson sites earned platinum in RBA audits for socially responsible manufacturing.
- Paper recycler that closes the resource loop.
- We have set aside 100 billion Yen (770 million Euros) over the next ten years with a focus on decarbonisation, resource recycling and an accelerated programme to develop environmental technologies.

5. Inkjet technology

5.1 Inkjet is the future

Epson inkjet is the future of sustainable business printing and offers revolutionary advantages in terms of durability, maintainability and print quality over conventional laser technology. Currently, 33% of business users already choose this technology, and leading market research firm IDC expects this rate to increase to 43% by 2022¹

5.2 Heat-Free Technology

We are 100% committed to our Heat-Free inkjet technology, and our proprietary PrecisionCore piezo technology underpins all Epson inkjet printers across our consumer, office, commercial and industrial print ranges, and is what separates us from other manufacturers.

Benefits of Heat-Free Technology:

- Up to 96% fewer used consumables than laser printers²
- Up to 83% less power consumption and CO2 emissions than comparable laser printers³
- Fewer replacement parts means a lower environmental impact
- Less intervention increases productivity
- Consistent high-speed printing - up to 50% faster from ready compared to laser printers⁴



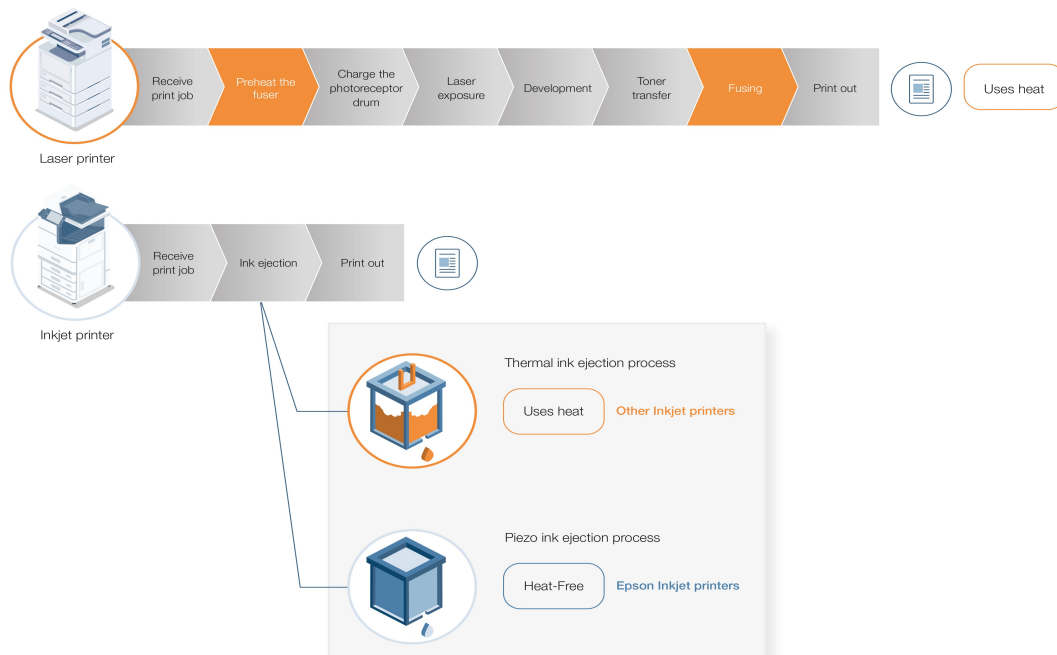
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Two main characteristics distinguish Epson's technology:

1. Unlike thermal inkjet printers and laser printers, Epson's Heat-Free Technology does not require high temperatures for the ink ejection process. Instead, pressure is applied to the piezo element, which bends backwards and forwards when the ink is ejected through the print head. Thanks to this Heat-Free technology, Epson printing systems are the most energy efficient systems in the market.

2. The volume of the ink in each ink drop can be controlled very precisely because the piezo element can be precisely controlled. This results in a very high print quality. Micro Piezo technology uses piezo crystals that send electrical signals to the printer via electric bursts. This produces extremely consistent, small drops in terms of shape and size that produce clear and sharp prints.



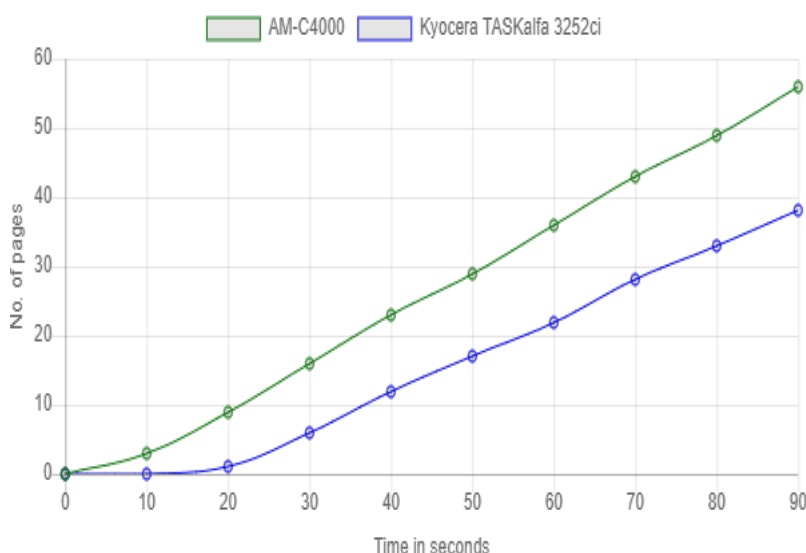
6. Save time with highly productive inkjet technology

Over the period of the contract and based on the data you provided, we have calculated the time spent printing with user intervention is up to **2,171 hours** in your current situation.

Using the proposed Epson solution you could save **58%**. This is a difference of **158 working days**.

The graph below shows that the **AM-C4000** (green) processes the print jobs much faster than the **Kyocera TASKalfa 3252ci** (blue).

For example, a **3 -page** document on the **AM-C4000** multifunctional with a print speed of **40 pages** per minute is printed much faster than the **32 pages per minute** **Kyocera TASKalfa 3252ci**.



As Epson's business inkjet multifunctionals do not have a warm-up time and because they are able to print the first page very quickly, users could achieve a time saving of **1,266 hours** over a **60 - month** contract period.

Using the data you provided, we can estimate potential savings through productivity and user intervention of **£ 15,821**



Potential saving of up to

1,266.0

hours over a 60 -month contract period

7. Sustainability

7.1 Using fewer consumables

Laser printers usually use more consumables and, in many cases, require periodic replacement of the drum, transfer unit and fuser unit. Thanks to Heat-Free Technology, our inkjet printers, compared to laser printers, contain fewer parts that need to be replaced periodically and the print heads last the lifetime of the printer. This reduces the environmental impact of production, use and recycling.

7.2 Fine dust and ozone

In inkjet technology, the ink is sprayed directly onto the paper by means of a print head, the ink is a liquid, rather than a powder like toner. This makes the inkjet printing process very clean.

7.3 Power performance

A lower TEC value means that a printer is more energy efficient than a device with a higher TEC value.

When switching amongst to Epson inkjet technology, high energy savings can be achieved because Epson printing equipment has amongst the lowest TEC values in the market.

Compared to the current print fleet, the use of Epson printing equipment can save **1,494 kWh** over the entire contract period.



Potential saving of up to

1,494 kWh

over the entire
contract period



Laser printer

From old, laser technology to new Heat-Free Epson inkjet technology



Inkjet printer



7.4 CO2 reduction

As Epson inkjet is a "cold technology" and no heat is applied during the printing process, Epson printers and multifunctionals consume much less energy than laser-based equipment. This leads to a much lower CO2 emission than comparable laser multifunctionals and laser printers.

The current laser print fleet has a high degree of CO2 emissions. By switching from laser technology to Epson business inkjet technology they can achieve a CO2 reduction of **48%** over the contract period.

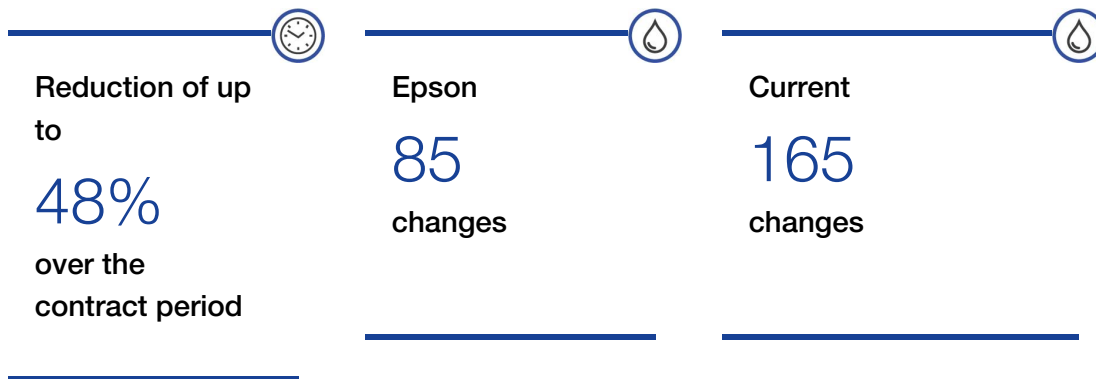
7.5 Waste production

Our ink cartridges need to be changed far less frequently due to their high capacity. Epson inkjet multifunctionals are made up of fewer internal components than comparable laser printers and multifunctionals.

Epson inkjet technology ensures that less waste is produced than laser technology by:

- Fewer empty ink/toner cartridges, packaging materials and transport.
- No drums, fusers and transfer units.
- Reducing the use of raw materials.
- Epson recycling programme with reuse of materials like plastics.

Your potential savings



8. Boosting efficiency by managing consumables

If the cartridges need to be replaced regularly, as the number of prints that can be made with a toner cartridge (Yield) is often lower than the current situation, many consumables (toners) must be kept in stock. In addition, these toner cartridges are larger than ink cartridges.

In the current situation **165 toner** changes are required during the contract period. The high capacity of the Epson ink cartridges largely reduces the work of managing consumables.

For the proposed configurations and print volumes, the Epson multifunctionals require **85** compared to the current laser multifunctionals - this is **80** fewer changes. This corresponds to a reduction of **48%** on the facility management workload.

Your potential savings

€

80

fewer
changes

⚙️

Reduction of
up to

48%

on the facility
management
workload

Based on the following actions, this results in the following estimated time savings:

Inventory management (25%)

- Accept sent cartridges
- Internal distribution to stock location
- Orderly placement of cartridges in stock

Place new cartridge (50%)

- Walking distances to stock location
- Find the right cartridge from stock
- Remove packaging material
- Remove empty cartridges and place new ones
- Cleaning up packaging material

Collecting waste (25%)

- Separate waste
- Waste disposal at garbage facility

During the contract, this means, assuming **20 minutes** of working times as specified above, a time saving of:

Your current situation involves **55 hours** expended on changing consumables. This compares to **28** in the Epson proposal. This represents a **48% saving**.

9. Cost savings

By implementing Epson equipment, an energy saving of **1,494 kWh** could be realised over the entire contract period. Based on a business energy tariff of **0.340 £/kWh** this results in a cost saving on energy of **£ 508** compared to the current situation.

9.1 Reducing wasted time

The total savings that can be achieved by reducing energy consumption, changing consumables, and reduced print waiting times are as follows:

Total Savings Indicator	
Savings handling	£ 333
Savings energy	£ 508
Savings print time	£ 15,488
Total savings	£ 16,329

Consumables Handling	Changes	Time Printing & User intervention	Hours	User Intervention Cost	
Current situation	165	Current situation	2,171	Current cost	688
Epson situation	85	Epson situation	905	Epson cost	354
Difference	80	Difference	1,266	Difference	333
% Difference	48%	% Difference	58%		
		Difference working days	158		

Country	United Kingdom
Customer name	North York Moors National Park Authority
Contract length (months)	60
Supplies changing time (mins)	20
Hourly rate	£ 12.5
Electricity cost /kWh	0.34

Energy Use	kWh	CO2Emissions	kg CO2		
Current situation	2,009	Current situation	459.58	Current cost	683
Epson situation	515	Epson situation	117.88	Epson cost	175.00
Difference	1,494	Difference	341.70	Difference	508
% Difference	74%	% Difference	74%		74%



10. Detailed overview

SUSTAINABILITY				
ITEM	CURRENT SITUATION	EPSON ALTERNATIVE	SAVINGS / DIFFERENCES CURRENT versus EPSON	
Energy use over 60 months	2,008.82 kWh	514.71 kWh	1,494.12 kWh	74.38%
Energy usage / Year	401.76 kWh	102.94 kWh	298.82 kWh	
Energy usage / Month	33.48 kWh	8.58 kWh	24.90 kWh	
Energy usage / Day	1.10 kWh	0.28 kWh	0.82 kWh	
Energy usage / 1,000 Pages	1.93 kWh	0.49 kWh	1.43 kWh	
CO2 emission over 60 months	459.58 kg	117.88 kg	341.70 kg	74.35%
CO2 emission / Year	91.92 kg	23.58 kg	68.34 kg	
CO2 emission / Month	7.66 kg	1.96 kg	5.69 kg	
CO2 emission / Day	0.25 kg	0.06 kg	0.19 kg	
CO2 emission / 1,000 Pages	0.44 kg	0.11 kg	0.33 kg	
# of trees to compensate CO2 emission	21 Trees	5 Trees	16 Trees	

PRODUCTIVITY				
ITEM	CURRENT SITUATION	EPSON ALTERNATIVE	SAVINGS / DIFFERENCES CURRENT versus EPSON	
Number of cartridge over 60 months	165	85	80	48.48%
Print waiting/service time over 60 months	2,171 hours	905 hours	1,266 hours	58.31%

FINANCIALS				
ITEM	CURRENT SITUATION	EPSON ALTERNATIVE	SAVINGS / DIFFERENCES CURRENT versus EPSON	
Estimated costs over 60 months	£ 27,820.50	£ 11,491.67	£ 16,328.83	58.69%
Total Cost / Year	£ 5,564.10	£ 2,298.33	£ 3,265.77	
Total Cost / Month	£ 463.68	£ 191.53	£ 272.15	
Total Cost / Day	£ 15.24	£ 6.30	£ 8.95	
Total Cost / 1,000 pages	£ 26.71	£ 11.03	£ 15.68	



By replacing existing printing fleet with
Epson Heat-Free devices

North York Moors National Park Authority

Could be reducing over 60 month contract
duration

341.70 kg CO₂

&

1,494 kWh

And estimated

1,266.0 hours

Reduced printing/waiting & intervention time

The savings mentioned are estimates based on
Epson's calculation method. Estimated savings depend on
the development of the fleet during the term of the contract.

“Epson’s Optimisation Calculator is an innovation that breaks barriers in giving businesses a truer understanding of printing implications. By utilising competitor specifications, harnessing data from DataMaster Lab, and cross-checking with previously-established methodologies to avoid deviation, Epson has created a calculation methodology that achieves an admirably fair analytical tool that is a real credit to data application and to Epson’s sustainable technology proposition.”

Edward Bilson, Technical Director of DataMaster Lab



Energy saving calculated based on comparison of Typical Energy Consumption (TEC) of the devices. Epson calculation methodology for TEC is an innovation based upon previously-established methodologies, removing averages and replacing these with manufacturers' per-product power consumption data as provided by DataMaster Lab /Printer-Benchmark.com, and has been independently-verified by DataMaster Lab / PrinterBenchmark.com. CO2 saving calculated as being proportional to energy (i.e. reduced energy usage results in reduced CO2 generation), based on a per-territory average generation of kg CO2 per kWh electricity used. Time saving calculated based on comparison of i) manufacturers' per-product first page out time data as provided by DataMaster Lab / Printer-Benchmark.com, and ii) devices' maximum A4 ppm.

1 IDC Technology Spotlight, sponsored by Epson, BUSINESS INKJETS: TACKLING CLIMATE CHANGE, doc #EUR148484621, January 2022

2 Storage space comparison based on Epson calculations of storage space requirements for packaged consumables sufficient to print 6,000 pages on 12 SFP and MFP (3-in-1) printers selected from among the top-selling 50% of A4 monochrome laser printers (below-20ppm class) listed in IDC Worldwide Quarterly Hardcopy Peripherals Tracker 2019Q2 data FY17 results. Average toner package unit volumes and yields for each model were calculated by Epson using toner package dimensions and yields published by the manufacturer for each model (as of August 2019). Actual size and number of toner cartridges required varies by laser printer model. EcoTank consumables quoted yields are simulated figures calculated by Epson based on ISO/IEC24711 methodology using ISO/IEC19752 test pat.

3 Based on Epson calculations, the Epson WorkForce Pro WF-C8190DW uses 83% less energy than the HP Color LaserJet Enterprise M750dn, the highest-selling model in the A3 colour single-function 21-30ppm printer segment (IDC, Quarterly Hardcopy Peripherals Tracker, Q4 2015 to Q3 2019 shipments, published Q2 2020). Methodology based on "Typical Energy Consumption", defined under and/or simulated with reference to the ENERGY STAR test procedure and presented in kWh per year. CO2 saving calculated as being proportional to energy saving, based on a per-territory average generation of kg CO2 per kWh electricity used.¹

4 Based on Epson calculations, Epson business inkjet time-saving calculated by comparison to business laser devices' average lowest "Print/Copy time" ("from Previous Job", "from Ready State" or "from Sleep State") as reported by ENERGY STAR, added to the time taken to print at maximum speed the remaining pages in an average sized office print job and multiplied by the average number of print jobs per year, according to Keypoint Intelligence. Laser printer models identified using IDC, Quarterly Hardcopy Peripherals Tracker, Q3 2016 to 2020 Q2 shipments, published Q2 2020.

5 Source: CBS, Energy Market Prices, Electricity Prices PX.

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