Digital Label Printing Market; An Inside Perspective

Q4, 2023

The impact of lingering supply chain effects on label demand

2021

- Strong demand
- Over-bought label equipment and substrates

2022

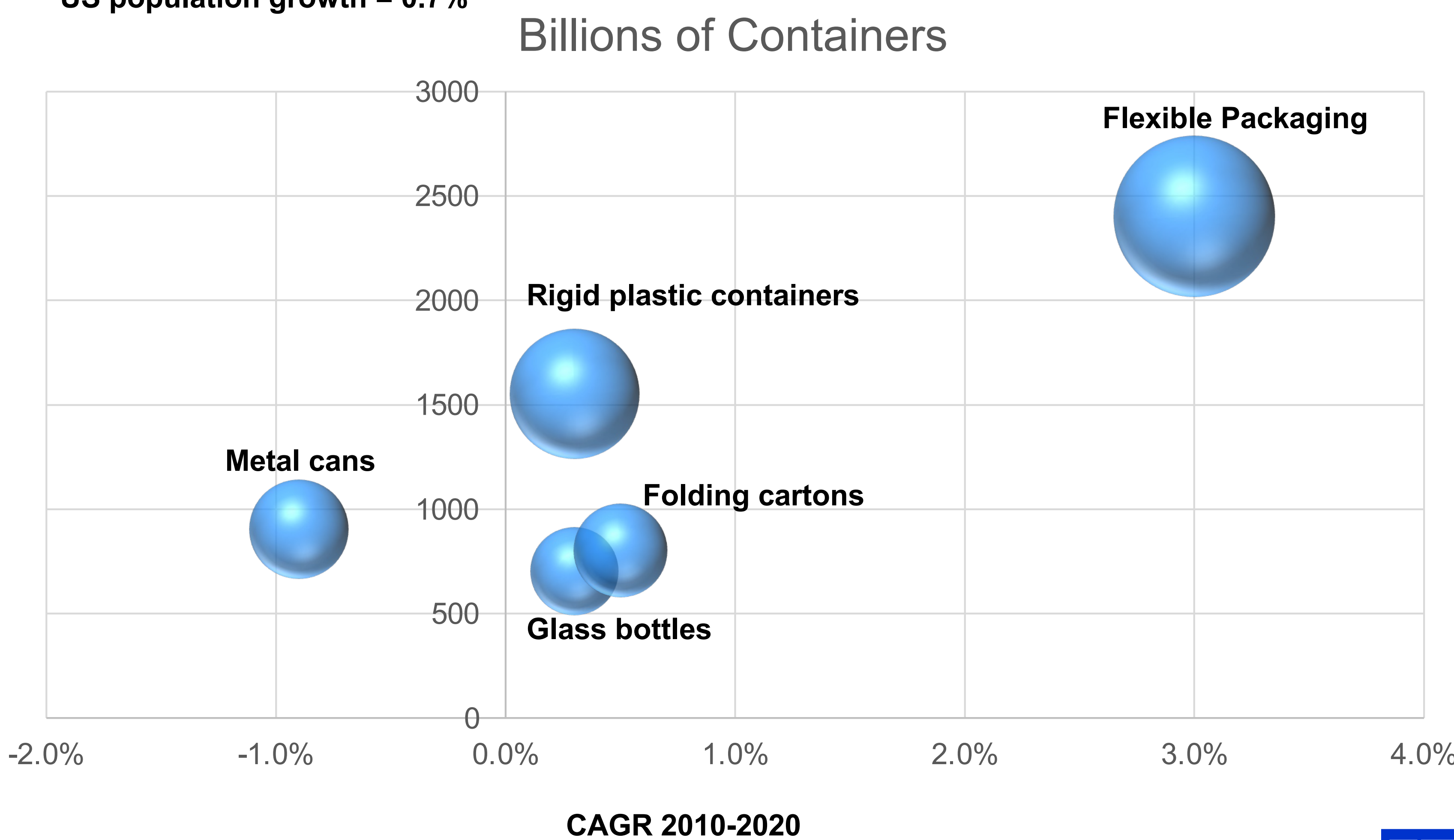
- UMP strike reduced label availability = shift to flexible packaging, other
- Drew down on excess inventory

2023

- Demand/Supply for labels back to “normal”
- Running existing equipment more, not upgrading equipment due to inflation/ interest rates

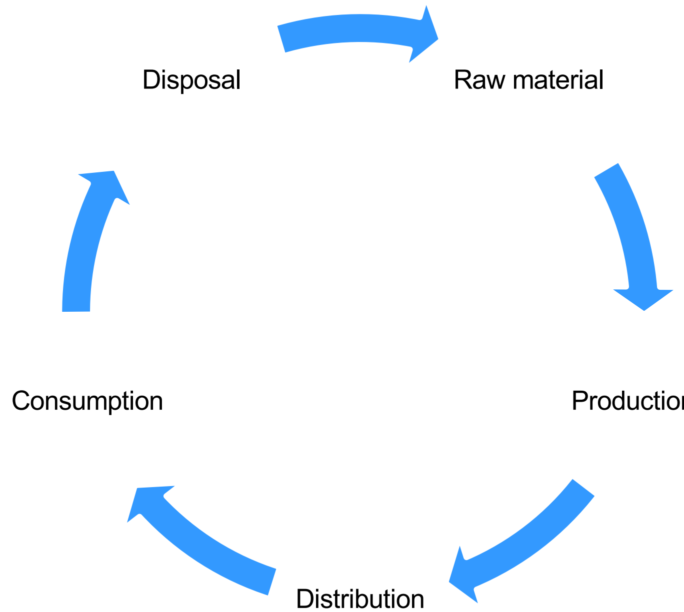
Packaging Types, Scale, and Growth, WW (Excl China)

Note: EU population growth = 0.3%
US population growth = 0.7%



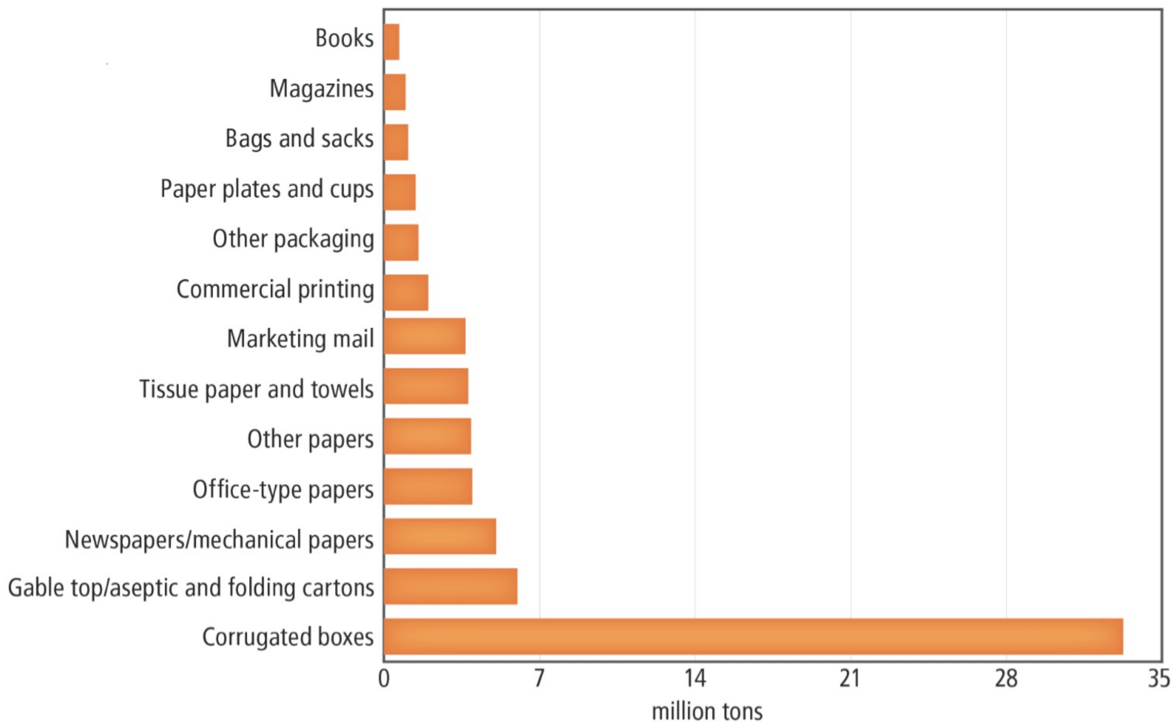
Sustainability

Sustainability: Needs to address all levels of life cycle; Only works if economically viable



US Paper Waste

Figure 3. Paper and Paperboard Products Generated in MSW, 2018



https://www.epa.gov/sites/production/files/2021-01/documents/2018_tables_and_figures_dec_2020_fnl_508.pdf

- Corrugated is #1 sustainability target for reduction
  - Will micro-flutes grow in popularity?
  - Will closed loop e-commerce packaging grow in popularity?

Nestle Closed Loop Example

Making refill and reuse options easier for our consumers

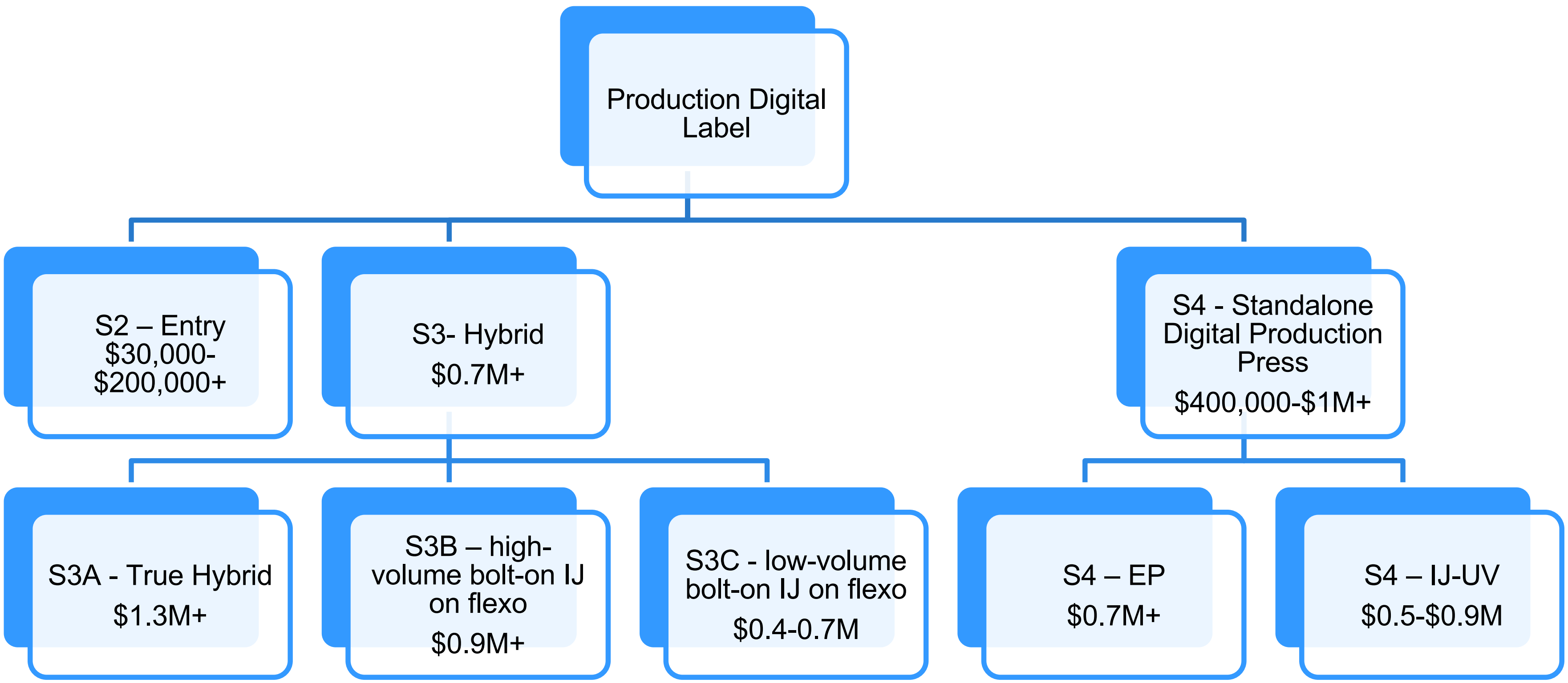
Nestle Chile

- Back to the Future:
  - The milkman concept; re-use food/beverage containers rather than recycle
- Leverage e-commerce retailers to facilitate closed-loop packaging use

Sustainability: Putting Packaging Converter Business Model at Risk

- Business model is based upon weight/volume of packaging created
  - A reduction in both will lead to lower revenues
- Opportunity for digital printing of packaging
  - Enables value increase, mitigating decline in packaging volume

IT Strategies Label Sectors



Label Sector Definitions

Digital Label Printer/Press Sectoral Definitions 1

Sector	S2	S3	S4
Digital System Type	Light Production EP/IJ (UV & AQ) Digital Label Presses	Hybrid Modular UV IJ Production Digital Label Presses	EP/IJ (UV & AQ) Production Standalone Digital Label Presses
Ave. Month Duty Cycle	<10,000 M2	30-60,000 M2?	20-40,000 M2
Market Status	**Emerging as low cost alt. to S3/4 for majority of smaller converters**	**Major initiative from 2015**	**Strong Growth, Established, UV still underperforming**

Digital Label Printer/Press Inclusions

	S2	S3	S4
Acquisition Cost Range	$30,000 - $200,000+	$700K-$1M+	$200K-$1M+
Leading Vendors	**Colordyne**	**Mark Andy**	**HP Indigo**
	Trojan	**(Nilpeter)**	**Xeikon**
	Afinia	**OMET**	**Epson**
	Epson	**FF/Graphium**	**EFI**
	(Konica Minolta)	**Gallus**	**Durst**
		Custom integration	**Domino**
			Screen

Product & vendor identities between A & B becoming fluid and in development

Digital Label Printer/Press Sectoral Definitions 2

Sector	S2	S3	S4
Digital System Type	Light Production EP/IJ (UV & AQ) Digital Label Presses	Hybrid UV IJ Production Digital Label Presses	EP/IJ (UV & AQ) Production Standalone Digital Label Presses
Format	Integrated Conversion mini-presses 13"w	Digital Press + configurable in-line Analog Conversion/Print Capability 13+"w	Digital Standalone Production Engine. Minimal in-line Conversion ~13"w
Market	Mostly Small Label Converters , but also some Print for Use	Dedicated Label Converters Primary PS labels	Dedicated Label Converters Primary PS labels
Dynamic	Emerging 'mid' Sector showing early success at the smaller LC	3rd initiative. Driver for true hybrid probably highend LR versioning; also for Flex Pckg	Mainstream Digital Initiative, successful, driving to higher volumes. ~25% output now pckg, decorative etc.
Ave. Month Duty Cycle	<10,000 M2	60,000 M2?	20-30,000 M2

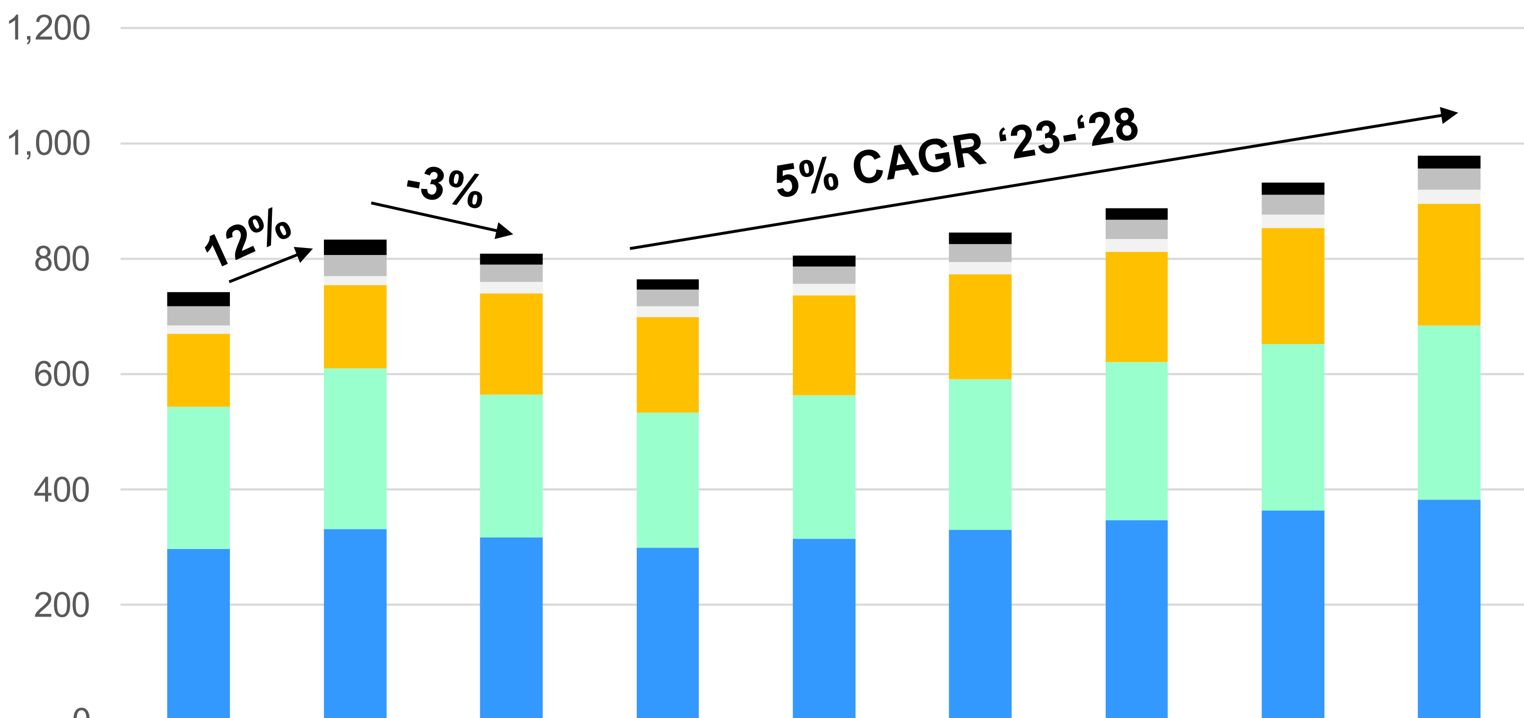
Sub-sectors of Hybrid (S3)

Sector 3A: designed from base as a fully 100% integrated analog/digital conversion press: examples are Gallus LabelFire and MA Digital Series

Sector 3B: where you take an existing standalone digital press (UVIJ) and because you cannot afford to develop a 3A you bolt on conversion front and back. Aftermarket integration rather than orginal design hybrid in segment 3A

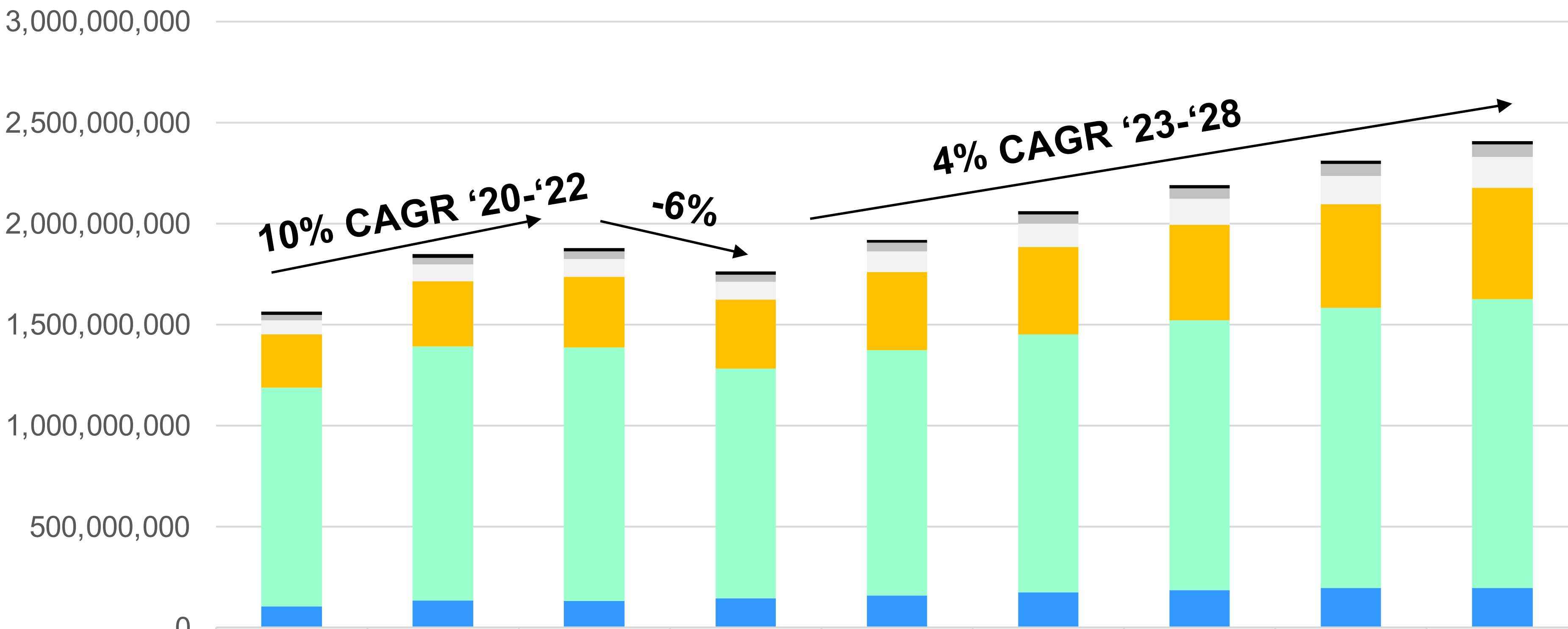
Sector 3C: where you bolt a print engine (mainly Memjet) onto an analog press. Good for simple lo-vol apps but difficult to fully integrate at full speed and high volumes, but suitable for some converters

Digital Label Press Unit Sales, 2020-2028 WW



	2020	2021	2022	2023	2024	2025	2026	2027	2028
S3C Hybrid	24	26	19	18	19	20	21	22	23
S3B - Hybrid	34	37	30	28	30	31	33	34	36
S3A - True Hybrid	14	16	20	19	20	21	22	23	25
S4 UV Inkjet	126	144	175	165	174	182	191	201	211
S4 EP	247	279	248	234	248	261	274	288	302
S2 Entry	297	331	317	300	315	330	347	364	382

Digital Label Press M² Printed, 2020-2028 WW



	2020	2021	2022	2023	2024	2025	2026	2027	2028
S3C Hybrid	15,925,140	16,741,746	16,384,662	14,471,172	14,844,269	15,137,310	15,331,126	15,403,607	15,329,316
S3B - Hybrid	25,505,682	33,929,505	37,146,198	36,624,036	41,950,682	47,072,778	52,280,663	57,508,671	62,675,028
S3A - True Hybrid	70,685,244	82,320,084	89,746,272	88,308,436	101,161,366	114,767,154	127,652,717	140,603,686	153,420,818
S4 UV Inkjet	263,925,000	321,724,575	348,568,680	340,527,252	387,344,703	432,020,823	472,791,891	512,708,776	551,048,568
S4 EP	1,083,804,02	1,258,567,54	1,257,911,24	1,137,163,48	1,214,950,55	1,278,641,68	1,337,155,00	1,388,448,08	1,430,093,75
S2 Entry	103,117,834	134,443,091	129,913,171	145,174,407	159,218,268	173,084,760	184,790,709	195,605,757	195,605,757

Bottom Line

- Labels remain the lowest common denominator in packaging: easy to use
- Digital label printing is expected to continue to grow; existing infrastructure in place
- Potential threat is shift to flexible packaging and pressure to move to more sustainable packaging (direct-to-shape)