

Our business units

Xaar plc has a number of business units within the Group, with the principal focus being on inkjet technology.

Printhead

Our Printhead business unit focuses on the design, manufacture, marketing and sales of printheads and associated products which are used in a variety of applications such as Ceramic Tile Decoration, Graphics, Décor, Labels and Packaging as well as 3D Printing and Additive Manufacturing.

Revenue segment



Markets

Industrial	53%
Packaging	30%
Graphic Arts	15%
Royalty	2%

Product Print Systems

Product Print involves printing all kinds of industrial and promotional objects such as medical equipment, automotive parts, tools, apparel, appliances, sports equipment and toys. Xaar company EPS manufactures and sells a range of highly customised print systems for these applications, including some using Xaar's inkjet printheads.

Revenue segment



Markets

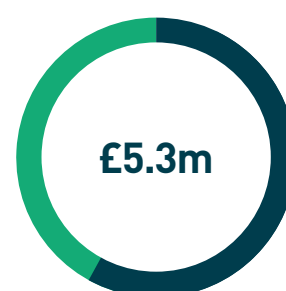
Digital	58%
Analogue	39%
Other	3%

Digital Imaging

Our digital imaging company, FFEI Ltd, focuses on high performance digital imaging solutions – from digital inkjet label presses to digital pathology scanners.

In March 2022 we acquired Megnajet, market leader in the design and manufacture of industrial ink management and supply systems for digital inkjet. The acquisition is part of our strategy to offer our customers a more integrated inkjet solution.

Revenue segment



Markets

Inkjet	60%
Life Sciences	40%

3D Printing

We have recently sold our remaining interest in Xaar 3D to Stratasys (see Financial Statements – note 11, page 137). Xaar 3D is developing, manufacturing and commercialising 3D printing machines with a unique 3D printing technology. The sale to Stratasys will enable Xaar 3D to succeed with their go-to-market plans.

In addition, we have developed a close relationship with Stratasys for future collaboration and ongoing supply of printheads.

We continue to work on other 3D printing projects which use Xaar printheads to deliver alternative 3D printing technology.

£9.3m

Cash proceeds received

£17.9m

Gain on sale of investment

£10.9m

Fair value of contingent consideration on disposal

(£246k)

Transaction costs on disposal



DELIVERING ON OUR STRATEGY

2021 summary

Product launches

The Printhead business continues to perform well with a growing pipeline of new product developments coming from the ImagineX printhead platform.

In April we launched the Xaar Nitrox to deliver greater print speeds (up to 100 metres per minute) and uniformity for unparalleled performance across a wide variety of print applications. By the end of 2021 we already had 23 projects using the Xaar Nitrox in progress, covering more than seven different application sectors.

We also launched the Xaar Irix in September. This printhead is targeted at our Coding & Marking customers in particular but also offers a good solution for printing direct to products, printing functional fluids and for 3D printing applications where a highly accurate delivery of ink drops and/or longer throw distances are important. Interest from our Coding & Marking customers has been positive with six customers already evaluating the printhead.

New opportunities

The number of customers launching new machines has increased year on year, with ten customers launching with Xaar technology during 2021. The sectors into which the machines have been launched are varied and cover labels, ceramics, direct-to-shape, 3D printing and PCB printing. Four other planned launches have been pushed to 2022 due to delays caused by COVID-19.

In June we signed a co-operation agreement to establish a 'Joint Digital Printing Laboratory' with the Beijing National Innovation Institute of Lightweight Ltd. (BNI) in China. We are now collaborating on R&D projects built on the innovative technologies from both parties as well as their expertise in inkjet printing. The Joint Laboratory will develop new applications in digital inkjet such as printing glass, electronics, 3D and automotive spray painting.

Operational efficiencies

Scalability of the Huntingdon factory has been a focus in 2021. We introduced some standard efficiency initiatives within the production area, restructuring the team into smaller work units. This makes it easier to train operators, easier to manage the teams on a day to day basis and easier to react to changing market demands through scaling up production quickly when necessary. In addition, a second initiative, the Xaar Excellence System, is now underway and covers Company-wide standards and processes.

Our IT Transformation Programme to establish a modern, secure and supportable IT infrastructure is also underway. This will enable us to deliver an optimised and consistent set of end-to-end operational processes.

The relocation of our corporate HQ from the Cambridge Science Park to the nearby Cambridge Research Park took place in July and will generate savings of £0.7 million per annum from the start of the second half of 2021. The new global headquarters houses Xaar's finance, HR, legal and marketing functions, as well as a new purpose-built R&D laboratory. Specifically configured to enhance the working environment for the team, the new offices embrace Xaar's commitment to flexible working for employees. Also, importantly the offices provide a significantly reduced carbon footprint for Xaar.

A move towards an integrated service

We appointed an Ink Business Director in March 2021 to develop and roll out a new ink strategy aimed at building collaborative partnerships with leading fluid manufacturers. We are working with these companies to fully optimise the fluid, not just in the printhead in a lab setting, but also throughout the machine development programme, end user integration and beyond. This ensures optimum print performance in the actual application environment, and ultimately delivers a better end result for our customers and their customers, as well as shortening time to market for all parties. For our UDI customers we are selling fluids, manufactured by our fluid partners under the Xaar brand. This helps to tie us into a long-term relationship with these customers and will provide an ongoing revenue stream.

We made significant progress this year towards our goal of providing an integrated inkjet solution whereby our customers can access the printing ecosystem as well as the print technology from Xaar. In July we acquired FFEI, which is enabling us to widen our product offering (of print engines using Xaar technology) to our UDI customers.

The roadmap for our Ink Supply Systems, developed this year, will ensure that we can help customers evaluate and adopt our technology – and ultimately reduce their time-to-market. One focus in 2021 has been to upgrade the Hydra Ink Supply System for use with aqueous inks.

In March 2022 we acquired Megnajet, market leader in the design and manufacture of industrial ink management and supply systems for digital inkjet.

The acquisition is part of our strategy to offer our Printhead business unit customers a more integrated inkjet solution.

We have also developed our datapath roadmap, and are now working on delivering a rich portfolio of datapath products to help our customers develop their systems and solutions and also to ensure they can take advantage of the technology advantages available from our ImagineX platform.

Building stakeholder engagement

We are now building momentum with our customer-centric business model, re-engaging with past customers and attracting new ones. Products launched this year are gaining good traction (23 projects with the Xaar Nitrox and six customers already evaluating the Xaar Irix), and we already have ten new customer launches with Xaar printheads during 2021.

Our 720 dpi print resolution is also attracting interest in our ceramics market. Xaar has the unique ability to print at this high resolution. This capability, which we showcased at Uniceramics, China, in June, has proven to be of interest to tile manufacturers looking to print exceptionally large tiles which are used for homeware products (for example, table tops).

In August we announced the opening of a new Customer Service Centre to better support our Chinese customers, delivering technical support and training and providing a fast response to customer needs.

The new marketing platform that we implemented at the end of 2020 is also driving audience engagement. Our campaigns in 2021 generated a unique reach of over 678,000 people, over 350,000 video views, over 15,000 meaningful engagements (likes, shares, comments) and gained us over 1,000 new followers on LinkedIn.

Building a viable printhead business with a stable future

We are making good progress with delivering our product roadmap. The launch of the Xaar Nitrox in April delivered our first high frequency printhead which can reach speeds of 100 metres per minute. We delivered increased throw distance via the Xaar Irix in September, and the aqueous programme is on track with the printhead now in its beta testing phase. A significant focus for our marketing campaigns in H2 has been to promote the advantages of our Ultra High Viscosity capability, with the goal of opening up new applications which involve printing highly viscous fluids to achieve new functionality, such as increased product toughness or material flexibility.

Our business units continued
Printhead continued

Our inkjet printhead range



Xaar Nitrox

With unparalleled productivity and performance, the Xaar Nitrox lets you create without limits

Xaar Irix

Exceptional print quality, simple to use, robust, and highly reliable

Xaar 2002

High productivity and out-of-the-box exceptional print quality

Xaar 1003 C

Ultimate versatility in ceramic tile decoration

Xaar 1003 U

All round reliable high quality printing for industrial applications

Xaar 1003 AMP

Small drop deposition on an industrial scale

Xaar 501

High production up-time and industrial reliability

Xaar 502 O

Industrial reliability and mineral-oil free inks

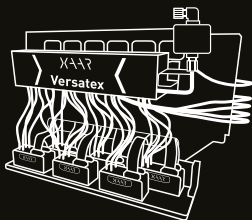
Xaar 502 S

Exceptional print quality for Wide-Format Graphics

Xaar 128

Adaptable printhead with trouble-free integration

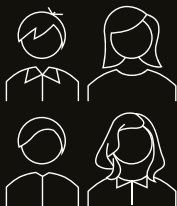
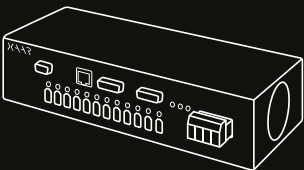
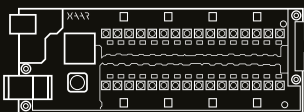
Our integrated solutions



Fluids

Ink supply systems

Print engines



Drive electronics and datapath solutions

Support

Printhead – technologies

Xaar's core inkjet technologies

We have a number of unique technologies which are incorporated into our printheads, and which provide distinct advantages to our customers.



TF Technology

Xaar's TF Technology is the original and still the best ink recirculation technology available. A printhead's architecture determines how well ink recirculation is implemented and therefore influences the degree to which the method delivers benefits across today's wide range of printing and jetting applications. Xaar's TF Technology, together with the unique Hybrid Side Shooter printhead architecture, enables ink or other fluids to flow directly past the back of the nozzle during drop ejection at very high flow rates.

This ensures the nozzles are continuously primed, keeping the printhead operational and the nozzles firing and – with the ink in constant motion – prevents sedimentation and nozzle blocking, particularly in heavily pigmented inks. Any air bubbles and unwanted particles in the ink are also carried away, improving reliability, even in the harshest industrial environment.

This makes jetting significantly more reliable compared to alternative printhead designs where convoluted ink flow paths means that recirculation is close to but not at the back of the nozzle.

The main benefits of TF Technology are unrivalled jetting reliability, outstanding print quality and an increased production uptime.



High Laydown Technology

Xaar's High Laydown Technology enables a range of new applications, thanks to its ability to deposit large quantities of fluid in each pass. It makes possible printing very high levels of UV inks or high build varnish in a single pass for tactile embellishments on labels, packaging and commercial print. Braille and label warning triangles are also possible. High Laydown Technology delivers unprecedented ink discharge rates for gloss and adhesive effects on ceramic tiles, so that effects can be printed at high line speeds.

For additive manufacturing applications, High Laydown Technology offers increased printing productivity which significantly accelerates build rate for parts and the ability to print a broader range of fluids including higher viscosity materials; this ultimately results in tougher 3D printed parts than those printed with standard inkjet technology.



Ultra High Viscosity technology

Xaar's Ultra High Viscosity technology opens up a wide range of new inkjet capabilities and applications for OEMs and manufacturers using Xaar technology. Most printheads can only jet materials with viscosities of up to 10-25 centipoise ('cP'). Thanks to Xaar's unique TF Technology and innovative High Laydown Technology, fluids with significantly higher viscosities – up to 100 cP – can now be jetted.

The ability to lay down fluids with higher particle loading and particle sizes offers advantages such as an increased colour gamut, opacity and special effects. In addition, jetting higher molecular weight photopolymers for Advanced Manufacturing and 3D printing applications is made possible.

Where we excel

+ We are the only truly independent inkjet technology company with over 30 years of experience. Our independence enables a flexible, collaborative approach to ensure we remain customer-centric and focus on their goals

+ State-of-the-art UK manufacturing facilities and an enviable R&D department staffed by scientists and engineers with a wealth of inkjet industry knowledge and expertise

+ A comprehensive portfolio of products to cover a wide range of applications

+ Engineers with extensive knowledge of inkjet and its application across many sectors as well as considerable field experience. This means they are able to assist our OEMs and UDIs in the successful design, build, commissioning and post-installation support of all Xaar-based inkjet systems

+ Ready-to-use development kits and an extensive portfolio of systems components ensures that OEMs and UDIs can get up and running quickly

Priorities for 2022

- Continuing to deliver on the vertical integration strategy to support our goal of driving printhead sales
- Launch Versatex for our UDI customers
- Launch of aqueous printhead and the ecosystem to support it (such as the datapath and ink delivery systems)
- Launch Sustainability Roadmap.

Our business units continued

Product Print Systems

Introduction to the Product Print Systems business unit

Engineered Printing Solutions ('EPS') is a recognised leader in the industrial product marking machine industry, manufacturing highly automated machines and accessories. As well as providing an industry-leading service and support, EPS occupies a niche position as one of only a few bespoke product marking machine companies in North America.

What we achieved in 2021

2021 has been a rebuilding year within EPS.

In April, we changed the leadership of EPS. Additional changes were made in Finance, Human Resources, and EH&S Management. The sales group was re-organised into two distinct groups. One group focuses on selling pad print equipment and distributed inkjet printers and their related consumable items into the medical, industrial, promotional products, and other markets. A separate group focuses on selling the bespoke inkjet systems into industrial accounts.

We achieved +9% growth in sales in 2021 and ended the year with a strong order book for bespoke systems as well as a plan for continued strong growth for 2022.

At the very end of 2021 we took the largest single order in the Company's history (for multiple units) which will be realised during 2022, and the first half of 2023. There were continued challenges related to COVID-19 including no tradeshow presence and difficulty with travel, as well as regular interruptions of work schedules and supply issues.

We also made many changes in our internal procedures and business systems to allow a more focused approach to the business and better use of our resources to achieve results.

Project focus

In 2021, EPS designed, built, and delivered a bespoke single pass machine for a leading player in the promotional products industry. Based on the XD-70 platform, this machine featured a six-axis robotic arm controlled by a vision system to load parts, inline flame pre-treatment, a five-colour, six-head print engine, and servo-controlled offload accumulators for sorting of different SKUs.

Stored recipes enable the robotic arm to locate the part from the load cell, spot check the part for correct orientation and place it on a conveyor for pre-treatment. The part then continues under the printheads for decoration. Following inline UV curing, the part is conveyed to a series of "gates" that open and close according to the recipe. In this manner, parts are sorted automatically. On average, this machine can mark 1,000 parts per hour, including changeovers.

This successful implementation of single pass printing technology to the promotional products industry is an important step forward for EPS. The COVID-19 pandemic affected this market segment greatly, as the cancellation of sporting events, weddings and closure of restaurants negatively impacted sales for promotional products. As these events start to come back online, EPS is poised to bring this disruptive technology to an established industry that is seeking new efficiencies for their product decoration services.

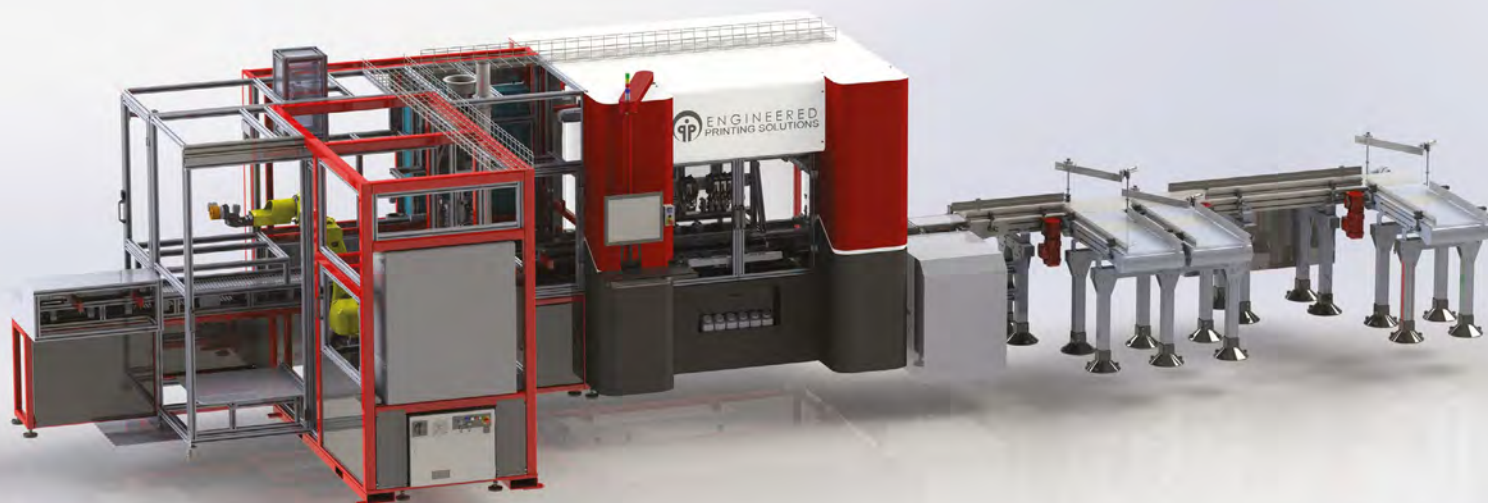
Where we excel

+ Our core strengths are designing, building and integrating machines which allow our customers to product mark their parts in a highly automated manner, enabling significant cost savings and virtually unlimited print flexibility and personalisation. We offer unparalleled service and support which in turn ensures we build long-term relationships with our customers

Priorities for 2022

In 2022, we will continue our efforts to standardise the base print engine platforms which become part of our customised inkjet solutions. The benefits of more standardisation will be lower costs and improved lead times.

At our core, EPS is an innovative group of very talented inkjet and automation experts who utilise their creativity and experience to design, build, and deliver specialised printing systems for our customers.



Digital Imaging

Introduction to FFEI

Established in 1947, FFEI has an impressive reputation for developing innovative and award winning digital inkjet and life science solutions – from concept to delivery. Most importantly, FFEI works closely with customers to ensure their market knowledge is transformed into the digital imaging system they need to meet their bespoke requirements. The two core FFEI application areas are digital imaging solutions for label presses and digital pathology scanners.



Where we excel

- + Over 65 years of know-how in industrial digital imaging technology
- + An extensive core technology patent portfolio
- + A reputation for developing sophisticated solutions from concept to delivery
- + A culture of innovation and a keen focus on customer needs, underpinned with highly capable and committed employees

FFEI Inkjet

The inkjet side of FFEI focuses on the design and manufacture of inkjet print engines which it sells to OEMs to incorporate in their own systems and brand as their own.

The FFEI print engine includes an ink system, a control unit to run it and mounted Xaar printheads. The OEM will take these elements and mount them into their own press to add a new print feature.

To date, FFEI has focused on the labels and packaging market where the print engine provides an efficient way to add digital embellishments to analogue presses, for example, varnish embellishment, high laydown embellishment, high opacity white, variable data coding/marketing (which is very difficult without digital capability) and spot colours.

FFEI will continue to service its own customers as before but is developing a roadmap of products for Xaar's UDI customers which is launching in 2022 under the Xaar brand Versatex. This is a stripped back standard print engine which, because of the changes, is more versatile and open to a range of different applications. It offers a more complete solution for the UDIs who have less inkjet experience and who are looking for a standalone engine, helping them to keep development costs down and get to market more quickly.

FFEI Life Sciences

Digital pathology scanning technology

Over ten years ago FFEI applied its digital scanning expertise to the challenge of whole slide imaging (WSI) for pathology. Today its award-winning technology has been successfully taken to market by a number of blue chip clients. Central to the success of these scanners is FFEI's patented 'dynamic focus' technology, which delivers unparalleled scanning speed, z-stack functionality and high-resolution imaging.

Whether customers are seeking to add imaging capabilities to their existing core competencies, or are planning to extend their existing imaging portfolio, FFEI can help.

Optical imaging and detection technologies developed by FFEI have been successfully applied to a number of different laboratory formats and applications in partnership with a number of blue chip companies.

Product portfolio development is ongoing and there is now a pipeline of next generation scanning technologies; some are very close to market readiness, while others require further development. FFEI is now looking for new partners to reap the rewards of these next generation scanning systems.

Sierra slide colour calibration technology

FFEI's solutions include its patented Sierra slide and the unique capability to integrate with cloud-based ICC colour management profile generators. The Sierra slide calibration technology universally standardises WSI image quality to the highest ground-truth fidelity across all digital pathology scanning systems. This ensures the true and normalised colour of stained tissue biopsies are presented to pathologists, researchers and AI alike.

Business performance

Continuing operations – revenue

Revenue for the Group of £59.3 million is an excellent performance for the year, representing a year-on-year increase of £11.3 million (2020: £48.0 million) of which FFEI represents £5.3 million in the period since acquisition.

It is a very pleasing result given the ongoing restrictions arising from COVID-19, with Printhead revenue increasing 14% and EPS 9%. Group revenues increased from £26.3 million in the first half of the year to £33.0 million in the second half driven principally by a £1.7 million increase in revenue from the EPS business. This is a strong recovery across the business demonstrating the positive customer engagement and trust that is being regained across our customer base and the continued momentum we have in the business.

Revenue from the Americas grew year-on-year across the Group, rising £3.3 million (2021: £23.6 million, 2020: £20.3 million), including £2.4 million from FFEI and despite a small drop in Printhead revenue of £0.3 million. The rise, driven by the recovery in EPS revenue, stems from increases in sales of digital machines and peripherals demonstrating the new commercial approach is being well received with customers.

Performance in Asia, and China in particular, has been very successful in 2021. This has been the key driver for the continued overall revenue growth in Printhead. Group revenue grew £1.3 million in the first half of the year to £5.8 million (H1 2020: £4.5 million) and continued to grow in the second half to £6.2 million (H2 2020: £5.1 million). This growth has largely been driven by the re-engagement of Chinese Ceramic OEM customers where our new product range is proving successful. Revenues in Printhead have increased year-on-year from £9.6 million to £11.9 million, a 24% increase.

This is a real proof point for the change in strategy; the removal of distribution channels, the implementation of a clear pricing strategy, and more significantly a change in how we interact and support our customers have all helped with the speed of adoption of the Xaar 2002 together with Xaar Nitrox and Irix in China.

Revenue in EMEA has continued to rise year-on-year. Excluding FFEI, revenue was £20.9 million compared to £18.1 million, and we have seen a promising continued upward trend in revenue since H2 2019. Revenue in the first half of the year increased £2.1 million compared to H1 2020 of £8.4 million and by £0.7 million in the second half compared to £9.7 million in H2 2020.

Printhead revenue for the year increased £4.8 million to £40.1 million (2020: £35.3 million). Growth in the first half was 20% and in the second half was 8% as we saw continued momentum in revenue throughout the year.

Printhead revenue growth stems from the continued recovery in the key sectors of Ceramics & Glass (C&G) with growth of £5.2 million (38%). Increasing market share with our extended product portfolio and being able to demonstrate our clear technology advantages has proven successful in the Chinese Ceramics market, where we have regained trust with our customers. We have also established a market leading position in Glass with the Xaar 2002 and won several accounts in the Glass sector in 2021, with revenue in 2021 increasing 38% compared to 2020.

Coding & Marking (C&M) revenue has remained largely flat year-on-year, while Direct-to -Shape (DTS) revenue has declined with the majority of the decline taking place in the Americas which we believe will be a short-term flattening of demand.

Whilst still a relatively small part of our business, DTS will prove to be an increasingly important sector for the business and an area for potential growth in the long term and it is encouraging that we are showing how our unique technology advantages can prove successful in this area by winning new accounts and commissioning new machines by switching their production lines over to a digital solution.

Wide Format Graphics (WFG) and Labels revenue fell slightly in the year from £6.3 million to £6.2 million. This is an area where we have seen some delays in orders, mainly COVID-19 related. As our customers are more able to access their own customer bases with a relaxation of travel restrictions, we expect this reduction to be one of timing only and to recover in 2022.

3D Printing and Advanced Manufacturing (AVM) have stayed relatively flat year-on-year (2021: £2.4 million, 2020: £2.5 million) with gains in 3D Printing offset by a reduction in revenues from AVM. As with the DTS market, the AVM market for printheads is still relatively small but growing, and we are very excited about our prospects in this area and expecting to see significant growth in the coming years. Both 3D Printing and AVM are markets where we are well positioned to take advantage of growth opportunities, but development cycles can be long, therefore, it can take several years for a customer to reach full production and ultimately significant demand for printheads.

Revenues from Packing & Textiles remain modest. Our ability to target this sector effectively is somewhat limited by our current product range. However, advancements in the product portfolio driven by the ImagineX platform should make this large sector more accessible in the future. Full year revenue of £0.8 million was down year-on-year (2020: £0.9 million).

Our royalty revenue stream was sold during 2019 and so we have a declining legacy royalty rate which will continue to decline in 2021 and 2022 before ceasing altogether shortly thereafter.

Revenue from the EPS business increased by £1.2 million to £13.9 million (2020: £12.7 million) as the new commercial approach has seen some significant customer order wins.

Table A – Revenue by region – Continuing operations

£m	2021 H1			2021 H2				FY 2021				FY 2020		
	PH	EPS	Total	PH	EPS	FFEI	Total	PH	EPS	FFEI	Total	PH	EPS	Total
Americas	3.9	6.1	10.0	3.4	7.8	2.4	13.6	7.3	13.9	2.4	23.6	7.6	12.7	20.3
Asia	5.8	–	5.8	6.1	–	0.1	6.2	11.9	–	0.1	12.0	9.6	–	9.6
EMEA*	10.5	–	10.5	10.4	–	2.8	13.2	20.9	–	2.8	23.7	18.1	–	18.1
Total	20.2	6.1	26.3	19.9	7.8	5.3	33.0	40.1	13.9	5.3	59.3	35.3	12.7	48.0

* Includes plc £0.2 million 3D service fee allocated to PH and EMEA. Figures subject to rounding.

This has been driven particularly by digital inkjet machine sales with growth of 11%, which is particularly pleasing as this will be the core focus for the business in the future. Pad print machine revenue has also increased (8%) albeit with a decline year-on-year in the second half. The focus on consumables and accessory sales has contributed to the growth as a result of the change in commercial approach, with increased revenue from ink, plates and parts. We see a strengthening pipeline and order book and we are well placed to deliver further growth in 2022 as companies start to invest in capital equipment again and those markets affected by the pandemic, such as Ad Speciality and Promotional Products, start to recover.

Continuing operations – gross profit

Gross profit for the year increased by £7.2 million to £20.2 million (2020: £13.0 million) with an increase in the gross margin to 34% (2020: 27%). This was primarily the result of an improvement in the Printhead business unit's gross profit which grew from 27%. We increased utilisation of the factory as throughput was increased during the year resulting in better overhead cost recovery, supporting margin gains. We have worked hard on cost saving initiatives during the year and as we increase volumes there should be further scope for improved overhead recoveries and accordingly margin gains. During 2021 we proactively worked to secure raw materials which should reduce further supply chain risks. Issues in supply chains globally are well known and documented, particularly so for semi-conductors and other technology materials, with increasing cost pressures. Our actions in Q4 should insulate us from further costs and mean we are able to meet customer demand throughout 2022. We have increased our working capital with inventory rising £9.1 million (2020: £4.8 million reduction in inventory). This higher level of both raw materials and finished goods is a deliberate, prudent approach which we believe will see us well placed to both manage customer requirements and further insulate the business from external supply chain risks whilst utilising the high level of operational gearing to deliver further improvements in the gross margin.

Gross profit for the EPS business declined £0.2 million in the year to £3.2 million (2020: £3.4 million) with gross margin down year-on-year (2021: 23%, 2020: 27%). Actions taken to refocus the business on future growth opportunities mean 2021 results have been impacted by non-cash write down adjustments totalling £0.7 million. These are largely related to inventory we now consider to be slow moving or obsolete.

Table B – printhead revenue

£m	2021 H1	2021 H2	FY 2021	FY 2020	Var	Var %
Ceramics & Glass	9.5	9.5	19.0	13.8	5.2	+38%
C&M and DTS	5.9	5.2	11.1	11.5	-0.4	-3%
WFG & Labels	3.4	2.8	6.2	6.3	-0.1	-2%
3D Printing & AVM	1.0	1.4	2.4	2.5	-0.1	-4%
Packaging & Textiles	0.2	0.6	0.8	0.9	-0.1	-11%
Royalties, Commissions & Fees ¹	0.2	0.4	0.6	0.4	0.2	+50%
Total	20.2	19.9	40.1	35.3	4.8	14%

¹ Royalties in H2 includes £0.2 million relating to Xaar / Stratasys service fee administered by Group.

Figures (£m) and percentages (%) are subject to rounding.

Table C – EPS revenue

£m	2021 H1	2021 H2	FY 2021	FY 2020	Var	Var %
Digital inkjet	3.6	4.4	8.0	7.2	0.8	+11%
Pad printing	2.4	3.1	5.5	5.1	0.4	+8%
Other	0.1	0.3	0.4	0.4	-	-
Total	6.1	7.8	13.9	12.7	1.2	+9%

* Figures (£m) and percentages (%) are subject to rounding.

Excluding the non-cash adjustments mainly relating to slow moving and obsolete inventory, the underlying gross margin was 28%, largely due to the resetting of the modular strategy by new management. Excluding the £0.7 million of adjustments recorded by EPS in 2021, the gross profit for the Group would have improved to £20.9 million, with a gross margin of 35%.

Continuing operations – R&D

R&D spend of £5.7 million was up £1.2 million on 2020 (2020: £4.5 million). This reflects the investment in the ImagineX platform which will be central to our long-term growth, with the added investment in FFEI of £0.4 million. The total increase is in proportion to our revenue growth and maintains a spend/revenue ratio of approximately 10%. Sales and marketing spend for the year was £6.3 million (2020: £6.0 million). The increase in spend of £0.3 million year-on-year reflects the focus on sales and business development in the Printhead business unit following the restructuring of the business in the second half of 2020. Savings were seen in both the Printhead and EPS businesses due to COVID-19 which limited our ability to visit customers and led to the cancellation of the majority of tradeshow which one, or both, businesses would have attended.

Continuing operations – expenses

General and administrative expenses increased £2.1 million from £8.0 million in 2020 to £10.1 million in 2021. This increase largely relates to planned investment in key areas of the business and infrastructure, including operations, IT and finance, offset by £0.3 million related to trading foreign exchange gains in 2021, as a result of the exchange rate volatility response to COVID-19.

Impairment reversals on financial assets were £0.4 million (2020: £0.9 million). This reversal predominantly relates to a distribution channel used by the Printhead business and the collection of a customer debt previously provided for.

Other operating income in 2020 of £0.8 million related to the PPP loan taken out by the EPS business in the US which met all qualifying criteria to be forgiven.

Restructuring and transaction costs of £1.4 million (2020: £0.8 million) predominantly relate to re-organisation costs, acquisition related professional fees and additional costs relating to the dilapidation and exit of the office on the Cambridge Science Park.

Business performance continued

Table D – Movement in net cash* (including 3D)

£'000	2021	2020
Cash & treasury deposits – Continuing operations	25,051	18,117
Cash & treasury deposits – 3D operations	–	2,120
Cash & treasury deposits at the end of the year	25,051	20,237
Cash & treasury deposits at the beginning of the year	20,237	25,322
Total net cash inflow/(outflow)	4,814	(5,085)
Effect of foreign exchange rate changes on cash balances	110	57
Increase/(Decrease) in net cash for the Group	4,924	(5,028)
Consisting of:		
Total cash (outflow) / inflow from continuing operations	(2,342)	7,073
Cash outflow from Xaar 3D business	(2,109)	(7,018)
Xaar 3D – Proceeds from share capital and share sale	9,272	–
Net cash inflow (outflow) from Thin Film operation	103	(5,083)
Increase/(Decrease) in net cash for the Group	4,924	(5,028)

* Net cash is defined as cash and cash equivalents, plus treasury deposits.

Continuing operations – profit

The profit before tax from continuing operations under IFRS was £1.0 million in 2021 (2020: £4.3 million loss). Basic earnings per share from continuing operations was 0.9p (2020: loss 5.7p).

The performance of the Printhead business improved £6.5 million from a £4.3 million loss in 2020 to a £2.2 million profit before tax in 2021, driven by increased sales, a much improved gross margin, and a reduction in operating expenditure. The EPS business went from a £0.3 million profit in 2020 to a £0.9 million loss in 2021 due to the impact arising from the write off and provisioning of legacy inventory. Excluding this one-off impact, the EPS business made a small loss which given the underlying performance of the business should see turn this into profit during 2022.

FFEI contributed a profit before tax of £0.4 million since acquisition on 11 July 2021.

In calculating the adjusted loss before tax we have adjusted for gains on derivative financial liabilities of £2.9 million (2020: £0.1 million) and fair value gains on financial assets of £1.0 million (2020: nil) alongside restructuring costs of £1.4 million, foreign exchange losses on intra-group loans of £0.1 million, and share-based payments of £0.7 million with an R&D expenditure credit of £0.3 million and amortisation of acquired intangible assets of £0.4 million (see Financial Statements – note 4 on page 130).

The adjusted loss before tax from continuing operations was £0.6 million, compared to £3.9 million loss in 2020. This is a significant step forward for the business, emphasised by the delivery of adjusted profit in the second half of 2021. The adjusted EBITDA for continuing operations in the year was £3.2 million (2020: £0.1 million).

Discontinued operations

Due to the divestment of the remaining investment in Xaar 3D, completed on 1 November 2021, the results are classified as discontinued operation. The business was classified as an asset held for sale as at 31 December 2020.

A £13.5 million profit was recorded in relation to discontinued operations (2020: £10.3 million loss) with cash outflows for the period of £1.9 million (2020: £12.1 million). The Thin Film business, which was classified as discontinued in 2019, recorded a loss of £0.2 million (2020: £3.7 million) which related to inventory commitments and supplier liabilities. All liabilities regarding the Thin Film business have now been settled. The 3D business recorded an operating loss of £4.2 million in 2021 (2020: £6.4 million loss).

The Group has recognised a gain on the sale of the investment in subsidiary of £17.9 million, comprising net cash received of £9.3 million, with contingent consideration at the transaction date of £10.9 million, less transaction costs of £0.2 million.

Basic earnings per share from discontinued operations was 20.0p (2020: loss 9.5p).

Profit for the year

The Group profit for the year was £14.2 million (2020: £14.7 million loss) of which £16.2 million is attributable to the owners of the Company (2020: £11.7 million loss), with a £2.0 million loss to non-controlling interests (2020: £3.0 million loss). The total basic earnings per share attributable to shareholders is 20.9p (2020: loss 15.2p).

Cash generation

The Group retained a healthy cash balance of £25.1 million at the year end, representing an increase of £4.9 million during the year, comprising a cash outflow from continuing operations of £2.3 million, with discontinued Xaar 3D operations utilising £2.1 million, being offset against cash proceeds received for the sale of Xaar 3D of £9.3 million.

Operating cash inflow for continuing operations before working capital was £2.7 million due to improved aEBITDA of £3.2 million delivered principally in our Printhead division.

As a result of the managed investment in inventory, working capital saw an outflow of £3.4 million, with improvements in receivables and payables helping to offset some of the £9.1 million increase in inventory.

The Group maintains a strong disciplined focus on cash, and this will continue throughout 2022. During 2021, investing activities saw a cash spend of £2.3 million, mainly on infrastructure and IT projects.

The business has a clear plan and strategy which the strong balance sheet and cash position will support. There remain external development opportunities which, if they can expand our capabilities and expertise, we will look to potentially add to the Group. We will also continue to invest internally to ensure we have the operational capacity and efficiency to meet future demand, alongside investment in our product roadmap development.

Strong balance sheet

Non-current assets increased £22.7 million in the year from £24.7 million to £47.4 million. This was driven by the increase in goodwill following the acquisition of FFEI Limited of £0.7 million, along with an increase in intangible assets of £3.8 million. The identification of financial assets at fair value arising from the sale of 3D assets was £10.9 million plus revaluation through profit and loss at year end of £1.0 million (2020: £nil). Additionally, there were increases in right-of-use assets of £7.3 million, and a £0.9 million reduction in property, plant and equipment as new purchases were controlled in line with the Group's cash focus.

Current assets, excluding the disposal group assets held for sale, increased £18.4 million from £38.1 million in 2020 to £56.5 million. A significant proportion of this increase is attributable to the increase in inventories of £9.1 million to £18.8 million (2020: £9.7 million), associated with the managed investment in our supply chain capability. Trade and other receivables increased by £2.5 million to £12.1 million (2020: £9.6 million) and cash and cash equivalents (including treasury deposits) increased by £7.0 million to £25.1 million (2020: £18.1 million), with current tax assets increasing by £0.1 million to £0.5 million (2020: £0.4 million). Each of these were primarily driven by the consolidation of FFEI.

The 3D business was classified as held for sale with £10.0 million of assets in 2020 and disposed of in 2021.

Current liabilities, excluding liabilities associated with Xaar 3D (held for sale) in 2020 of £1.6 million, increased by £8.7 million to £23.0 million (2020: £14.3 million) primarily due to the increase in trade and other payables of £11.6 million to £21.5 million (2020: £9.9 million), as a result of the consolidation of FFEI. A reduction in the provision balance of £0.2 million arose from the utilisation of the £0.3 million restructuring provision in the year, offset by an increase in warranty provision of £0.1 million. Current lease liabilities increased by £0.1 million to £1.2 million (2020: £1.1 million), with the disposal of Xaar 3D also removing the liability arising from derivative financial instrument, of £2.9 million.

Non-current liabilities increased by £10.7 million to £12.2 million (2020: £1.5 million), which mainly relate to lease liabilities recorded under IFRS 16 for property, which increased by £7.0 million to £8.5 million (2020: £1.5 million) in the year, alongside recognising a dilapidation provision on leases of £0.3 million (2020: £nil) and long-term liability of £3.4 million for the deferred consideration on the acquisition of FFEI Limited.

Dividend

No dividend has been declared for 2021, as the Board believes that prioritising cash for continued investment in the business at this stage of our rebuilding programme will deliver more compelling returns for shareholders in the medium term.

Table E – Cash flow table – Continuing operations (excluding 3D)

	2021	2020
aEBITDA	3,183	62
Restructuring and transaction expenses	(1,404)	(754)
Depreciation of right-of-use assets	871	1,107
Government grant (PPP loan)	–	819
Other	90	144
Operating cash flows before movement in working capital	2,740	1,378
Movement in working capital	(3,383)	6,735
Cash (utilised) / generated by operations	(643)	8,113
Income taxes received	288	351
Net cash used in investing and other financing activities	(1,987)	(1,391)
Net (decrease) / increase in cash and cash equivalents from continuing operations	(2,342)	7,073

