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EUROPE 2025

THE PULSE

LEARN · CONNECT · ENGAGE

Flexo for Folding Carton Production

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Edale

INTRODUCTION

- 30 years with Edale, a UK-based manufacturer of flexographic print and converting solutions for labels & packaging.
- 20+ years as Managing Director.
- 2022, I led the sale of Edale to Canon Production Printing, resulting in Edale becoming a Canon Company.
- For the last 20 years, Edale has run against the tide, developing solutions for single-pass carton production.
- I have personally been involved in the design, development and sale of single-pass flexographic carton production lines, resulting in more than 50 installations.



AGENDA

- Explore how inline flexo compares to traditional offset and sheetfed workflows for carton production.
- Learn about press configurations and how to adapt label press knowledge to carton production.
- Understand the types of carton jobs best suited for inline flexo and where it delivers the most ROI.

EDALE: THE CARTON & LABEL PRESS PEOPLE

We design and engineer printing and converting solutions for the packaging industry.

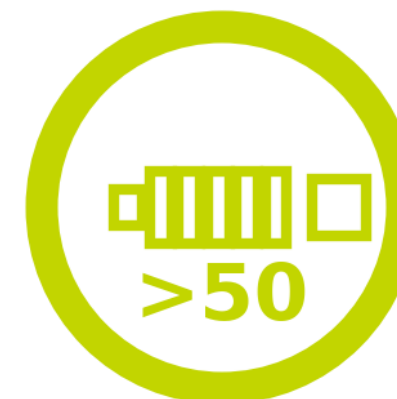
“Our solutions are trusted globally by business owners, packaging specialists and production managers from organisations of every size.”



>50% Revenue from carton applications



Edale first exhibited single-pass carton production at IPEX 1998, Birmingham UK



>50 installations of single pass carton production lines.



EDALE: A CANON COMPANY

Part of **CANON PRODUCTION PRINTING** SINCE 2022

**A LEADER IN DIGITAL
CONTINUOUS &
SHEETFED PRINTERS**

**2,900
EMPLOYEES**

**€1.5BN+
REVENUE**



HOW DOES SINGLE PASS FLEXO COMPARE TO TRADITIONAL OFFSET FOR CARTON PRODUCTION?



COMMON CARTON PRINTING PRODUCTION CHALLENGES



EXCESSIVE SET-UP
TIME & WASTE



HIGH RUNNING &
MAINTENANCE COSTS



LARGE
WORKFORCE



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LARGE MANUFACTURING SPACE &
WORKING AREA FOR MULTIPLE MACHINES



HIGH WIP & STORAGE INCREASES
WORKING CAPITAL



INCREASED SKUs



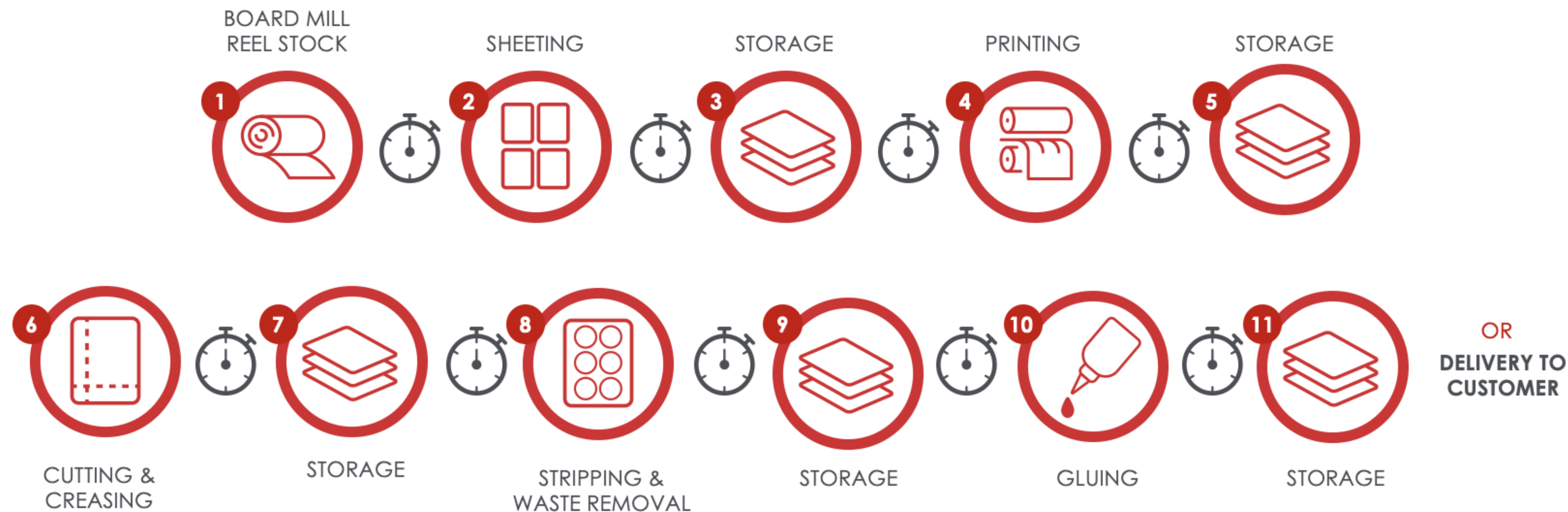
LONG DELIVERY TIME TO MARKET



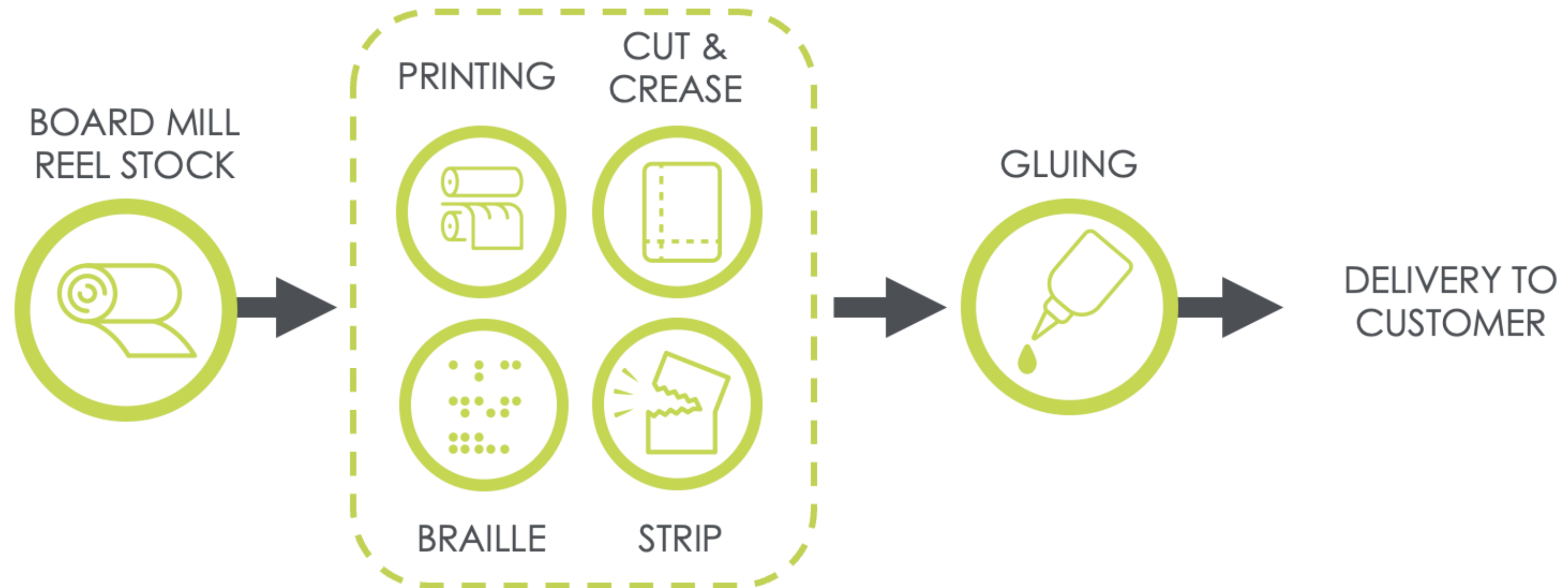
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TRADITIONAL CARTON WORKFLOW

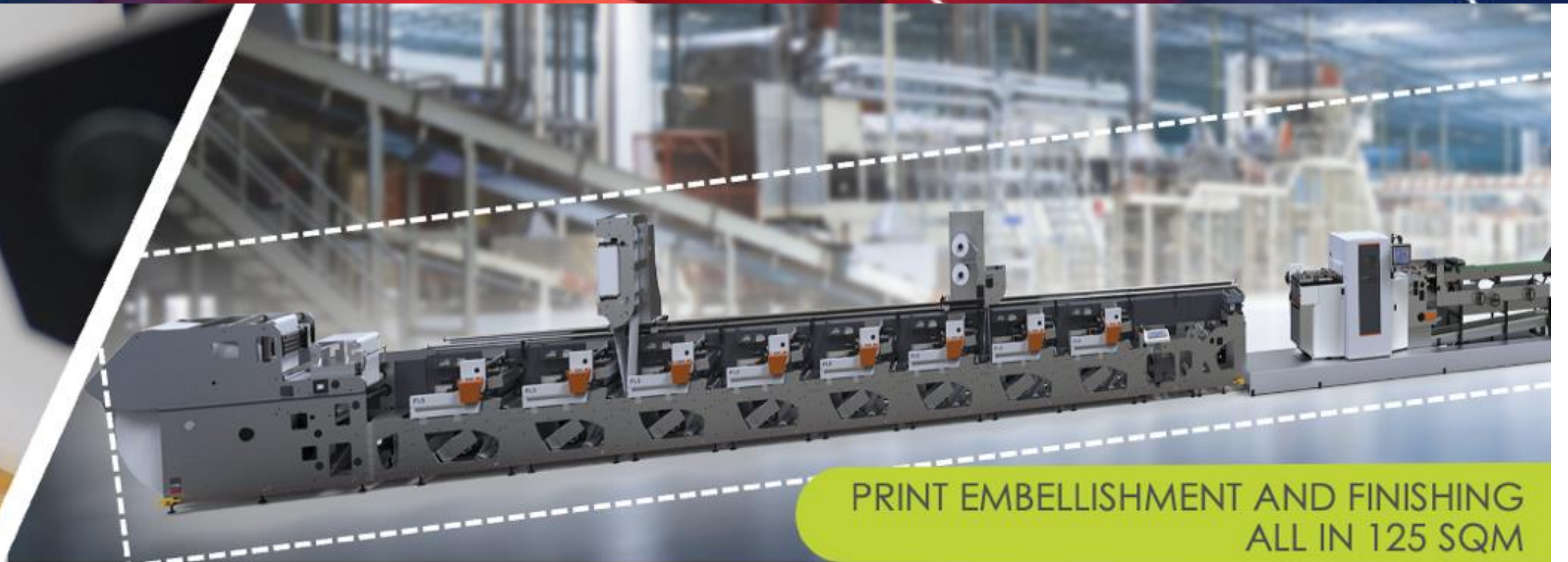


HOW IS SINGLE-PASS FLEXO DIFFERENT?





REDUCED WIP FREES FACTORY SPACE
FOR PRODUCTIVE ACTIVITY



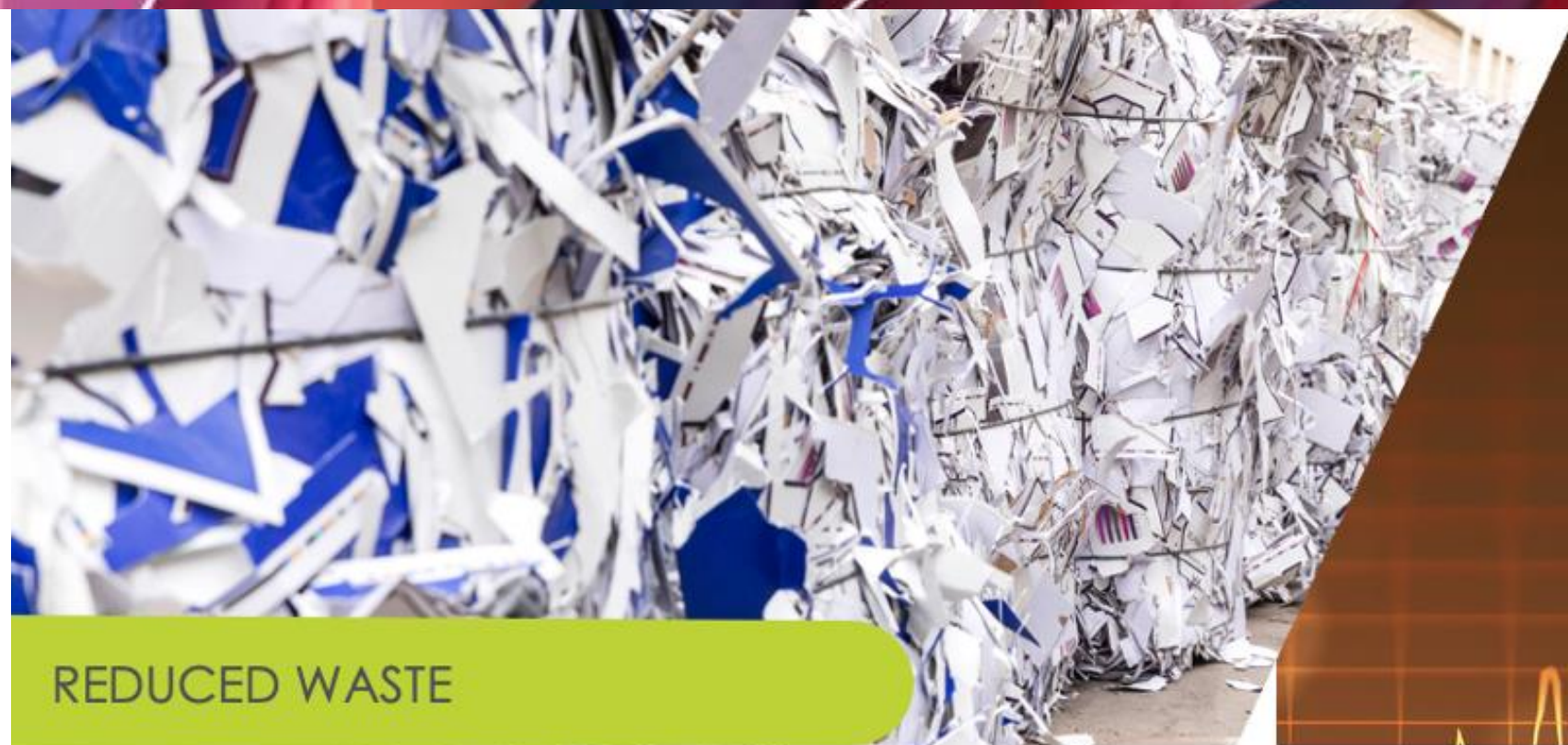
PRINT EMBELLISHMENT AND FINISHING
ALL IN 125 SQM



SINGLE OPERATOR PRINT AND FINISHING



SAVE ENERGY



REDUCED WASTE



LOWER CAPITAL INVESTMENT



SHORT, MEDIUM &
LONG RUNS



REDUCED LEAD TIMES



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OPEN YOUR MIND TO FLEXO SOLUTIONS

UV FLEXO



IMPROVE COLOUR
CONSISTENCY

UV INKS



STRONG, VIBRANT
& INSTANT DRYING

SINGLE PROCESS



TIGHTER PROCESS
& QUALITY CONTROL

EMBELLISHMENTS



DIFFERENTIATE | ADD VALUE
PROTECT CLIENTS



Tighter process control | Increased added value | Lock out your competitors



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WHAT ARE THE PRESS REQUIREMENTS FOR SINGLE PASS CARTON PRODUCTION?

THE SINGLE-PASS CARTON PRODUCTION LINE



Roll fed



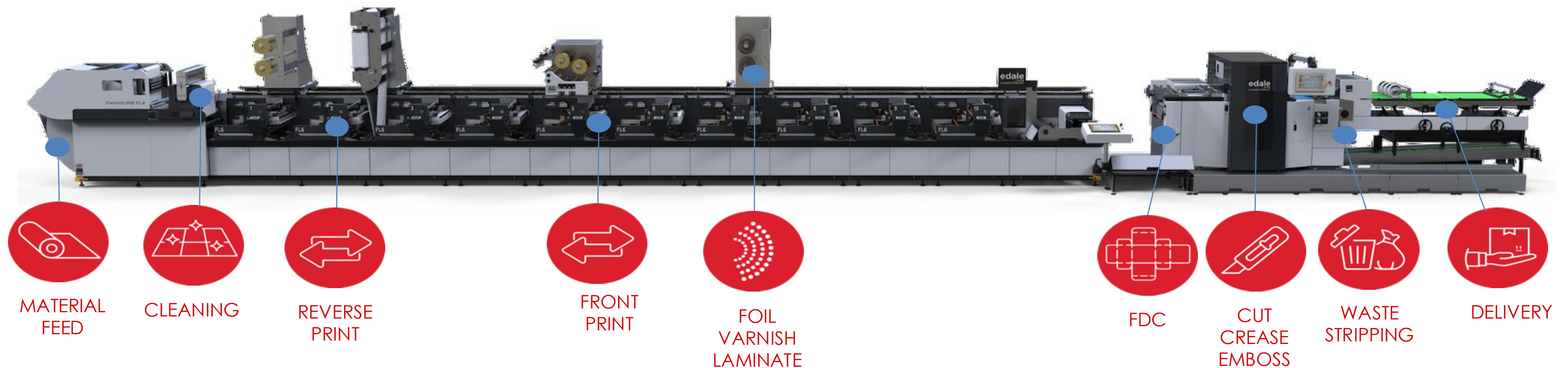
Printing/Perfecting/Varnish/
Foiling/Laminating



Cut/Crease/Blank/Delivery



THE SINGLE-PASS CARTON PRODUCTION LINE



MINIMUM PRESS REQUIREMENTS

- >500MM width, ideally 550-650mm.
- >600um substrate calliper capability.
- 1.5m unwinder, contact & noncontact cleaning.
- Quick colour change.
- UV & WB technologies.
- 8, ideally 10 flexo stations.
- 2 foiling/lamination stations.
- Foil save.
- Turnbar.
- Flatbed die cut, crease emboss.

EXPLORE THE TYPE OF CARTON JOBS AND FORMATS SUITED TO THE SINGLE PASS FLEXO PROCESS.

WHAT DOES THE DATA SAY?

FACTORS CONSIDERED

Cost of Finance/Capital

Depreciation

Power

Maintenance/Service

Utilisation/Availability

Shift Pattern

Labour

Operating Speeds

Run Length

Processes

Carton Size & Stepping

Make Ready

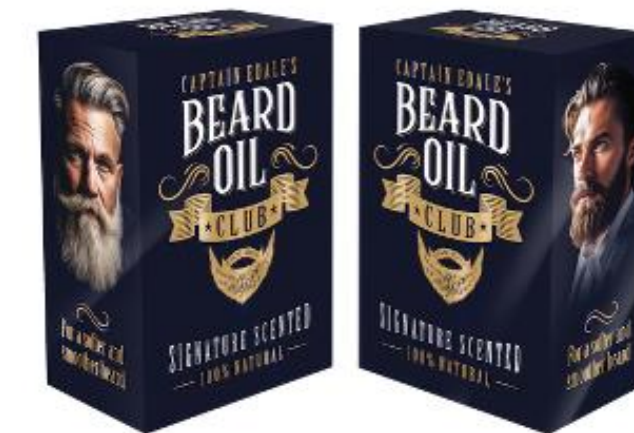
Waste (setup & run)

Consumables:

- Board
- Inks/varnishes/adhesives
- Foil
- Laminates

Plates & Tapes

Die Tools



MID SIZE HIGHLY EMBELLISHED BOX

Beard oil carton box

Configuration:

L 286mm x W 257mm

75,000 Cartons

Reverse Print

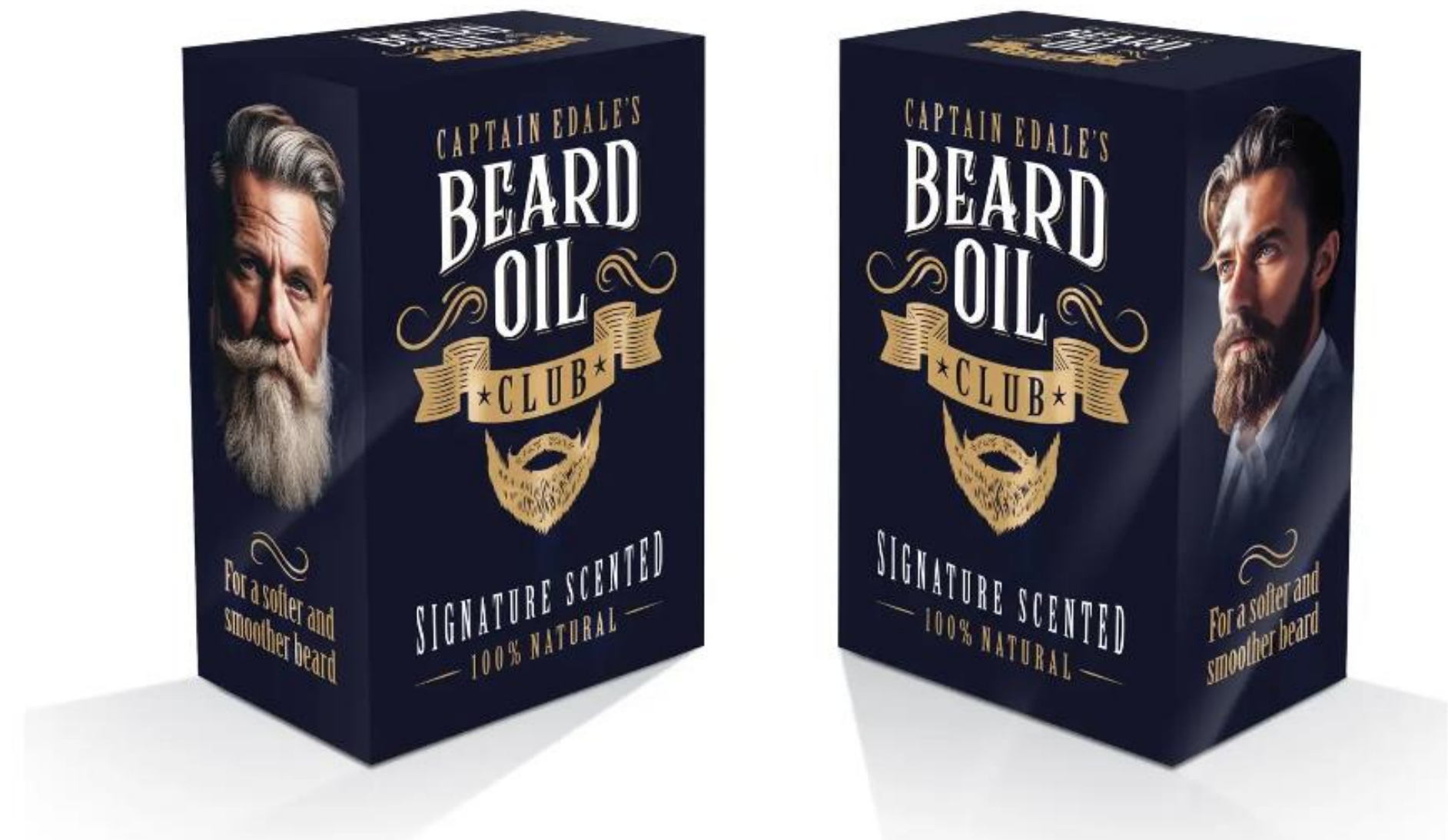
CMYK

Foil

Gloss Varnish

Cut, Crease, Emboss

Strip

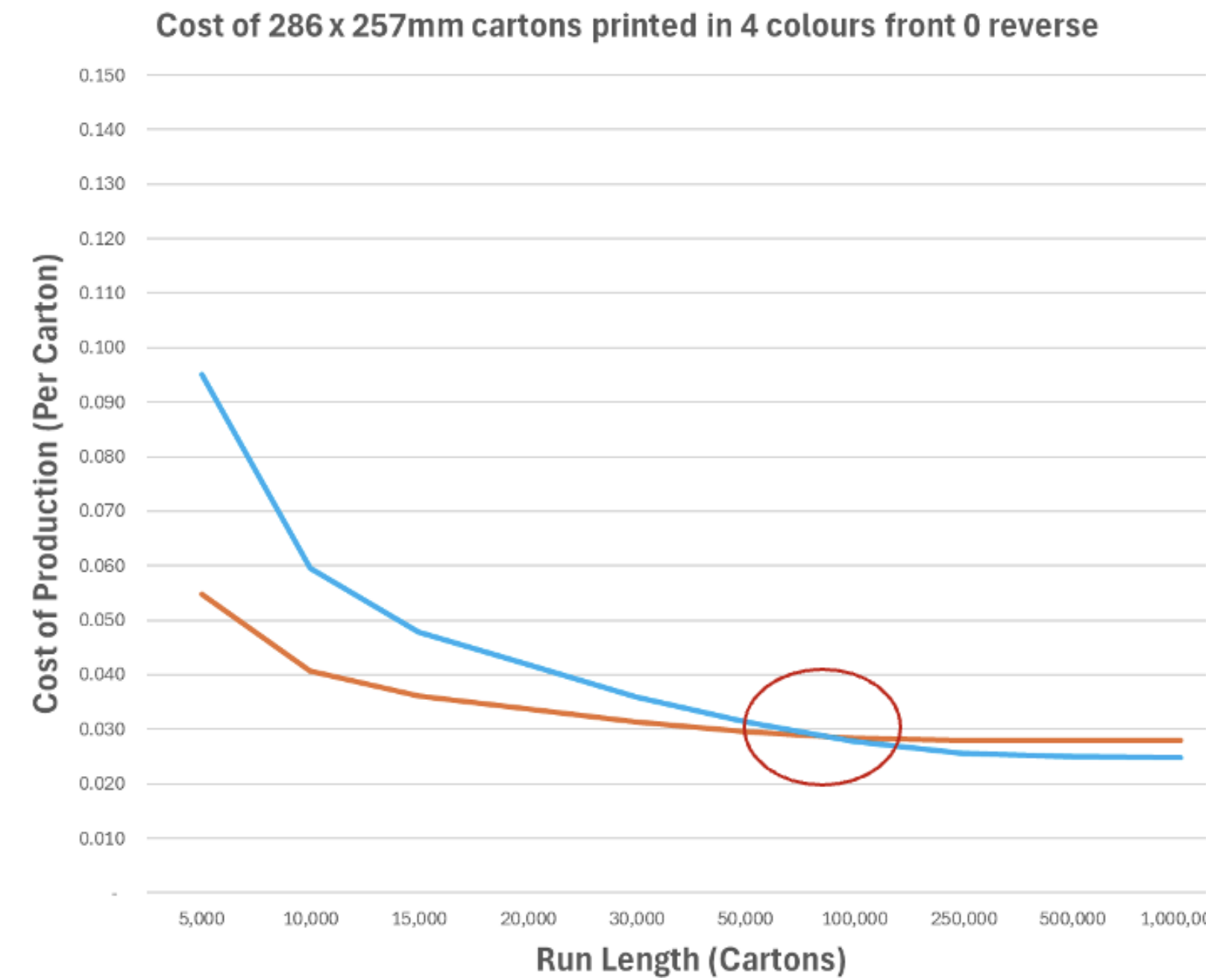


MID SIZED HIGHLY EMBELLISHED BOX

Surface Print

- Slight cost advantage at 75,000 cartons
- Economic transition point – 76,900 cartons
- Total production time significantly less
- Waste higher
- Lower annual print capacity

	Flexo		Litho		
Total Costs	£	2,141.82	£	2,149.57	▲ 0.36%
Cost Per Carton	£	0.029	£	0.029	▲ 0.36%
Total Production Minutes	mins	222.17	mins	407.14	▲ 45.43%
Waste	£	286.51	£	241.34	▼ 18.72%
Annual Print Capacity - Job	#	1,080	#	1,841	▼ 41.31%
Annual Print Capacity – Million Cartons	#	81.0	#	138	▼ 41.31%

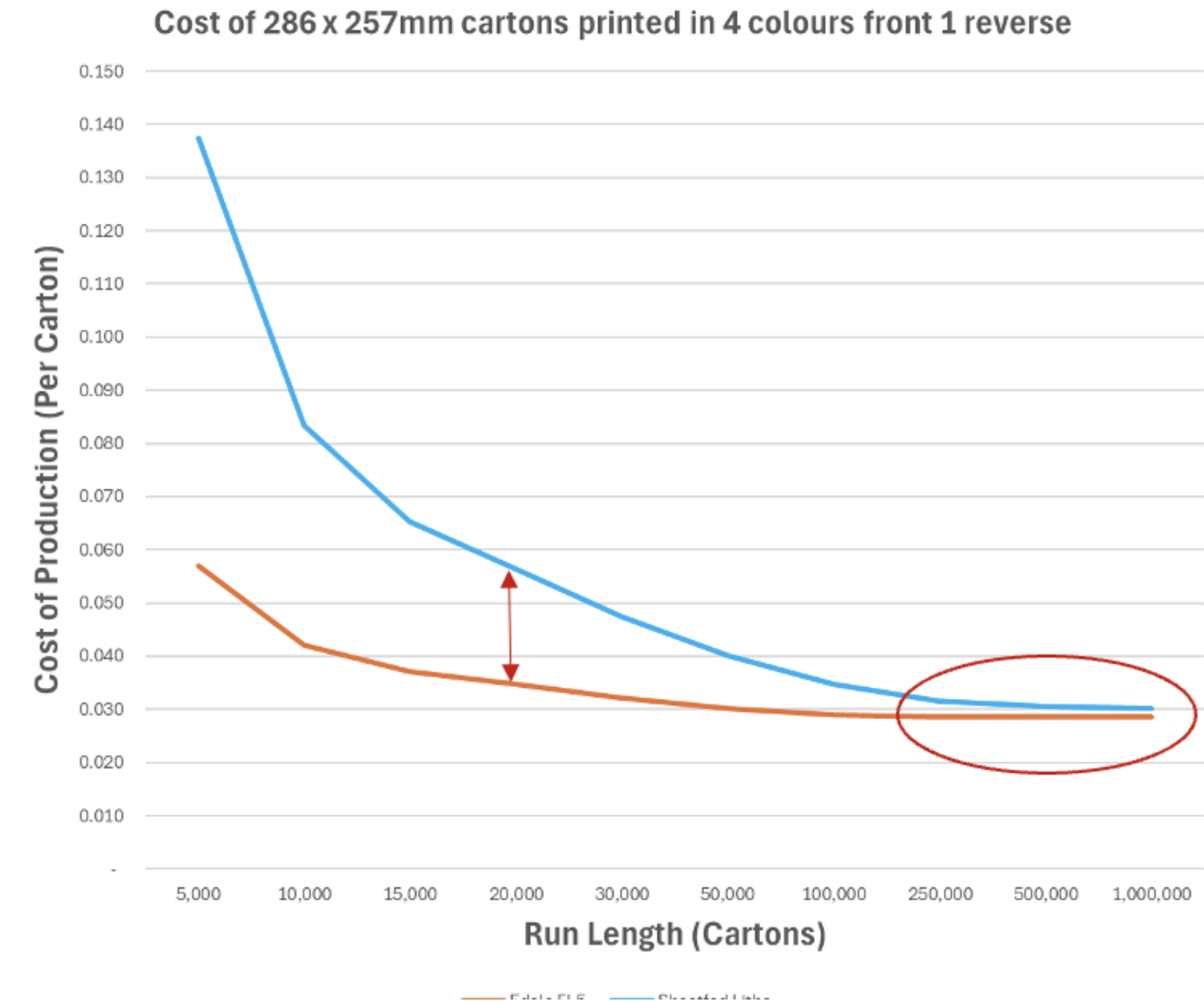


MID SIZED HIGHLY EMBELLISHED BOX

Surface & Reverse Print

- Gap at shorter run lengths expands
- Cost advantageous even at long runs
1,000,000 ~ 6.91%
- Production time savings extend further
- Annual print capacity reverses

	Flexo		Litho		
Total Costs	£	2,190.87	£	2,654.36	▲ 17.46%
Cost Per Carton	£	0.029	£	0.035	▲ 17.46%
Total Production Minutes	mins	222.17	mins	537.53	▲ 58.67%
Waste	£	288.22	£	242.95	▼ 18.63%
Annual Print Capacity - Job	#	1,080	#	920	▲ 17.38%
Annual Print Capacity – Million Cartons	#	81.0	#	69.0	▲ 17.38%



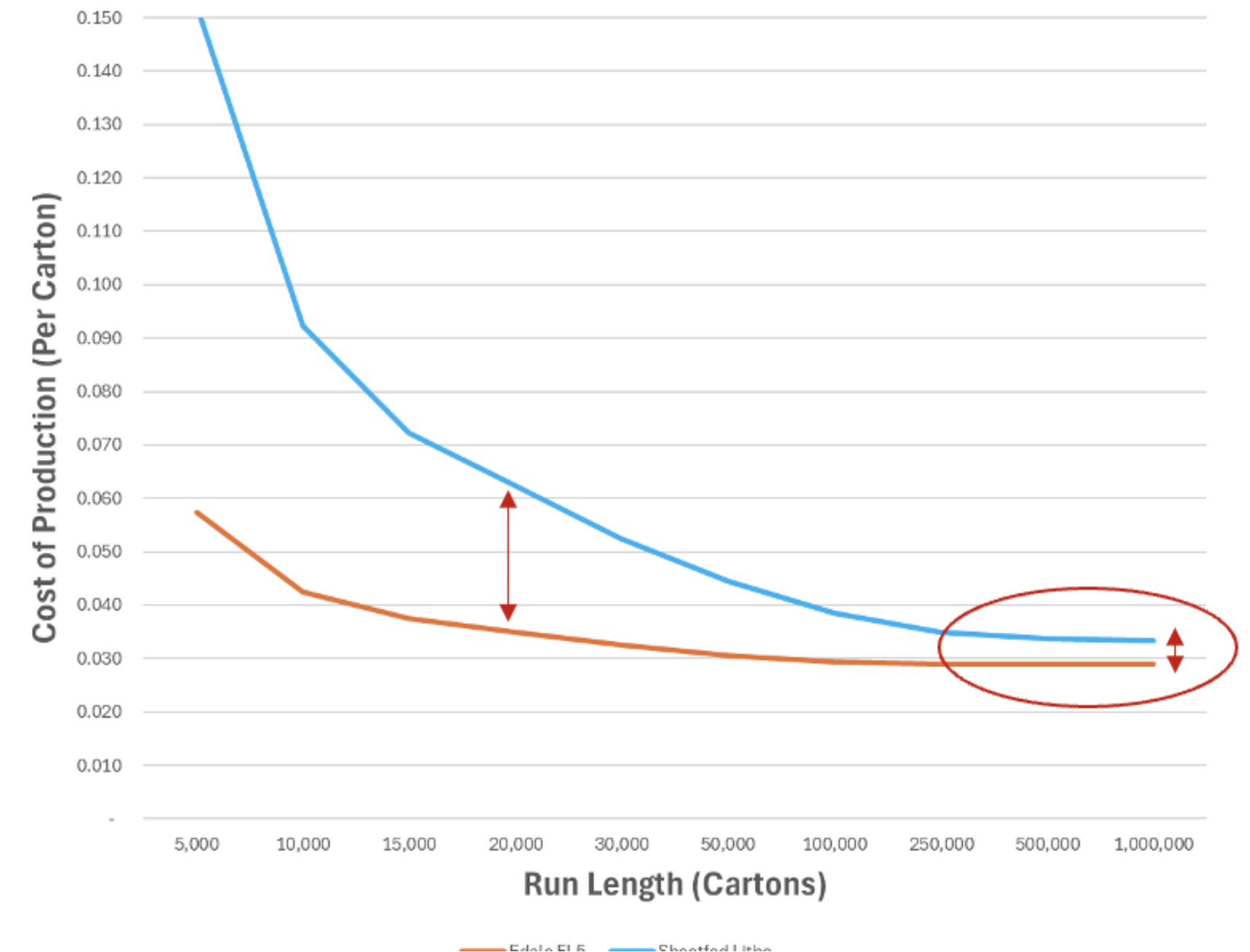
MID SIZED HIGHLY EMBELLISHED BOX

Surface & Reverse Print & Foil

- Price gap expands further, even at 1,000,000 cartons ~14.22%
- Total production time now more than 3x inline
- Annual print capacity remains consistent

	Flexo		Litho		
Total Costs	£	2, 224.78	£	2,958.27	▲ 24.79%
Cost Per Carton	£	0.030	£	0.039	▲ 24.79%
Total Production Minutes	mins	222.17	mins	699.11	▲ 68.22%
Waste	£	288.22	£	249.82	▼ 15.37%
Annual Print Capacity - Job	#	1,080	#	920	▲ 17.38%
Annual Print Capacity – Million Cartons	#	81.0	#	69.0	▲ 17.38%

Cost of 286 x 257mm cartons printed in 4 colours front 1 reverse



SMALL FORMAT HIGHLY EMBELLISHED BOX

Touch Lip Plump

Configuration:

L 144mm x W 171mm

75,000 Cartons

Reverse Print

CMYK

Foil

Gloss Varnish

Cut, Crease, Braille

Strip



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CONSIDERING SURFACE PRINT ONLY: TOUCH LIP PLUMP

- Greater advantages at shorter runs; approx. 14.07% vs. 0.36% @ 75,000 cartons
- Cost advantageous at longer runs; approx. 213,000 vs. 76,900
- Waste advantage immediately recognisable
- While lower, less capacity disparity between processes

	Flexo		Litho		
Total Costs	£	830.30	£	966.23	▲ 14.07%
Cost Per Carton	£	0.011	£	0.013	▲ 14.07%
Total Production Minutes	mins	95.80	mins	212.29	▲ 54.87%
Waste	£	119.32	£	155.65	▲ 23.34%
Annual Print Capacity - Job	#	2,505	#	3,854	▼ 35.00%
Annual Print Capacity – Million Cartons	#	187.9	#	289.1	▼ 35.00%



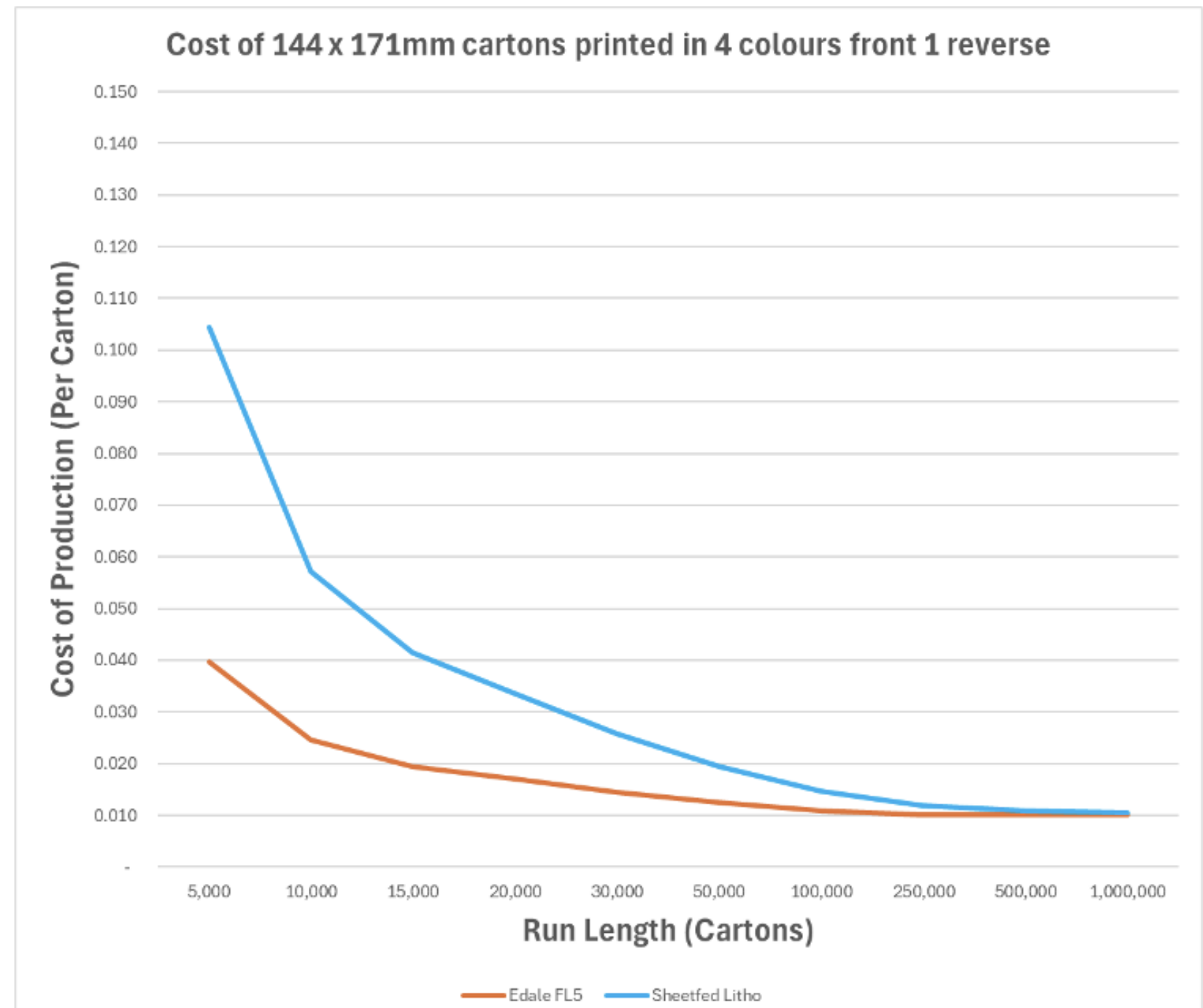
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CONSIDERING SURFACE & REVERSE PRINT: TOUCH LIP PLUMP

- Advantages compound at smaller formats:
 - Cost – 29.51% vs. 17.46%
 - Time – 65.11% vs. 58.67%
 - Capacity – 30% vs. 17.38%
- Waste efficient up to 200,000 cartons

	Flexo		Litho		
Total Costs	£	852.84	£	1,209.93	▲ 29.51%
Cost Per Carton	£	0.011	£	0.016	▲ 29.51%
Total Production Minutes	mins	95.80	mins	274.56	▲ 65.11%
Waste	£	121.11	£	157.42	▲ 23.06%
Annual Print Capacity - Job	#	2,505	#	1,927	▲ 30.00%
Annual Print Capacity – Million Cartons	#	187.9	#	144.5	▲ 30.00%

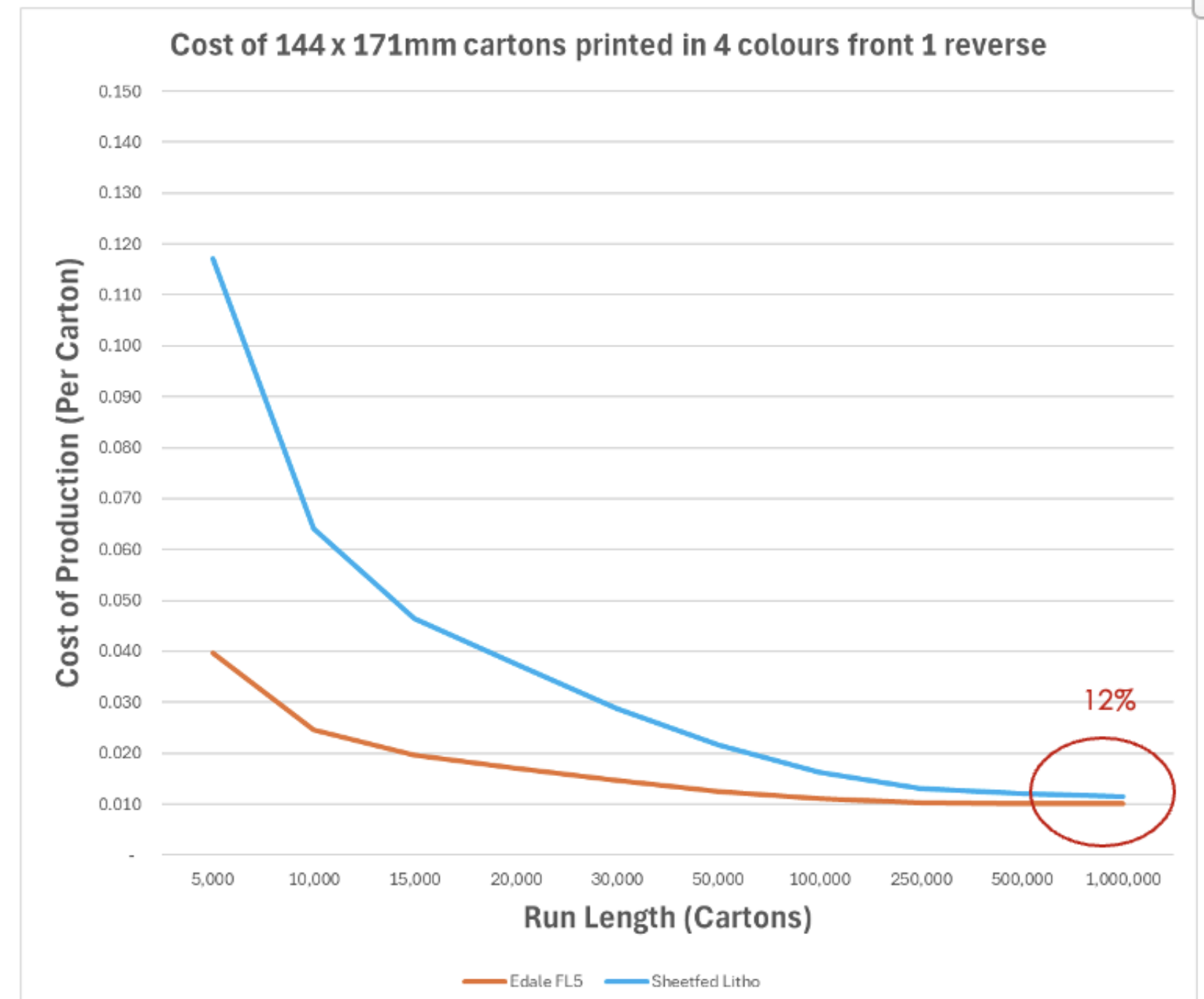


CONSIDERING SURFACE & REVERSE PRINT & FOILING:

TOUCH LIP PLUMP

- Further advantages recognised:
 - Cost – 36% vs. 24.79%
 - Time – 72.38% vs. 68.22%
 - Capacity – 30% vs. 17.38%
- Greater taper off vs. larger format
- Long runs still viable – 1,000,000 cartons ~ 12%

	Flexo		Litho		
Total Costs	£	866.28	£	1,355.03	▲ 36.07%
Cost Per Carton	£	0.012	£	0.018	▲ 36.07%
Total Production Minutes	mins	95.80	mins	346.86	▲ 72.38%
Waste	£	121.11	£	165.01	▲ 26.60%
Annual Print Capacity - Job	#	2,505	#	1,927	▲ 30.00%
Annual Print Capacity – Million Cartons	#	187.9	#	144.5	▲ 30.00%



LARGE FORMAT, SIMPLE PRINT = DOESN'T WORK!

"TRAYS"

Configuration:

L 281.8mm x W 339.73mm

400,000 Cartons

CMYK

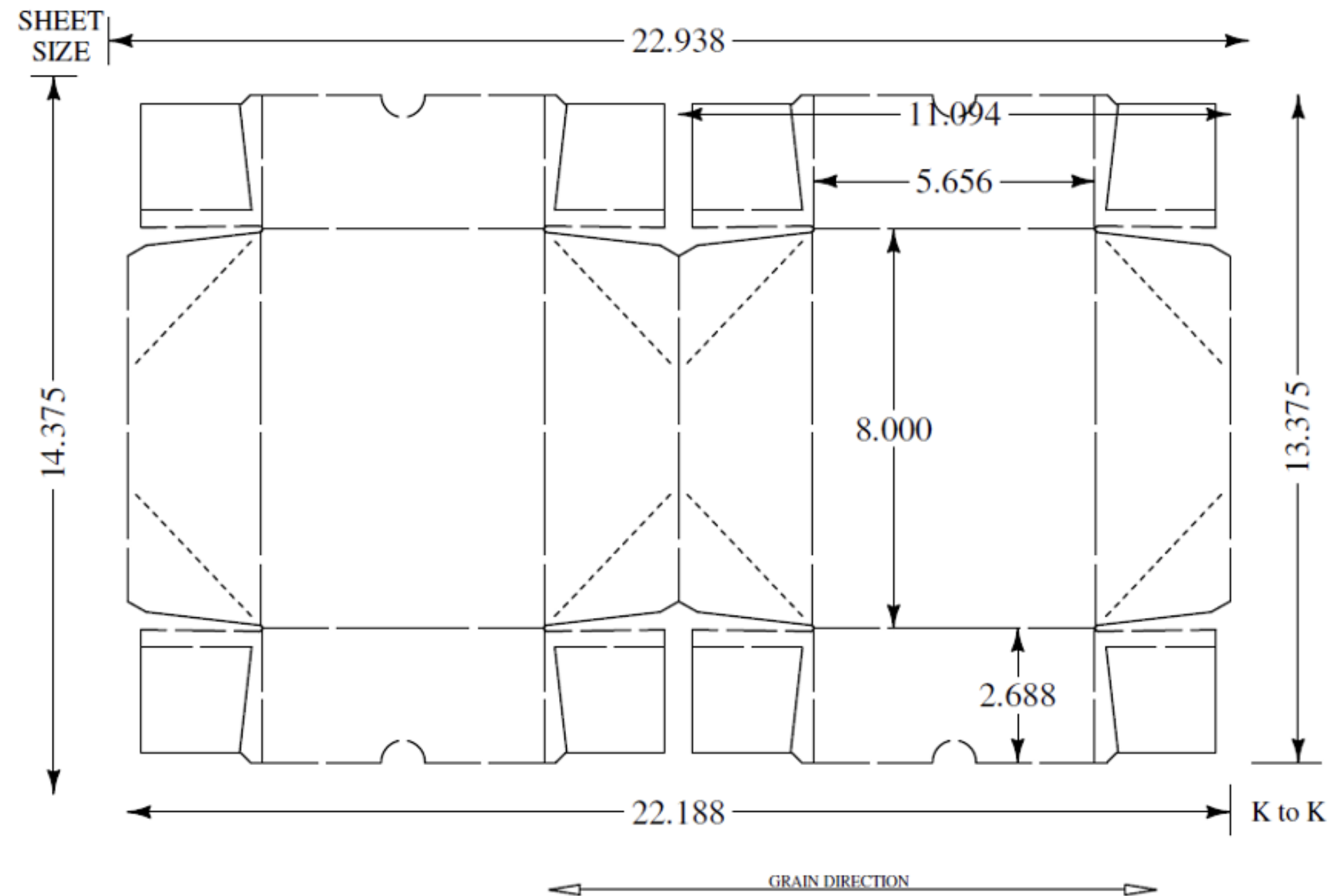
Varnish

Cut, Crease, Strip

In-house sheeting

No Reverse Print

No Foiling/Embellishment



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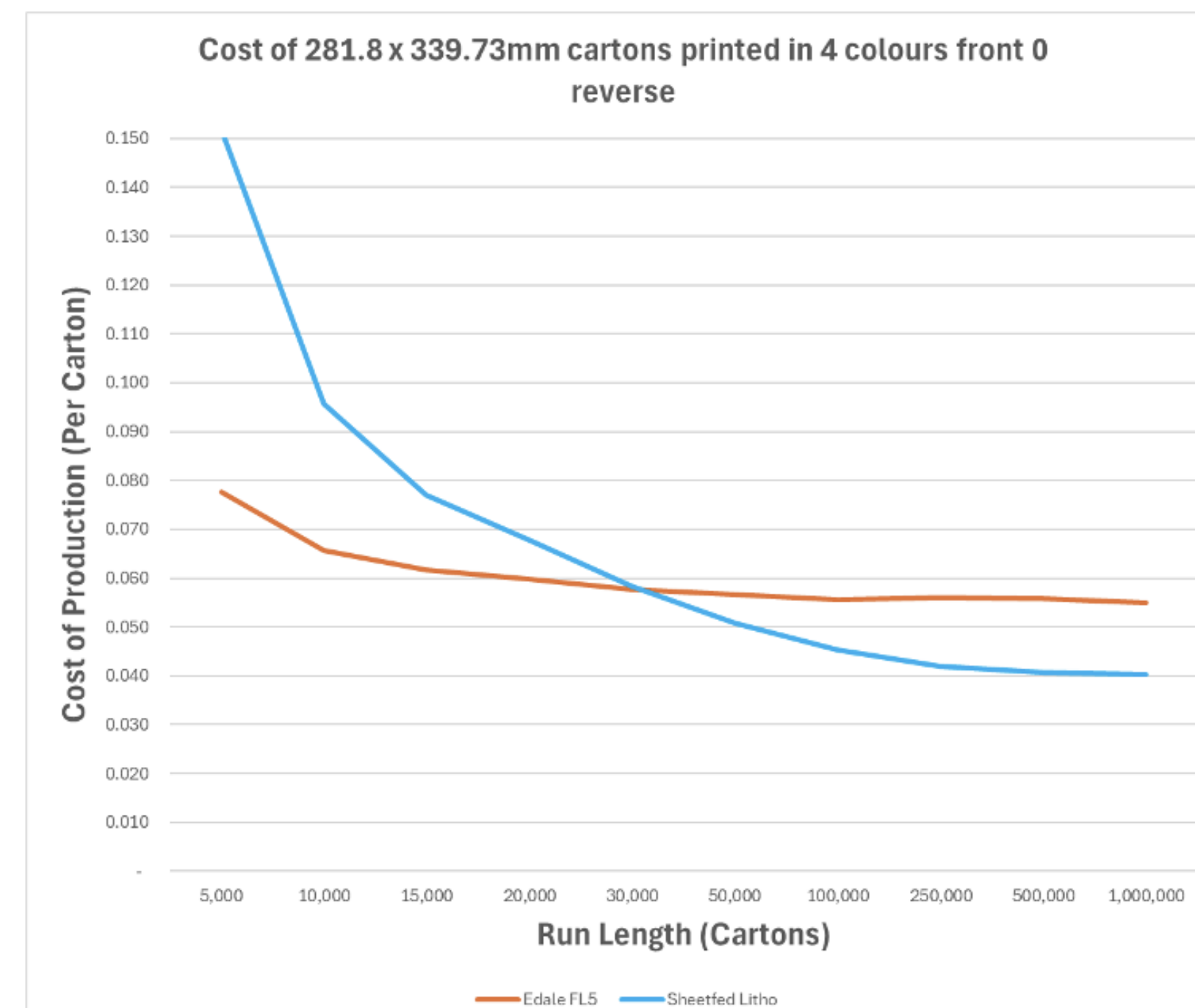


LARGE FORMAT SIMPLE PRINT = DOESN'T WORK!

"TRAYS"

- 1429mm x 1045mm sheet, 15-Up
- 370mm web, 2-Up
- Extremely inefficient use of web/"real estate"
- Print costs driving inefficiency:
 - Depreciation - £1,057.18 vs. 254.75
 - Power - £1,039.00 vs. 162.94
 - Labour - £2,770.65 vs. 476.89

	Flexo		Litho		
Total Costs	£	22,074	£	16,422	▼ 34.42%
Cost Per Carton	£	0.055	£	0.041	▼ 34.42%
Total Production Minutes	mins	2,131	mins	931	▼128.78%
Waste	£	1,413	£	738	▼ 91.34%
Annual Print Capacity - Job	#	236	#	1,374	▼ 82.79%
Annual Print Capacity – Million Cartons	#	94.6	#	549.6	▼ 82.79%



SUMMARY

While suitable for short, medium and long runs, one of the greatest strengths of the inline solution is **small format, embellished, high-quality** cartons.

In this configuration it's possible the inline solution may offer tangible advantages over the traditional carton production process.

THANK YOU

QUESTIONS?

