



Advanced Manufacturing Venture Capital Report 2023

FCF DeepTech Series

June 2023

A grayscale photograph of a 3D printer in operation. The printer's nozzle is positioned above a spherical object with vertical ridges, which is being printed on a white surface. The background is blurred, showing the industrial setting of the printer.

EXECUTIVE SUMMARY

FCF OVERVIEW

ADVANCED MANUFACTURING VENTURE
CAPITAL MARKET

ADVANCED MANUFACTURING IPO EXITS

ADVANCED MANUFACTURING M&A EXITS

The FCF DeepTech Series is a standardized set of reports, tracking European VC funding trends within four main DeepTech verticals and can be used as a quick reference for investors, corporates and professionals

More advanced, detailed and / or customized reports are available upon request

FCF DeepTech Series

FCF analyses and tracks the European funding trends within four main DeepTech verticals. Each quarter, one of the four verticals is examined individually. FCF defines DeepTech companies as firms whose product or service offerings are based on heavy R&D, patent development, substantial scientific advances and high-tech engineering, creating real technological innovations (in contrast to Internet-Platform companies applying 'state-of-the-art' technology to transform a non-digital business model to a digital one)

FCF DeepTech Verticals



CleanTech

Developers of technologies that seek to reduce the environmental impact of human activities or to significantly reduce the amount of natural resources consumed through such activities



Advanced Manufacturing

Companies utilizing innovative and novel technologies to improve products or processes related to manufacturing



Internet of Things (IoT)

Companies that provide a product that is enabled with sensors and actuators, embedded in physical objects, and / or software that uses this sensor data to improve the user experience or allows for sharing of this data with a network of other devices



Robotics

Automated or remote-controlled mechanical devices and technology. This includes machinery programmed to perform repetitive tasks, precision tasks and remote-operated movement or travel (e.g., UAVs, etc.)

Recipients

The FCF DeepTech Series targets the following recipients:

- Corporates / Executives
- Institutional Investors
- Venture Capital Investors
- Family Offices / HNWIs
- Advisors

Availability

The FCF DeepTech Series is available on FCF's website at '<https://www.fcf.de/de/research/>'

To recommend colleagues or fellow investors to be added to the mailing list, kindly send an email with the respective contact information

If you have questions, comments or ideas, please do not hesitate to contact us

Vertical – Advanced Manufacturing

This edition of the 'FCF DeepTech Series' focuses on VC funding developments within the European Advanced Manufacturing vertical

The European Advanced Manufacturing vertical has been split into four main subsectors

- (i) Additive Manufacturing,*
- (ii) Robotic Automation,*
- (iii) Sensors and IoT Platforms,*
- (iv) Industrial Process Software*

Advanced Manufacturing Subsectors

The Advanced Manufacturing vertical features companies utilizing innovative and novel technologies to improve products or processes related to manufacturing. This includes innovative machinery and autonomous robots that complete a larger part of the manufacturing process as well as sensors, software and IoT systems intended to make the production of goods more efficient and effective. Thus, the Advanced Manufacturing vertical has been divided into the following subsectors:



Additive Manufacturing

Developer of solutions designed to deposit materials in given geometrical shapes (e.g., 3D Printing). The subsector also includes providers of design and engineering solutions for Additive Manufacturing uses



Robotic Automation

Innovators that use robotic solutions to automate manufacturing steps usually completed manually. Examples of products include autonomous warehouse systems and industrial handling robots



Sensors and IoT Platforms

Provider of sensors and IoT systems intended to aid the automation of manufacturing processes or improve the performance of them. Potential use cases include sensors able to determine machine's maintenance needs



Industrial Process Software

Designer of software intended to use artificial intelligence, machine learning and / or big data processing to identify inefficiencies within a manufacturing process and suggest improvements

Selection of Companies

The companies were selected based on the following criteria:

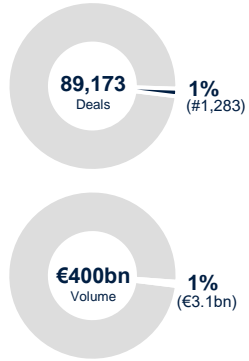
- Companies that have raised venture capital since 2018
- Companies with HQ located in Europe except Russia
- Companies operating within the Advanced Manufacturing vertical

Data

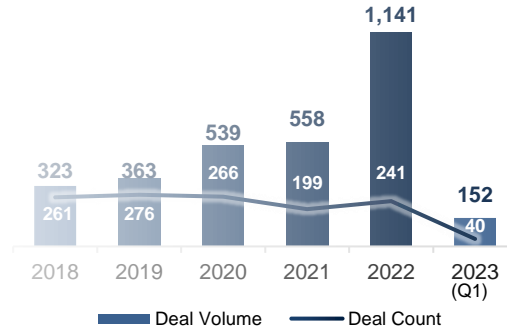
All input data is provided by Pitchbook and S&P Capital IQ and has not been independently verified by FCF. For additional information and disclaimer, please refer to the last page

European Adv. Manufacturing – Venture Capital Facts & Figures

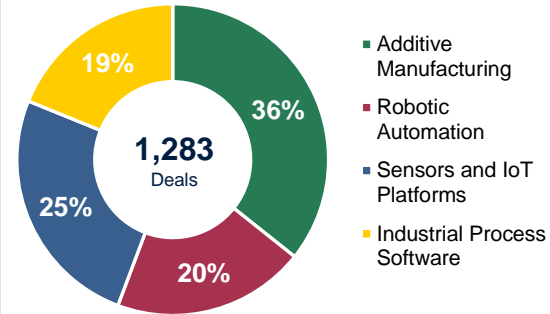
Adv. Manuf. VC Market as % of European VC Market ('18 – '23*)



Advanced Manufacturing VC Market Deal Volume and Deal Count (€m, '18 – '23*)



Advanced Manufacturing VC Market by Subsectors ('18 – '23*)



M&A Exits Venture-Backed ('18 – '23*)

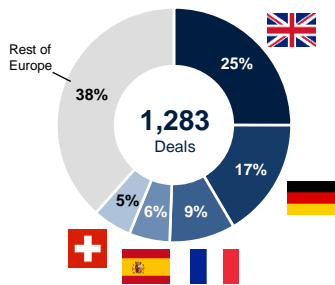


EUR 1,905m
Total Deal Volume

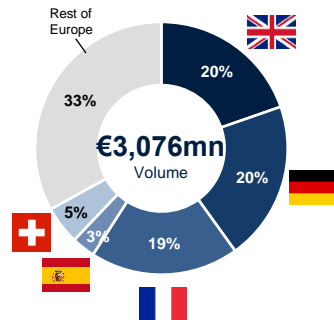


50
Total Deal Count

Top 5 Targeted Countries by VC Deal Count ('18 – '23*)



Top 5 Targeted Countries by VC Deal Volume ('18 – '23*)



Top 3 AM Companies by VC Volume Raised ('18 – '23*)

#	Company	HQ	Vol. (€m)
1	EXOTEC	France	388
2	CloudNC	UK	63
3	WOLF3D	Germany	53
Top 3 Total			504

Top 3 VC Investors by Deal Count ('18 – '23*)

#	Investors	HQ	Deal Count
1	European Commission Horizon 2020 European Union Funding for Research & Innovation	EU	66
2	Innovate UK	UK	58
3	ENTERPRISE IRELAND where innovation meets business	Ireland	21
Top 3 Total			145

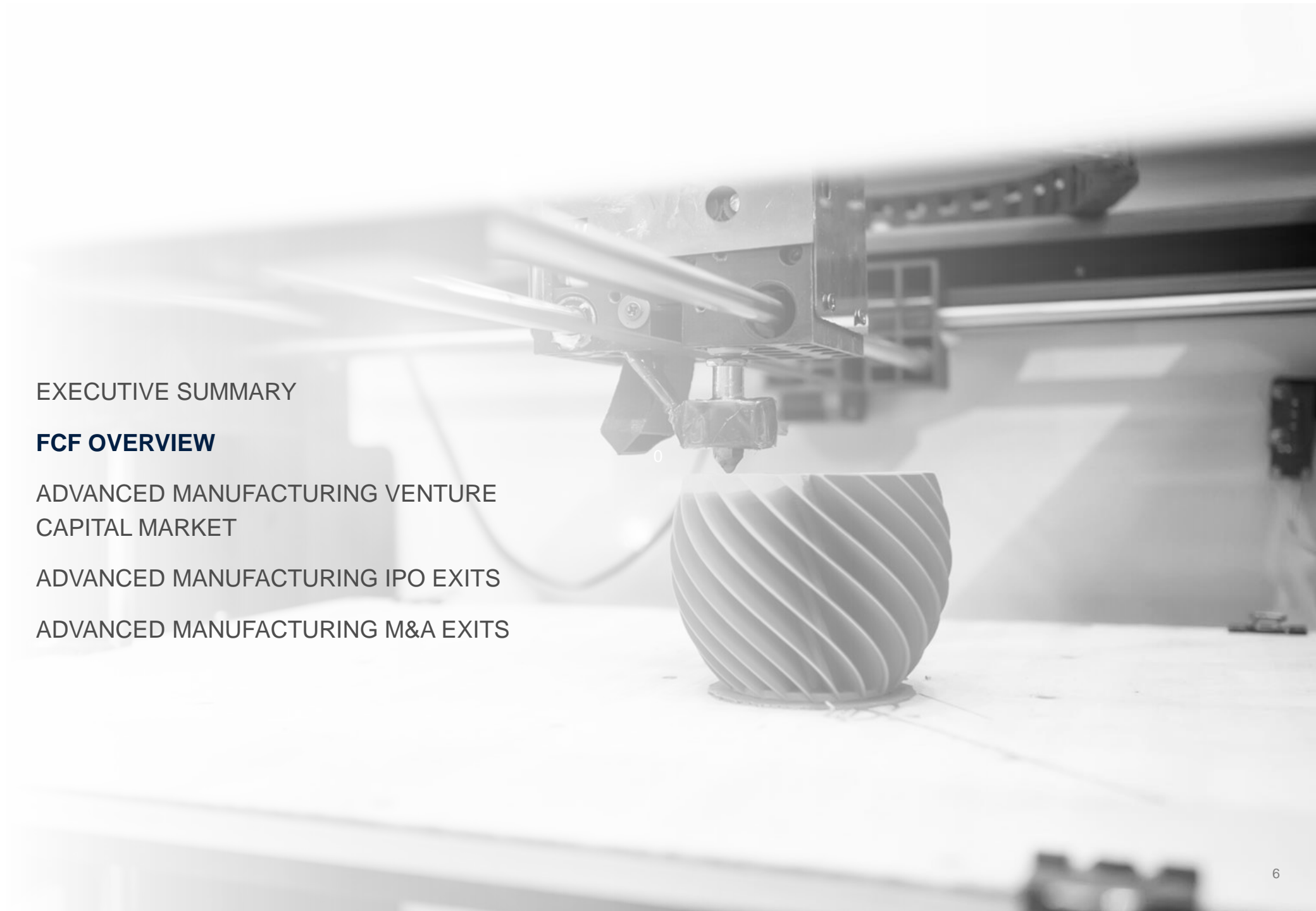
IPO Exits ('18 – '23*)



EUR 10m
Total Deal Volume



3
Total Deal Count

A grayscale photograph of a 3D printer in operation. The printer's nozzle is positioned above a spherical object with a ribbed, textured surface. The printer's frame and various mechanical components are visible in the background, which is slightly out of focus. The overall scene is brightly lit, creating a clean and industrial atmosphere.

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ADVANCED MANUFACTURING M&A EXITS

FCF seeks to provide its clients with financing solutions

- (i) at the lowest cost,
- (ii) with the highest flexibility,
- (iii) in the shortest period of time,
- (iv) with the highest closing probability, and with
- (v) financing partners that integrate well into their strategy

Who We Are

- Specialized Investment Bank and Financing Specialist
- Advising public and private small- / midcap companies
- Advisor for structuring and placement of financing transactions:
 - All instruments: Unbiased approach to all available corporate financing instruments (no product selling approach), allowing for customized financing structures
 - All investors: Close and trusted relationships with senior executives of virtually all relevant equity and debt investors
 - Fast process: Process management skills and direct / personal access to institutional debt and equity investors enable fast transactions
- More than 150 transactions with a total placement volume in excess of EUR 5.0 billion since foundation in 2005
- More than 15 professionals headquartered in Munich

Capital Markets Capabilities and Services

Equity	Private / Pre-IPO	<ul style="list-style-type: none"> ■ Venture capital ■ Growth capital 	<ul style="list-style-type: none"> ■ Private equity
	Public	<ul style="list-style-type: none"> ■ Initial Public Offering (IPO) / Capital increase ■ Private investment in Public Equity (PIPE) 	<ul style="list-style-type: none"> ■ Dual-track (IPO and alternative transaction pursued in tandem) ■ Block trade
Debt	Short-term Debt	<ul style="list-style-type: none"> ■ Receivables / Factoring / Asset-backed securities ■ Borrowing base / Inventory 	<ul style="list-style-type: none"> ■ Working capital / Revolving credit facility ■ Guarantees / Letter of credit
	Long-term Debt	<ul style="list-style-type: none"> ■ Bank loan facility / Syndicated loans ■ Sale-and-lease-back / Leasing ■ Corporate bonds (public / private placement) ■ High yield / PIK bond 	<ul style="list-style-type: none"> ■ Promissory note (<i>Schuldscheindarlehen</i>) ■ Second lien / Subordinated loans ■ Venture debt ■ Unitranches
	Hybrid	<ul style="list-style-type: none"> ■ Mezzanine capital 	<ul style="list-style-type: none"> ■ Convertible bonds

Selected Transactions

Acquisition Loan KKA Management GmbH EUR 20m May 2023	Capital Increase aerofolis GmbH [confidential] March 2023	M&A (Sell-Side) Energieinsel [confidential] March 2023	M&A (Sell-Side) PMG Projektmanagement GmbH [confidential] March 2023	M&A (Sell-Side) SER / RUZ Group [confidential] February 2023	European Investment Bank Debt Facility German Bionic Systems GmbH EUR 15m December 2022	Financial Advisory Mitteldeutsche Flughafen AG [confidential] December 2022	Syndicated Loan ante Holding GmbH & Co. KG [confidential] December 2022	Working Capital Facility CHO-Time Group EUR 7m November 2022	Software-Leasing Facility [confidential] Leading Global Device-as-a-Service Company EUR 10m October 2022	Interest Rate Hedging Mitteldeutsche Flughafen AG EUR 150m October 2022	European Investment Bank Debt Facility Evum Motors GmbH > EUR 12m September 2022
Factoring Facility JORA Holding GmbH & Co. KG EUR 25m September 2022	Equity Transaction - Joint Venture with Family Office Doppstadt Group > EUR 50m September 2022	Acquisition Loan and Working Capital Facility Bencis > EUR 20m May 2022	Acquisition Loan Facility Lloyd Fonds AG [confidential] April 2022	European Investment Bank Debt Facility numares AG EUR 20m February 2022	Syndicated Loan Schnellecke Logistics SE EUR 70m December 2021	Syndicated Loan KWD Automotive AG & Co. KG EUR 70m December 2021	Syndicated Loan [confidential] Top 25 Pharmaceutical Company EUR 80m November 2021	Syndicated Loan, Factoring, Real Estate Sale & Lease-Back [confidential] Top 10 German Food Company EUR 85m October 2021	Venture Financing Precisis AG EUR 20m September 2021	Syndicated Loan Ziegler Holzindustrie GmbH & Co. KG EUR 230m August 2021	Syndicated Loan Asamer Baustoffe AG EUR 80m May 2021



1

financing advisor in Germany, purely focusing on corporate financing transactions



More than
15

investment banking professionals



More than
100

years of aggregated, investment banking / financing experience



More than
150

completed transactions



More than
5 bn

total volume of advised & closed transactions since 2005



Network

access to more than 4000 international financial institutions



2000

contacts to family offices and ultra-high-net-worth individuals worldwide



More than
25

international conferences organized



More than
150

articles and research papers published



Leading

advisor for financing transactions with EIB in the DACH region

Case Study: Quantum-Systems GmbH

> EUR 10m European Investment Bank Growth Finance Facility

FCF advised Quantum-Systems GmbH on a > EUR 10m development debt facility from the European Investment Bank (EIB) to fund the strong growth of the firm subsequent to an equity financing round



EIB Debt Facility

Quantum-Systems GmbH

> EUR 10m

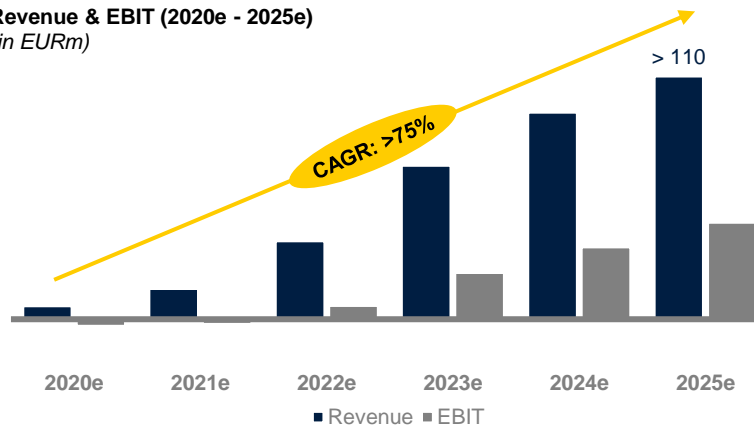
July 2021

Company Description

- Quantum-Systems GmbH (Quantum) is a developer and global leader in the automatic transition, eVTOL¹ fixed wing UAS² technology with applications in the surveying and defense and security sector
- The drones' hybrid functions combine eVTOL and common aircraft characteristics, thereby achieving long range and silent flights
- The highly efficient UAS are fully autonomous and powered with AI technology, enabling clients to benefit from the megatrend autonomous data collection solutions
- Clients – governments and firms operating in the areas of smart farming, surface mining, surveying and infrastructure – benefit from the best-in-class data quality, enabling real-time position detection
- Quantum was founded in 2015 and is headquartered in Oberpfaffenhofen (west of Munich) at a special-purpose airfield and currently employs more than 60 staff

Key Financials

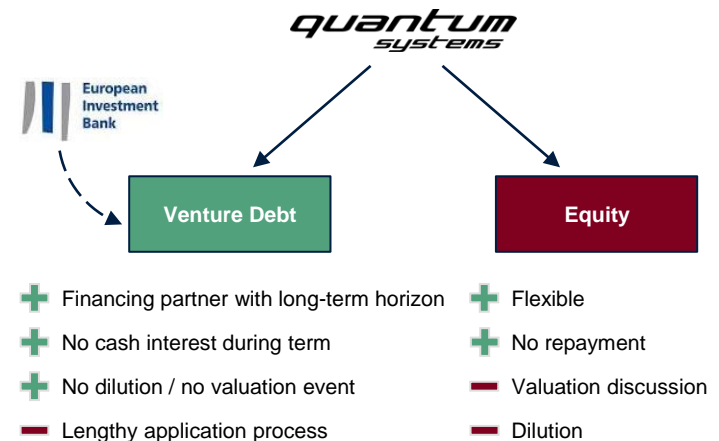
Revenue & EBIT (2020e - 2025e)
(in EURm)



Financing Options

- Prior to the EIB financing, Quantum was able to secure equity financing from several top-class strategic investors
- In addition to the equity financing, the venture debt instrument was taken up by Quantum to secure additional firepower to support the strong growth trajectory whilst minimizing the dilution to existing investors and the founders
- The secured funds will be aimed at further expanding R&D capabilities in autonomous flight and AI technology alongside strengthening integration of system-critical components of eVTOL UAS within clients' operating infrastructure
- The EIB financing provided the required funding:
 - Without dilution / valuation discussion
 - Already available during pre break-even growth phase

Transaction Highlights



¹ electric Vertical Take-Off & Landing, ² unmanned aerial systems

Case Study: ROBART GmbH

EUR 9m European Investment Bank Growth Finance Facility

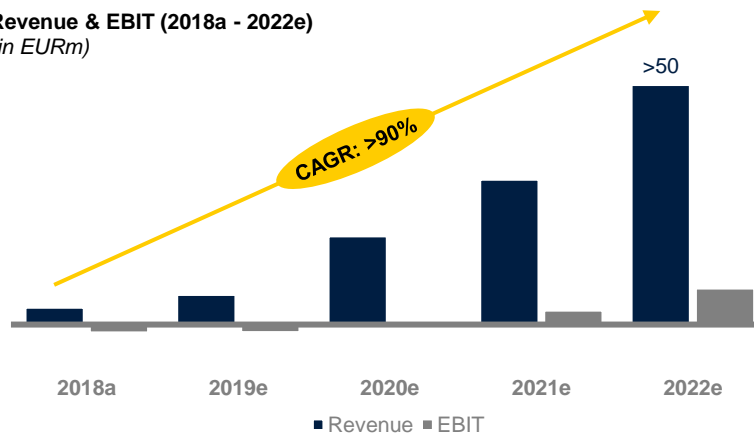
FCF advised ROBART GmbH on a EUR 9m development debt facility from the European Investment Bank (EIB) to fund the scale up of the business

Company Description

- ROBART GmbH (ROBART) is the technology leader in the field of AI-navigation systems for home appliance robots
- The company develops innovative navigation solutions, combining AI software, patented LIDAR technology and IoT services, enabling intelligent robotic navigation and human-robot interaction
- ROBART's products and services help its customers - blue-chip home appliance manufacturers - to accelerate the product development of intelligent robotic products
- Customers can choose from development services, plug & play navigation kits or entire private-label produced robotic products
- The company's expertise is planned to be rolled-out in other up-coming fields of mobile robotics (security, homecare, professional cleaning etc.)
- ROBART, located in Linz, Austria and branches in the US, China and Germany, was founded in 2009 and employs approx. 50 employees

Key Financials

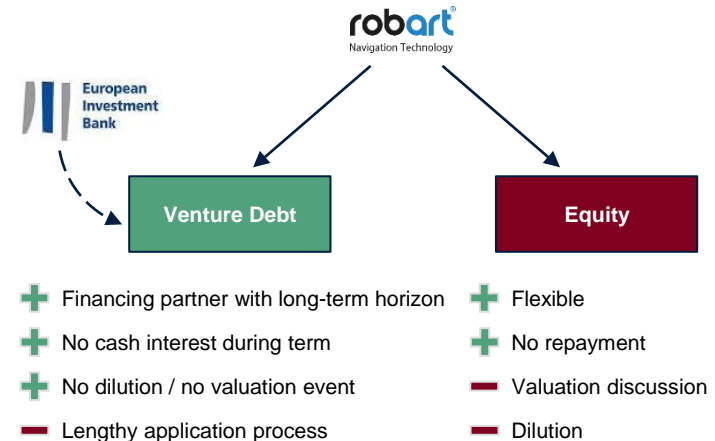
Revenue & EBIT (2018a - 2022e)
(in EURm)



Financing Options

- Up to the transaction, ROBART was financed with venture capital by several blue chip venture capital / corporate venture firms
- In order to accelerate growth, the company intended to raise further financing, especially to fund the expansion of its sales & marketing efforts, working capital requirements and further R&D spending
- Equity financing with existing and new investors was considered but the combination of the amount required and the valuation obtainable would have resulted in high dilution for the founders
- The EIB financing provided the required funding:
 - Without dilution / valuation discussion
 - In tranches tailored to the business liquidity needs
 - Without cash interest during the term of the loan
 - With a five year term long enough to reach break-even

Transaction Highlights



EIB Debt Facility

ROBART GmbH

~ EUR 10m

February 2020

Case Study: Hydrogenious LOHC Technologies GmbH

~ EUR 20m Capital Increase

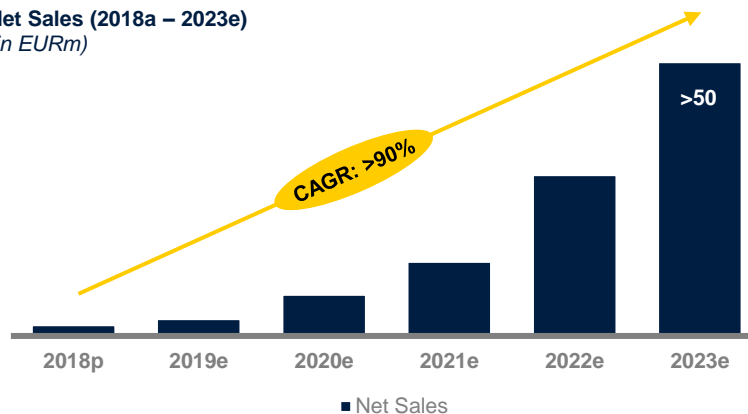
FCF advised Hydrogenious Technologies GmbH and its shareholders on the successful completion of a capital increase (total volume ~ EUR 20m), further funding the scale up

Company Description

- Developer of a hydrogen storage technology designed to store hydrogen in Liquid Organic Hydrogen Carriers (LOHC) – the revolution in hydrogen storage and transport
- Disruptor of the hydrogen logistics markets, enabling hydrogen to be transported in a non-toxic, non-flammable and non-explosive state
- Innovator, capitalizing on the emerging megatrend of hydrogen mobility, enabling the efficient the transport and distribution of hydrogen to Hydrogen Refueling Stations (HRS)
- Global leader in 'next-generation' mobile, 'on-board' LOHC technology
- Key partners (e.g. Clariant, MAN, Sasol, United Hydrogen, etc.) have been brought onboard to support in the development / testing phase
- Hydrogenious was founded in 2013 by Dr. Daniel Teichmann and Profs. Arlt, Schlücker and Wasserscheid in Erlangen, Germany. At present, the company employs ~65 FTEs

Key Financials

Net Sales (2018a – 2023e)
(in EURm)



Capital Increase

Hydrogenious LOHC Technologies GmbH

~ EUR 20m

July 2019

Investor Profiles



AP Ventures, formerly part of Anglo American Platinum, is a venture capital firm backed amongst others by Anglo American Platinum, a major global mining company



Covestro is a major German company which produces specialty chemicals for heat insulation foams and transparent polycarbonate plastics



Mitsubishi Corporation is Japan's largest trading company / conglomerate and a member of the Mitsubishi keiretsu



Vopak is the world's leading tank storage company that stores and handles various oil, chemicals, edible oils and natural gas-related products

Transaction Highlights

- The Company mandated FCF to structure and place a ~ €20m Series B financing round aimed at launching further commercial pilot projects and scaling up the technology
- FCF identified and approached a extensive list of relevant international venture capital, strategic and selected Family Office investors
- Hydrogenious received strong interest from investors, securing a strong negotiating position in terms of valuation and contractual terms, all the while ensuring closing probabilities were maximized
- Hydrogenious and FCF were able to secure the investment of three new strategically valuable investors, in addition to a further commitment from its anchor investor AP Ventures, that offer new joint commercialization projects whilst providing substantial firepower in future financing rounds

Case Study: Synapticon GmbH

~ EUR 10m Capital Increase with Family Office

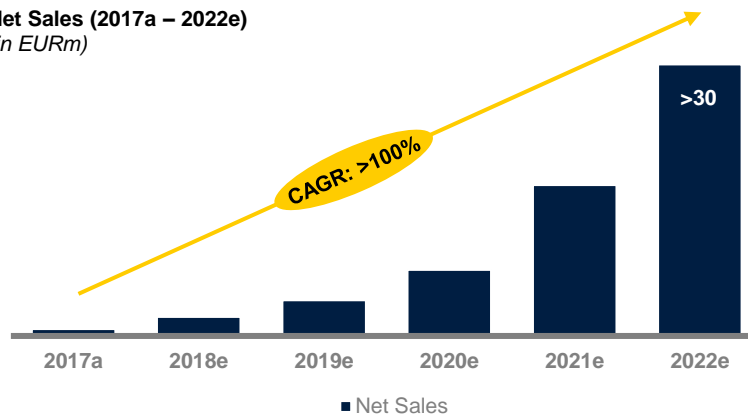
FCF advised Synapticon GmbH and its shareholders on the successful completion of a capital increase (total volume ~ EUR 10m), further funding the company's successful growth strategy and global commercialization plans

Company Description

- Provider of motion control solutions for the robotics industry, combining advanced software and electromechanics to deliver high performance servo drives (key electromechanical robotic motion control component)
- Comprehensive product portfolio spanning servo drives, integrated drive units and SoC (System on Chip) based on proprietary software SOMANET and sold as either customized or off-the-shelf solutions
- Clients are blue chip robotics and automation machinery OEMs (KUKA, Comau, Schunk, etc.) as well as emerging Asian robotics companies
- Acting as a one-stop supplier, the company offers turn-key solutions that drastically reduce the overall time-to-market
- Founded in 2012, based in Schönaich, Germany, the company currently employs 50 people in four locations (Germany, Serbia, USA and China)

Key Financials

Net Sales (2017a – 2022e)
(in EURm)



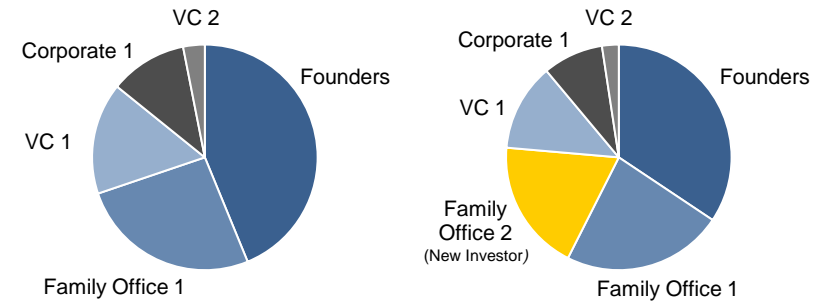
Capital Increase

Synapticon GmbH

~ EUR 10m

January 2019

Shareholdings (pre & post)



Transaction Highlights

- Synapticon is the innovation leader in robotic motion control and is scaling its operations in order to further develop / commercialize its product portfolio
- To finance and realize its business strategy, Synapticon mandated FCF to structure a ~ EUR 10m financing round
- FCF identified and approached a competitive list of relevant international venture capitalists as well as selected family offices
- Synapticon received a high number of submitted Lols, enabling a strong negotiating position with regards to valuation and contractual terms, while at the same time maximizing closing probability
- FCF and Synapticon were able to onboard a value-added family office as a new financing partner with strong industrial 'know-how' while also securing pro-rata participation from the existing shareholders

A grayscale photograph of a 3D printer in operation. The printer's nozzle is positioned above a spherical object with a ribbed, textured surface. The printer's frame and various mechanical components are visible in the background, which is slightly out of focus. The overall scene is brightly lit, creating a clean and industrial atmosphere.

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ADVANCED MANUFACTURING IPO EXITS

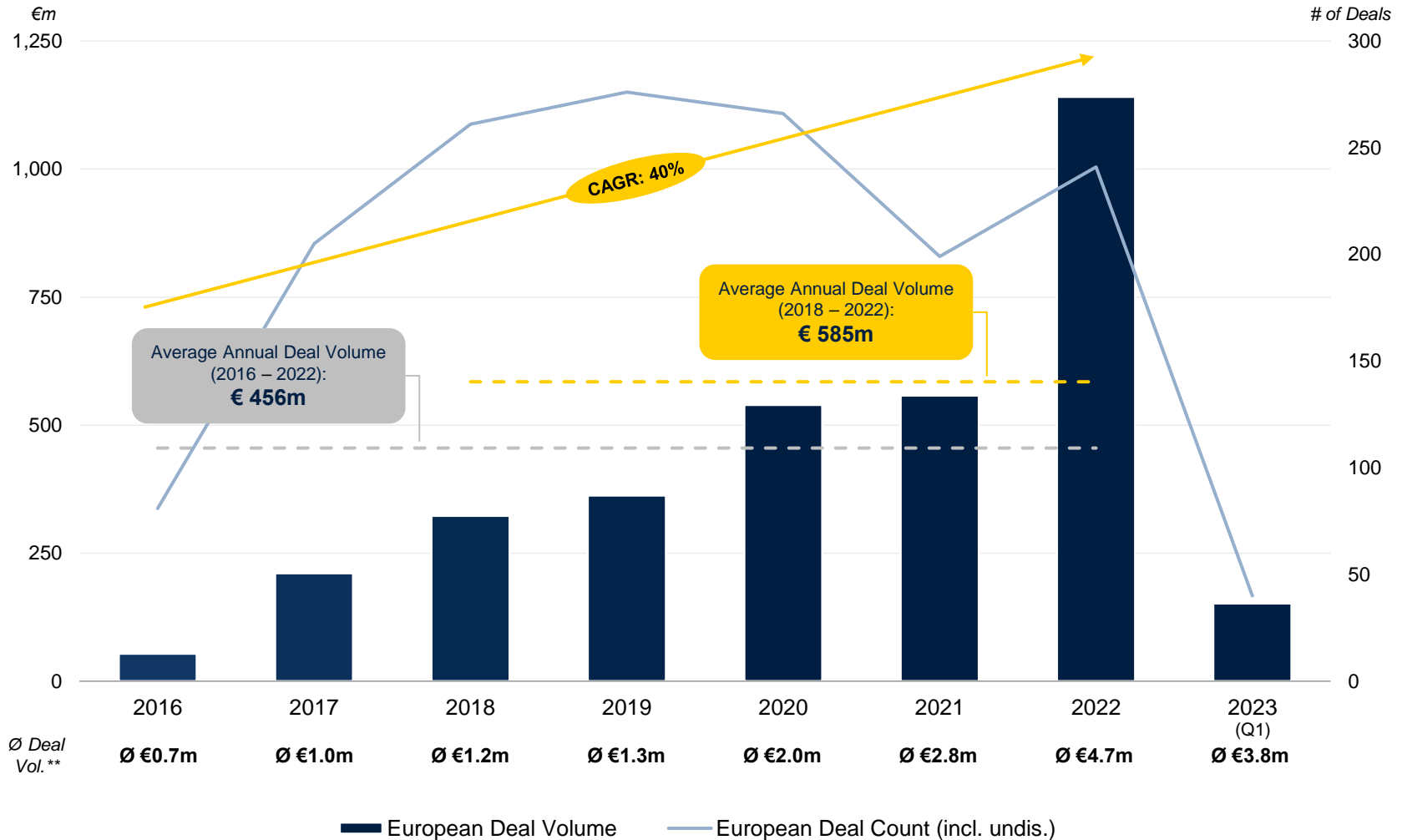
ADVANCED MANUFACTURING M&A EXITS

European Adv. Manufacturing Venture Capital Market Development 2016 – 2023*

Venture Capital investment volumes in Advanced Manufacturing start-ups have seen an upward trend since 2016, peaking in 2022 with €1,141m, more than twice the total financing volume in 2021 (€558m)

Despite increasing investment volumes, the number of deals has been – on average – decreasing since 2019. This increasing average deal volume indicates the growing maturity of the industry

The strong downturn in Q1 reflects the economic and political uncertainty and the currently challenging VC environment



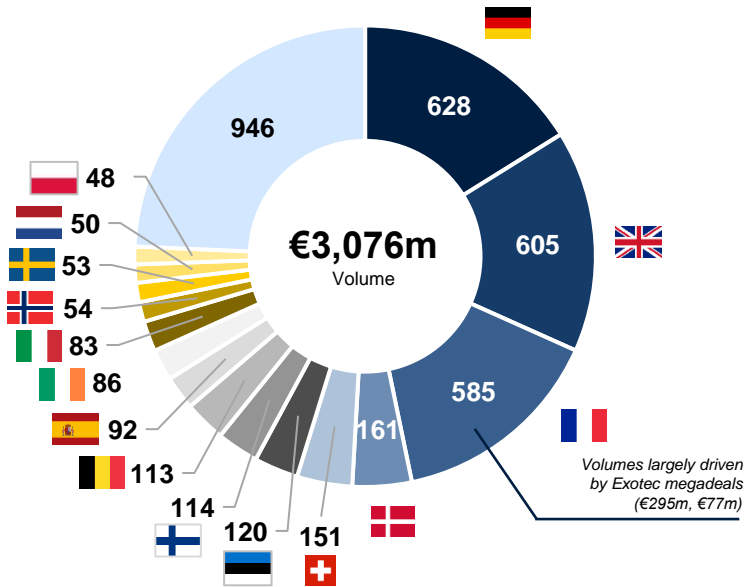
European CleanTech Countries ('18 – '23) by Deal Count & Volume

German start-ups saw the biggest share of investment volume in the past 5 years, while the UK had the highest number of deals

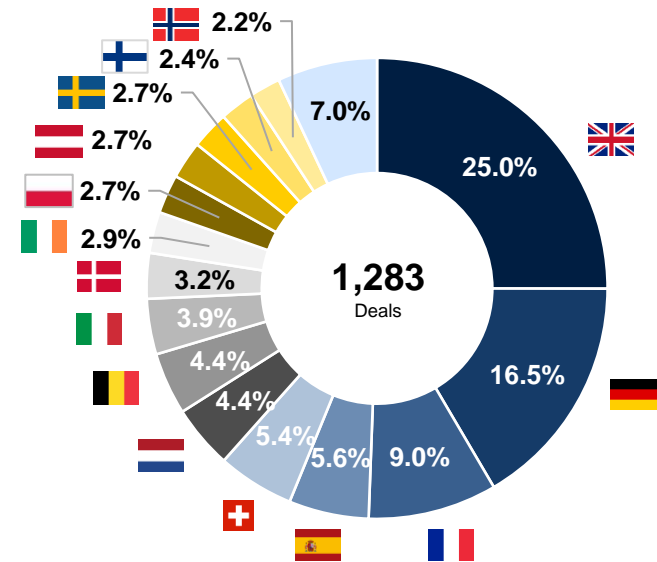
French start-ups place third in number of deals and volume invested, even after adjusting for the Exotec mega deals

The Top 5 countries represent over 65% and 55% of the total European Clean-Tech market with respect to deal volume and count, respectively. The Top 10 even comprises more than 85% and 75% of deal volume and count, respectively

Deal Volume (in EURm)



Deal Count (incl. undisclosed deals)



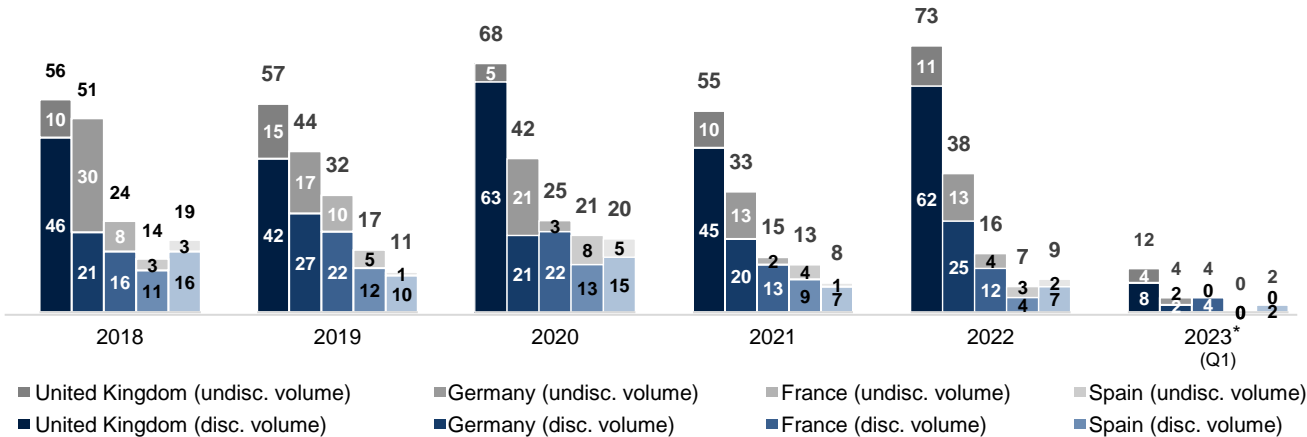
Top 5 Targeted European Adv. Manufacturing Countries ('18 – '23*) by Deal Count (Part I)

Since 2018, the UK has recorded the largest number of deals with a total of 321 VC funding rounds. Germany and France complete the Top 3 ranking with 212 and 116 deals, respectively

German companies appear to be more secretive in terms of disclosing VC funding volumes (only 55% of recorded deals have a disclosed volume) compared to 83%, 77% and 83% for UK-based, French and Swiss companies, respectively

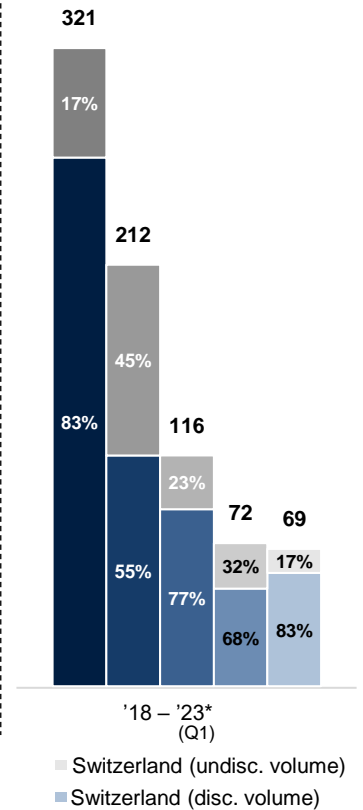
Deal Count (incl. deals with undisclosed deal volumes)

164 Deals (thereof 110 with disclosed volumes)	161 Deals (thereof 113 with disclosed volumes)	176 Deals (thereof 134 with disclosed volumes)	124 Deals (thereof 94 with disclosed volumes)	143 Deals (thereof 110 with disclosed volumes)	22 Deals (thereof 16 with disclosed volumes)
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Total Deal Count

790 Deals (thereof 577 with disclosed volumes)



Top 5 Targeted European Adv. Manufacturing Countries ('18 – '23*)

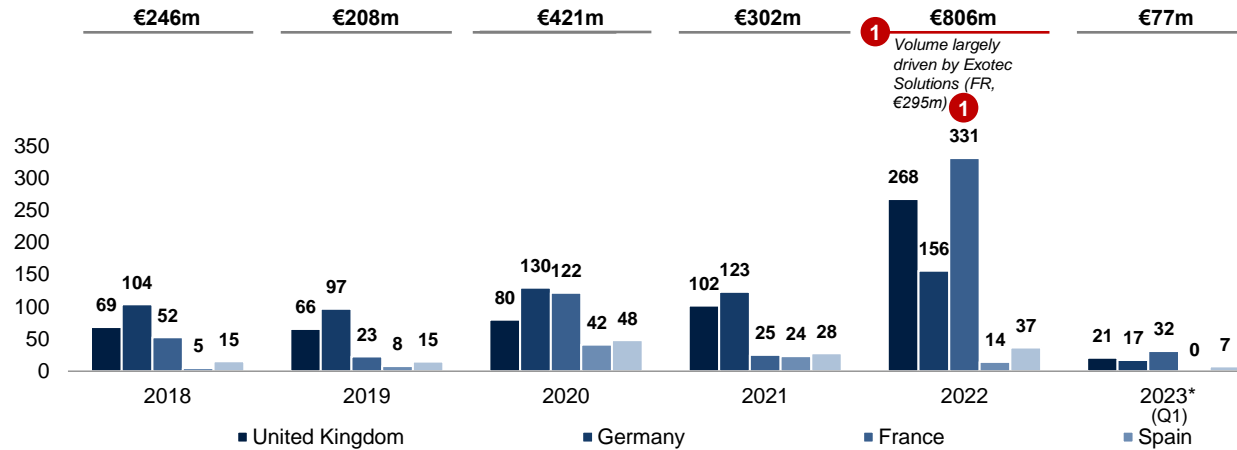
by Deal Volume (Part II)

Germany leads the Top 5 Targeted Countries in terms of deal volume (€628m), closely followed by United Kingdom (€605m) and France (€585m), despite the UK showing the highest deal count

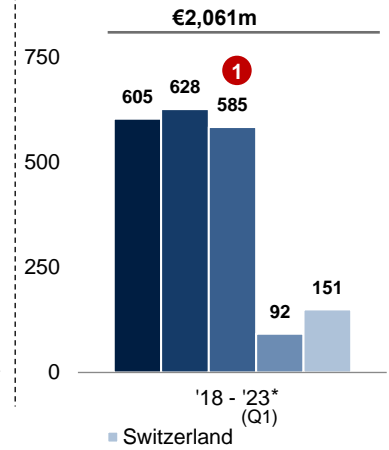
Considering that only 55% of German deals have disclosed deal sizes, the actual total deal volume (incl. undisclosed volumes) might be even higher

The deal volumes of France are largely driven by large funding rounds of Exotec Solutions (€388m in total), representing more than 50% of total French funding volume between 2018 and Q1'2023

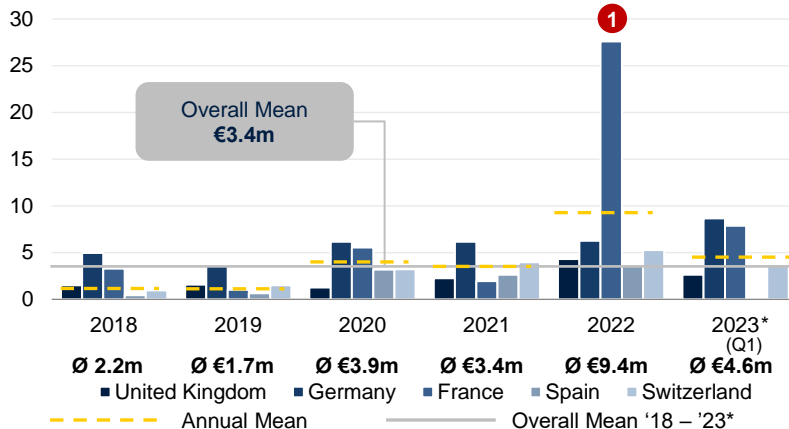
Deal Volume (in €m, excl. deals with undisclosed deal volumes)



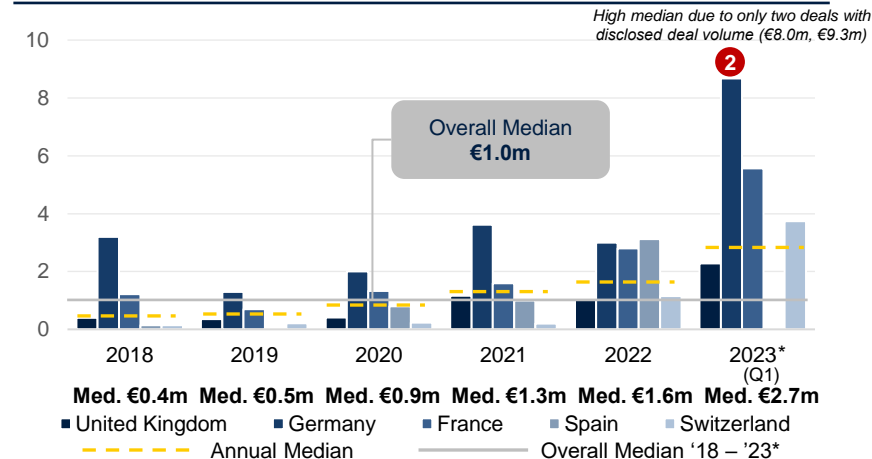
Total Deal Volume



Mean Deal Size (in €m, excl. deals with undisclosed deal volumes)



Median Deal Size (in €m, excl. deals with undisclosed deal volumes)



European Adv. Manufacturing Subsector Analysis ('18 – '23*)

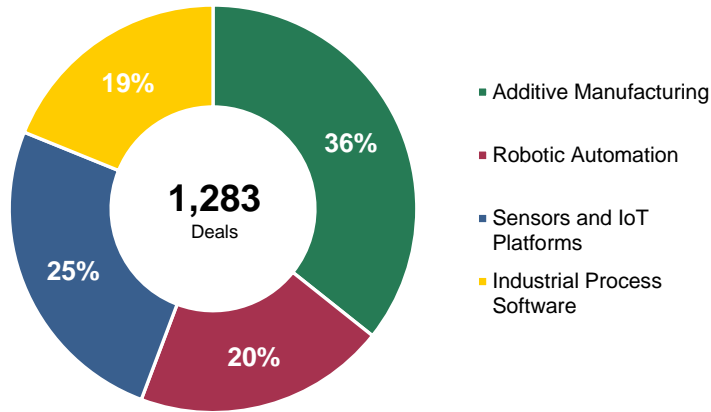
by Deal Count & Volume

'Additive Manufacturing' and 'Sensors and IoT Platforms' are the two largest subsectors by deal count, representing ca. 61% of all deals

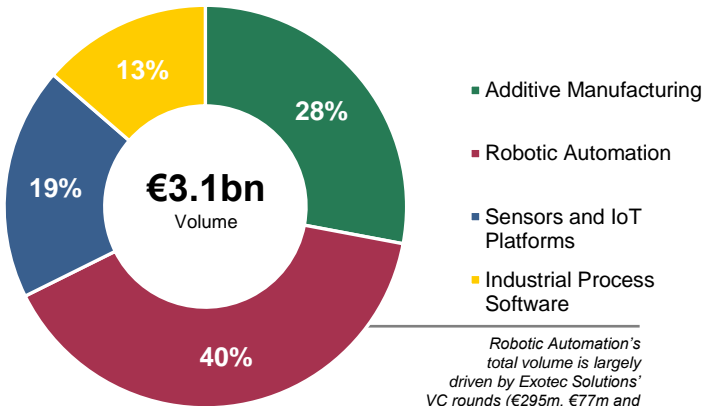
'Robotic Automation' and 'Additive Manufacturing' are the largest subsectors by deal volume, accounting for 68% of the overall deal volume

Even if you would exclude the large financing rounds of Exotec Solutions (€388m), the 'Robotic Automation' subsector would still account for 31% of the total deal volume

Deal Count (incl. deals with undisclosed deal volumes)

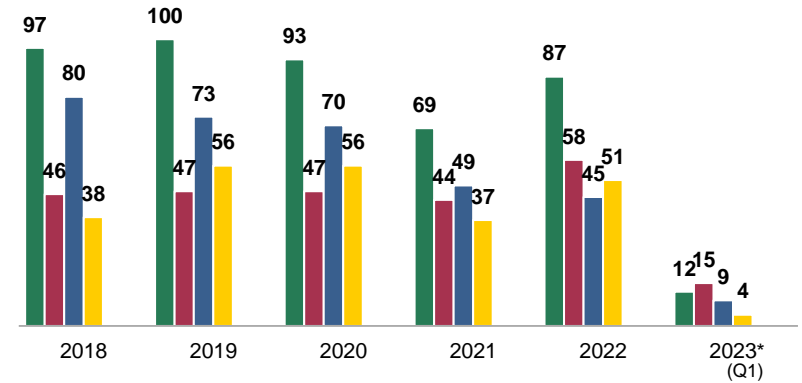


Deal Volume (excl. deals with undisclosed deal volumes)

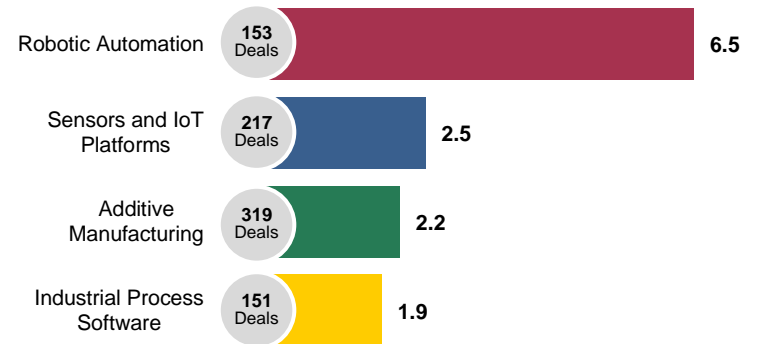


Robotic Automation's total volume is largely driven by Exotec Solutions' VC rounds (€295m, €77m and €15m or 32% of Robotic Automation's total volume)

Deal Count over Time (incl. deals with undisclosed deal volumes)



Mean Deal Size (in €m, excl. deals with undisclosed deal volumes)

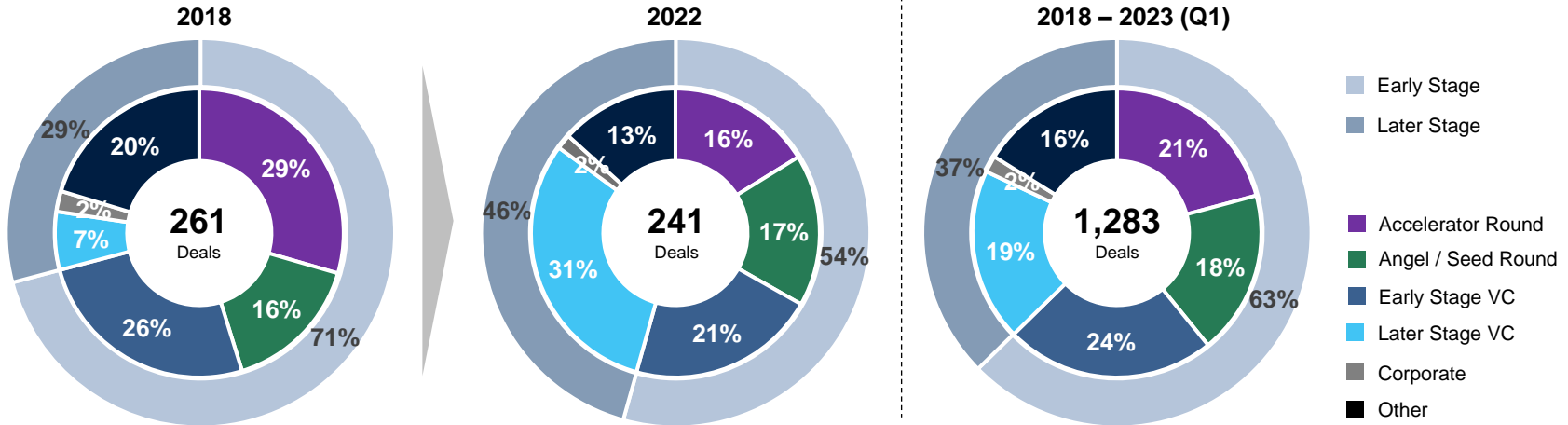


European Advanced Manufacturing Stage Analysis ('18 – '23*) by Deal Count

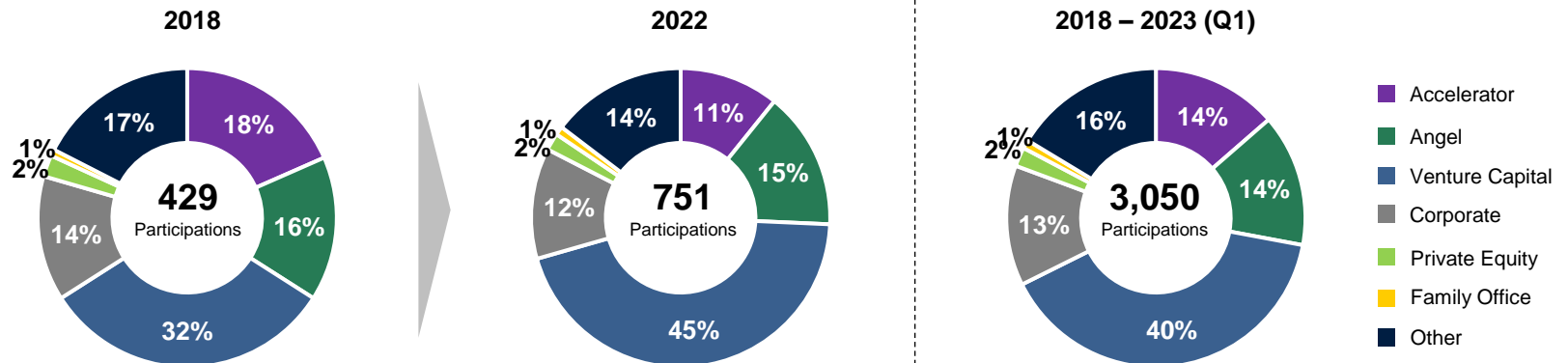
Advanced Manufacturing start-ups have matured in the last 5 years. In 2018 Early Stage deals (Accelerator-, Early Stage VC- and Angel / Seed Rounds) accounted for 71% of all deals, dropping to 54% in 2022, whereas Later Stage deals rose from 29% in 2018 to 46% in 2022

The share of investor type reflects this maturing as well, with Early Stage investors such as accelerators and angels giving away deal participations to Later Stage investors

Deal Type by Deal Count



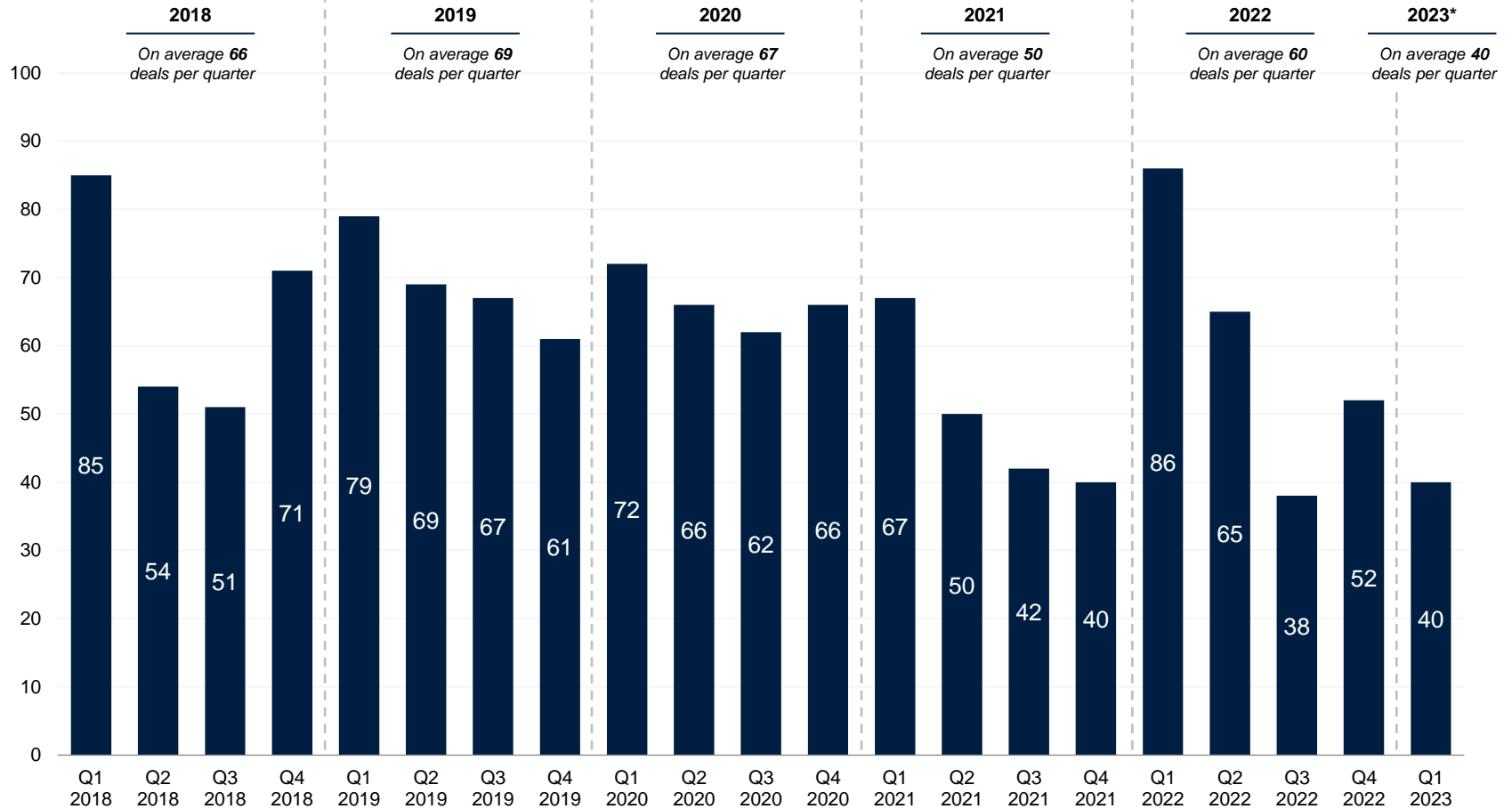
Investor Type by Participations



Quarterly Adv. Manufacturing Venture Capital Deal Count ('18 – '23*)

The first 1st quarter typically saw a spike in number of deals. The low number of deals in 2023 suggest that the more difficult funding environment has also materialized for advanced manufacturing start-ups

Deal Count (incl. deals with undisclosed deal volumes)

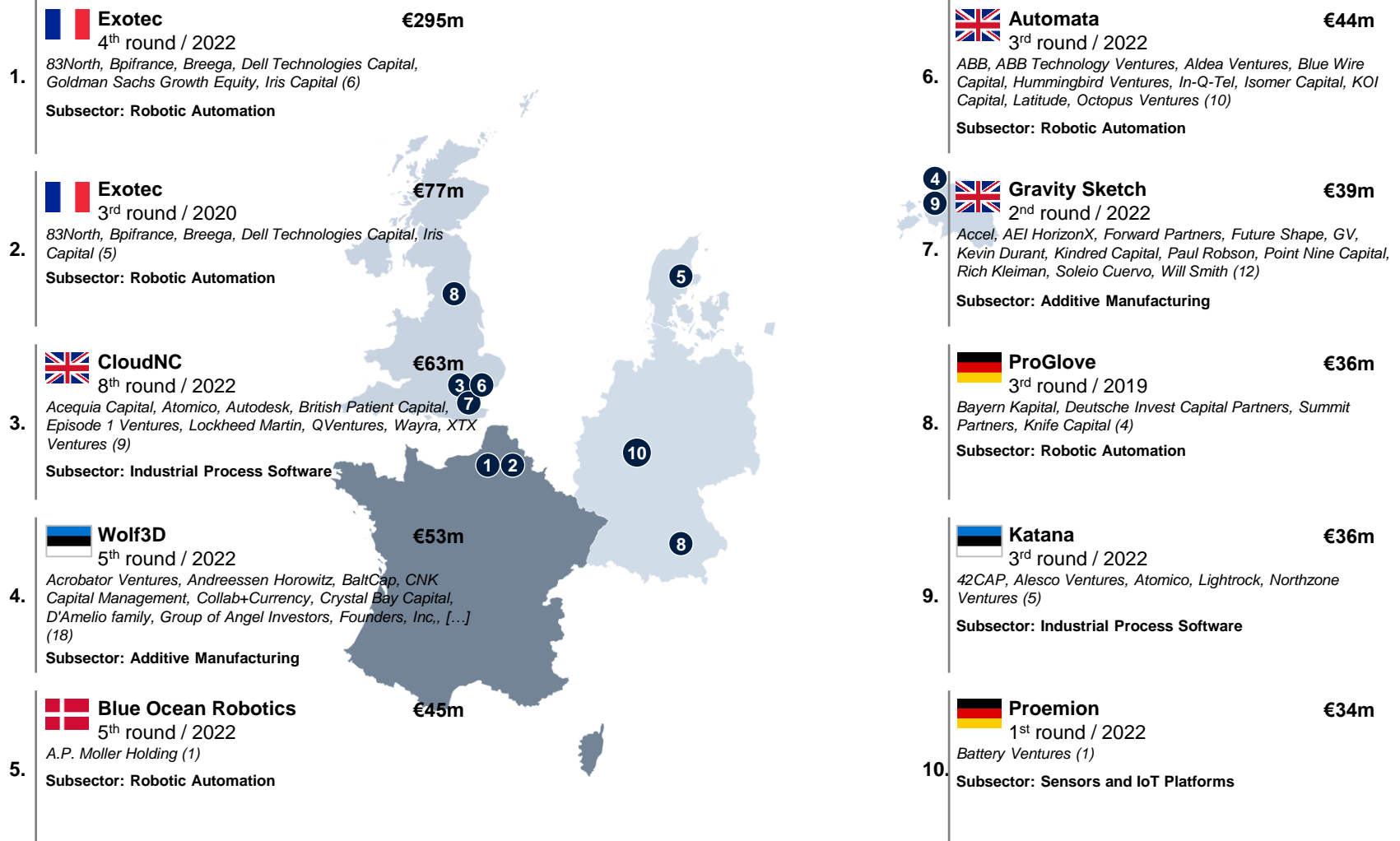


Top 10 European Advanced Manufacturing Deals ('18 – '23*)

by Deal Volume

Exotec dominates the Top 10 with a total financing volume of €372m in 2 deals

The Robotic Automation sector represents 50% of the largest deals in the Top 10, underlining the investor interest in this segment





Annual Top 10 European Advanced Manufacturing Deals ('18 – '20)

by Deal Volume











2018 (Top 10 account for 44% of annual deal volume)

1.		Magazino Cellcom Resources, Fiege, Körber, Zalando (4)	€20m / Corporate
2.		TactoTek Ascend Capital Partners, Business Finland, Conor Venture Partners, Faurecia, Nanogate, Nordea Bank, Plastic Omnium, Voima Ventures (8)	€18m / 5 th round
3.		Konux Alibaba Group, Green Bay Ventures, MIG AG, New Enterprise Associates, Unternehmertum Venture Capital Partners, Upbeat Ventures (6)	€18m / 4 th round
4.		Exotec Solutions 360 Capital Partners, Breega Capital, Iris Capital (3)	€15m / 2 nd round
5.		Metalysis ETF Partners, Hercules Capital BDC, Interogo Foundation, Molten Ventures, Woodford Investment Management (5)	€14m / 6 th round
6.		Biomodex Idinvest Partners, InnovAllianz, Inserm Transfert, LBO France, Sofimac Innovation, Wilco Accelerator (6)	€13m / 2 nd round
7.		GrAI Matter Labs 360 Capital, 3T Finance, iBionext (3)	€12m / 1 st round
8.		Luxexcel Innovation Industries, KLA, Munich Venture Partners, PMV, SET Ventures (5)	€12m / 5 th round
9.		OxSyBio IP Group, Parkwalk Advisors, Woodford Investment Management (3)	€11m / 2 nd round
10.		CloudNC Acequia Capital, Group of Angel Investors, Atomico, Entrepreneur First, Episode 1 Ventures, La Famiglia, Tornig (7)	€10m / 4 th round

2019 (Top 10 account for 53% of annual deal volume)

		ProGlove Bayern Kapital, Deutsche Invest Capital Partners, Summit Partners, Knife Capital (4)	€36m / 3 rd round
		OnRobot Bonnesen, Bøgh-Sørensen, Day One Capital, European Investment Bank, Gundersen, Sandal, Vækstfonden, VF Venture (8)	€25m / 3 rd round
		TactoTek 3M Ventures, Cornes Technologies, Ely Center, Finnvera, Nidoco, Nordic Option, Repsol Corporate Venturing, Tesi, Valeado (9)	€23m / 6 th round
		Wirepas ETF Partners, Inventure, Karma Ventures, KPN Ventures, Tesi, Vito Ventures (6)	€19m / 5 th round
		3D Hubs Anthony Fadell, Arthur Kosten, Balderton Capital, Endeit Capital, EQT Ventures, Erik de Bruijn, Future Shape, Hearst Ventures, Silverhorn Investment Advisors (9)	€16m / 4 th round
		arculus Atomico, La Famiglia, Spark Capital, Visionaries Club (4)	€15m / 2 nd round
		EVIRTHNG Fernbrook Capital Management LLC, Fuel Venture Capital, IDC Ventures (3)	€13m / 5 th round
		Blue Ocean Robotics Bo Stærmosse, Juliana Drivhuse, Nordic Eye Venture Capital, Steen Haustrup (4)	€11m / 3 rd round
		3d Signals DIVEdigital, Enrique M. Abroitiz Jr., Grove Ventures, HCS Capital, Mercura Capital, OurCrowd, State Of Mind Ventures, Vintage Investment Partners (8)	€11m / 2 nd round
		Flyability Dow, ETF Partners, GoBeyond, MKS Alternative Investments, Swisscom Ventures (5)	€9m / 4 th round

2020 (Top 10 account for 44% of annual deal volume)

		Exotec Solutions 83North, Bpifrance, Breega Capital, Dell Technologies Capital, Iris Capital (5)	€78m / 3 rd round
		Blickfeld Bayern Kapital, Continental, Fluxunit - ams OSRAM Ventures, High-Tech Gründerfonds, New Future Capital, Plug and Play Tech Center, TEV Ventures, Unternehmertum Venture Capital Partners (8)	€31m / 2 nd round
		Magazino European Investment Bank, Fiege Logistik, F-LOG Ventures, Jungheinrich, Körber, Zalando (6)	€21m / 3 rd round
		Yuanda Robotics Yuanda China Holdings (1)	€20m / 1 st round
		Blue Ocean Robotics Richard Sussmann (1)	€18m / 4 th round
		German Bionic Systems Bayern Kapital, Benhamou Global Ventures, IT-Farm, MIG AG, MK Venture Capital, Samsung Catalyst Fund, Storm Ventures (7)	€17m / 3 rd round
		Voovio Moira Capital Partners, Tackle Capital (2)	€15m / 3 rd round
		Infogrid Blue Impact Ventures, Concrete VC, Jigsaw VC, JLL Spark, Northzone Ventures, The Venture Collective (6)	€13m / 3 rd round
		CloudNC Atomico, Entrepreneur First, Episode 1 Ventures, GRIDS Capital, Nadav Rosenberg (5)	€13m / 6 th round
		Neo 4FO Venture Partners, Credit Suisse Entrepreneur Capital, Verve Ventures (3)	€13m / 2 nd round

Annual Top 10 European Advanced Manufacturing Deals ('21 – '23*)

by Deal Volume

2021 (Top 10 account for 38% of annual deal volume)

1.		ProVerum Ascentifi, Atlantic Bridge Capital, Boole Investment Syndicate, Davycrest Nominees, EIT Health, Enterprise Ireland, First Quantum Minerals, Gilde Health. P., Halo Business Angel N., Irrus Investm., Lightstone Vent. (11)	€30m / 5 th round
2.		Micropsi Industries Ahren Innovation Capital, Amplifier, Matterwave Ventures, Metaplanet Holdings, Project A, VSquared Ventures (7)	€27m / 5 th round
3.		SynSense China Electronics Haikang Group, CLP Holdings, CM Space, CTC Capital, Qigang Investment, Taikeyuan, Ventech, Yachangfu, Zhangjiang Science Investment (9)	€26m / 4 th round
4.		Gideon Brothers DB Schenker, Deutsche Bahn Digital Vent., Hardware Club, Ivan Topčić, Koch Disruptive Technologies, Luca Ascani, Nenad Bakić, Peaksjah OÜ, Pentland Ventures, Prologis Ventures, Rite-Hite, Taavet Hinrikus (12)	€26m / 4 th round
5.		TactoTek Conor Venture Partners, Plug and Play Tech Center, Tesi (3)	€22m / 7 th round
6.		Starmatik TRUMPF (1)	€21m / Corporate
7.		Photoneo AI Capital, Credo Ventures, Earlybird Venture Capital, IPM Group, Venture to Future (5)	€18m / 4 th round
8.		fruitcore robotics btov Partners, Constantia New Business, Unternehmertum Venture Capital Partners (3)	€17m / 1 st round
9.		Robotise Bayern Kapital (1)	€15m / 4 th round
10.		Spectricity Atlantic Bridge Capital, Capricorn Partners, imec.xpand, Shanghai Pudong Science & Technology Investment Company, XTRION N.V. (5)	€14m / 4 th round

2022 (Top 10 account for 57% of annual deal volume)

		Exotec 83North, Bpifrance, Breega, Dell Technologies Capital, Goldman Sachs Growth Equity, Iris Capital (6)	€295m / 5 th round
		CloudNC Acequia Capital, Atomico, Autodesk, British Patient Capital, Episode 1 Ventures, Lockheed Martin, QVentures, Wayra, XTX Ventures (9)	€63m / 8 th round
		Wolf3D Acrobator Ventures, Andreesen Horowitz, BaltCap, CNK Capital Management, Collab+Currency, Crystal Bay Capital, D'Amelio family, Group of Angel Investors, Founders, Inc. [...] (18)	€53m / 5 th round
		Blue Ocean Robotics A.P. Moller Holding (1)	€45m / 5 th round
		Automata ABB, ABB Technology Ventures, Aldea Ventures, Blue Wire Capital, Hummingbird Ventures, In-Q-Tel, Isomer Capital, KOI Capital, Latitude, Octopus Ventures (10)	€44m / 3 rd round
		Gravity Sketch Accel, AEI HorizonX, Forward Partners, Future Shape, GV, Kevin Durant, Kindred Capital, Paul Robson, Point Nine Capital, Rich Kleiman, Soleio Cuervo, Will Smith (12)	€39m / 2 nd round
		Katana 42CAP, Alesco Ventures, Atomico, Lightrack, Northzone Ventures (5)	€36m / 3 rd round
		Proemion Battery Ventures (1)	€34m / 1 st round
		fruitcore robotics Capricorn Partners, CNB Capital, Kompas VC, Matterwave Ventures, Quest for Growth, Unternehmertum Venture Capital Partners, XAI technologies (7)	€23m / 2 nd round
		Nomagic Almaz Capital, Capnamic Ventures, DN Capital, European Investment Bank, Evolution VC Partners, Hoxton Ventures, Khosla Ventures, Mana Ventures, Manta Ray Ventures, NetZero Capital (10)	€21m / 3 rd round

2023 (Top 10 account for 76% of annual deal volume)

		1X Alliance Venture, Hydrazine Capital, OpenAI Startup Fund, Sandwater, Skagerak Capital, Tiger Global Management (6)	€22m / 2 nd round
		GreenWaves Technologies Bpifrance, DGA France, Innovacom, Soitec, Thales Group, Zepp Health (6)	€20m / 4 th round
		Caracol CDP Venture Capital, EUREKA! Venture, Intesa Sanpaolo, NEVA SGR, Primo Ventures (5)	€11m / 3 rd round
		ProovStation Credit Agricole Entreprises, Otium Capital, Supernova Invest (3)	€10m / 3 rd round
		LeoTronics Undisclosed	€9m / 1 st round
		KEWAZO Cybernetix Ventures, Fifth Wall, MIG AG, Nemetschek Group, True Ventures, Unorthodox Ventures (6)	€9m / 4 th round
		Tau Finindus, Solvay Ventures (2)	€9m / 2 nd round
		Geomiq AXA Venture Partners, Fuel Ventures, Samaipata, Seneca Partners, TechNexus Venture Collaborative (5)	€9m / 4 th round
		Xolo DeepTech & Climate Fonds, HZG Group, Onsite Ventures, SquareOne (4)	€8m / 2 nd round
		Reshape Biotech ACME Capital, FundersClub, Nicholas Francis, Per Falholt, R7, Y Combinator (6)	€7m / 2 nd round

Top 10 German Advanced Manufacturing Deals ('18 – '23*)

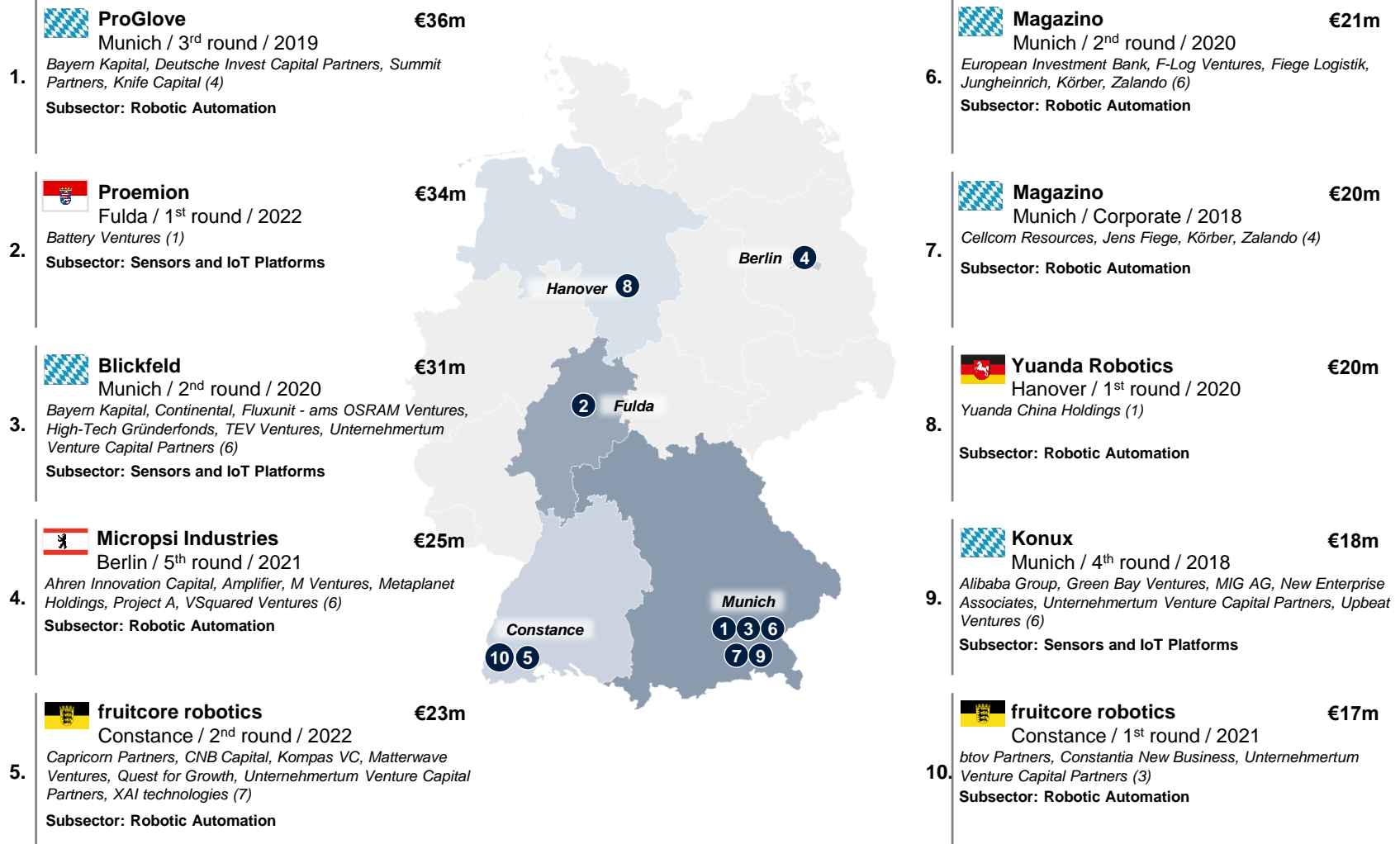
by Deal Volume

ProGlove's 3rd financing round (€36m) in 2019 leads the Top 10 ranking of German Advanced Manufacturing deals since 2018

Both, fruitcore robotics and Magazino have successfully closed two funding rounds in the Top 10 league table

The Robotic Automation sector represents 70% of the largest deals in the Top 10, underlining the investor interest in this segment

The majority of the companies in the Top 10 is located in Munich, Bavaria. The other companies are spread across Germany

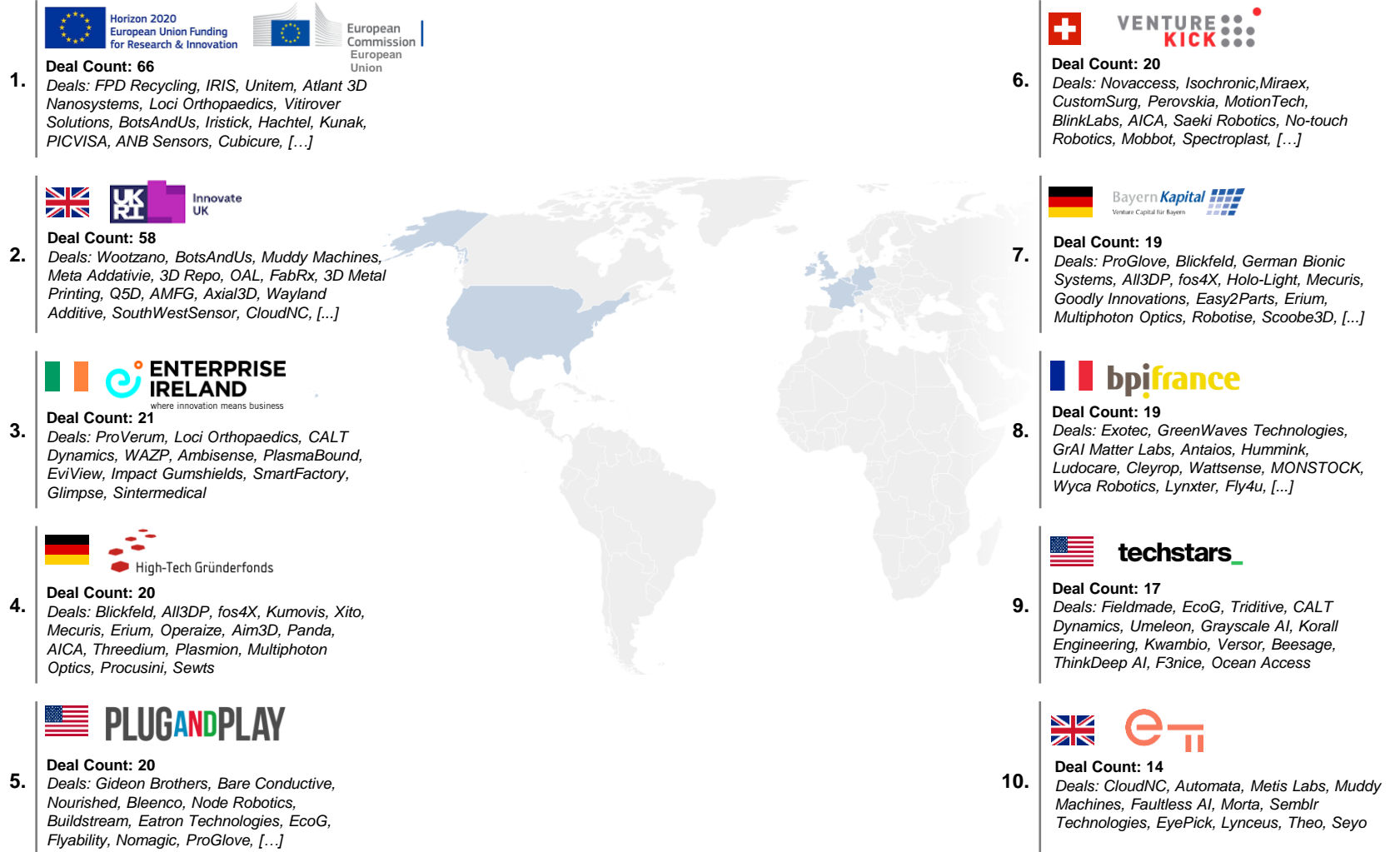


Most Active Investors in European Adv. Manu. Companies ('18 – '23*) by Deal Count

The EU leads the ranking by participating in 66 VC financing rounds since 2018 via its vehicles (i) Horizon 2020 (41 deals) and (ii) European Commission / Union (25 deals), followed by Innovate UK (58 deals)

The European Advanced Manufacturing Venture Capital market is dominated by European investors, with only two out of the Top 10 investors having their headquarters in US

The deal count is dominated by Early Stage, Accelerator-like investors



A grayscale photograph of a 3D printer in operation. The printer's nozzle is positioned above a spherical object with a ribbed, textured surface. The printer's frame and various mechanical components are visible in the background, which is slightly out of focus. The overall scene is brightly lit, creating a clean and industrial atmosphere.

EXECUTIVE SUMMARY

FCF OVERVIEW

ADVANCED MANUFACTURING VENTURE
CAPITAL MARKET

ADVANCED MANUFACTURING IPO EXITS

ADVANCED MANUFACTURING M&A EXITS

European Adv. Manufacturing IPO Market Overview ('18 – '23*)

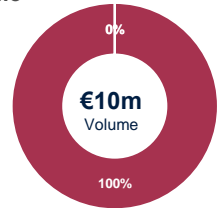
IPOs by Subsector

Number of IPOs



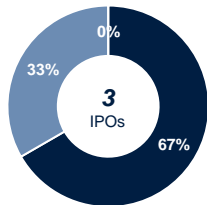
- Additive Manufacturing
- Robotic Automation

Issuing Volume



- Sensors and IoT Platforms
- Industrial Process Software

Price Range

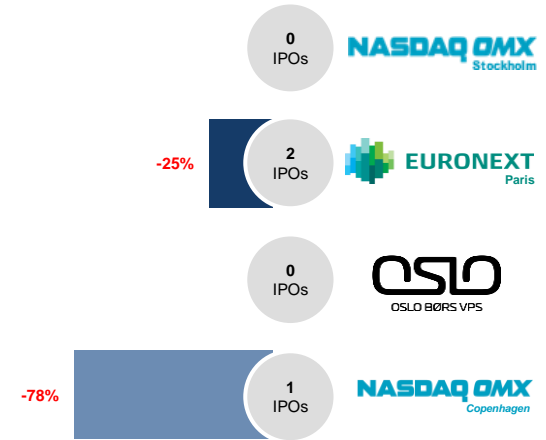


- Within Range
- Above Range
- Below Range

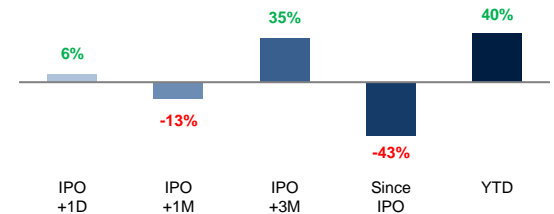
Advanced Manufacturing IPOs (by Volume)

IPO Date	Company	Exchange	HQ	Volume (€m)	IPO MCap (€m)	Since IPO %
24/06/2021	BOA Concept SAS	EURONEXT Paris	FR	4.9	14.6	47.9%
21/11/2018	Scape Technologies A/S	NASDAQ OMX Copenhagen	DK	4.7	19.8	-78.0%
14/03/2018	Octopus Biosafety SA	EURONEXT Paris	FR	0.2	26.6	-97.6%

Performance** and Issuance by Exchange



Mean IPO Performance

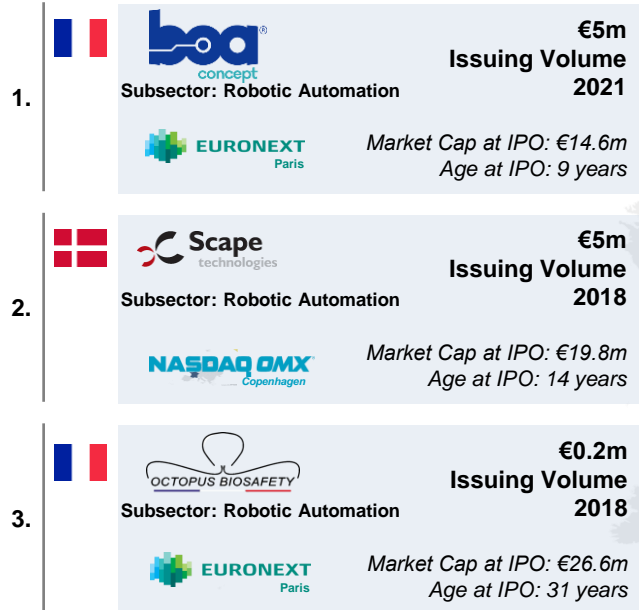


Top 3 Venture-Backed Adv. Manufacturing IPO Exits ('18 – '23*) by Issuing Volume

Over the last 5 years, only 3 European Advanced Manufacturing IPOs appeared – all of them in the Robotic Automation subsector and two involving French companies

Further, all 3 IPOs took place on stock exchanges in the companies' respective home country, suggesting a strong home bias

The low number of IPOs in the Advanced Manufacturing space is an indicator for the overall weakened IPO market for venture and established companies



A grayscale photograph of a 3D printer in operation. The printer's nozzle is positioned above a spherical object with vertical ridges, which is being printed on a white surface. The background is blurred, showing the industrial setting of the printer.

EXECUTIVE SUMMARY

FCF OVERVIEW

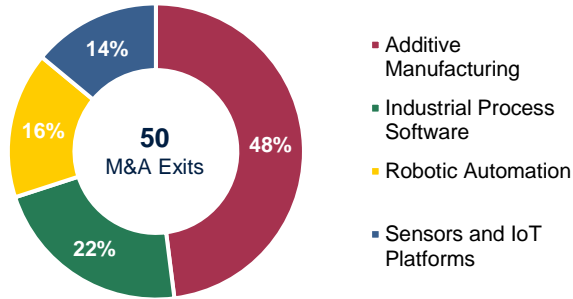
ADVANCED MANUFACTURING VENTURE
CAPITAL MARKET

ADVANCED MANUFACTURING IPO EXITS

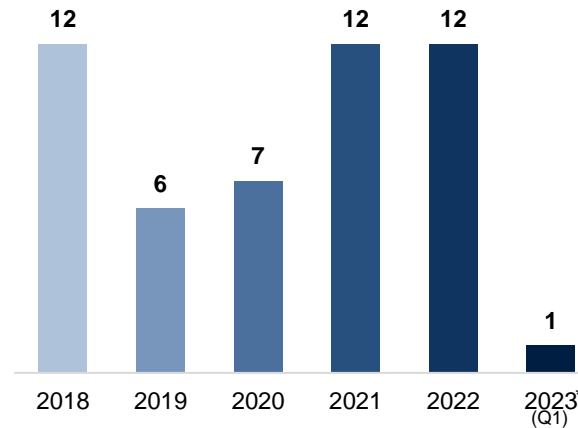
ADVANCED MANUFACTURING M&A EXITS

Overview of Adv. Manufacturing Venture-Backed M&A Exits ('18 – '23*)

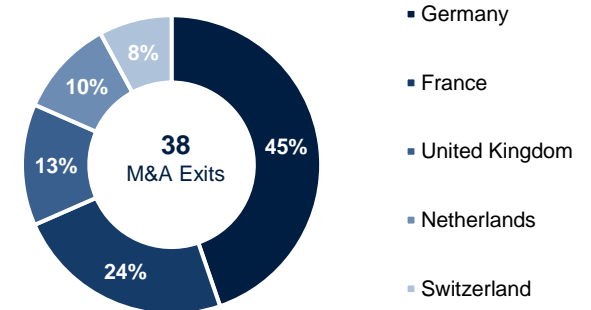
Number of M&A Exits by Subsector



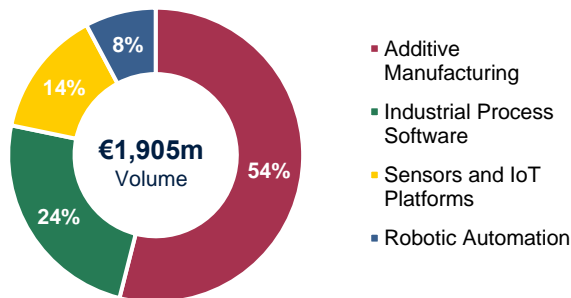
Number of M&A Exits over Time



Top 5 Target Countries (# of M&A Exits)



Disclosed Volume of M&A Exits by Subsector

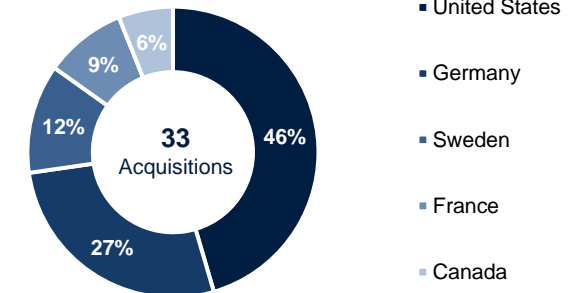


Top 3 Acquirers by Volume (€m)

#	Investor	HQ	Volume (€m)	# Deals	Target
1	Nikon		622	1	SLM SOLUTIONS
2	PROTOLABS Manufacturing Accelerated.		285	1	HUBS
3	HSB A Munich RE company		260	1	relayr.

Total Top 3 Acquirers **1,167** **3**

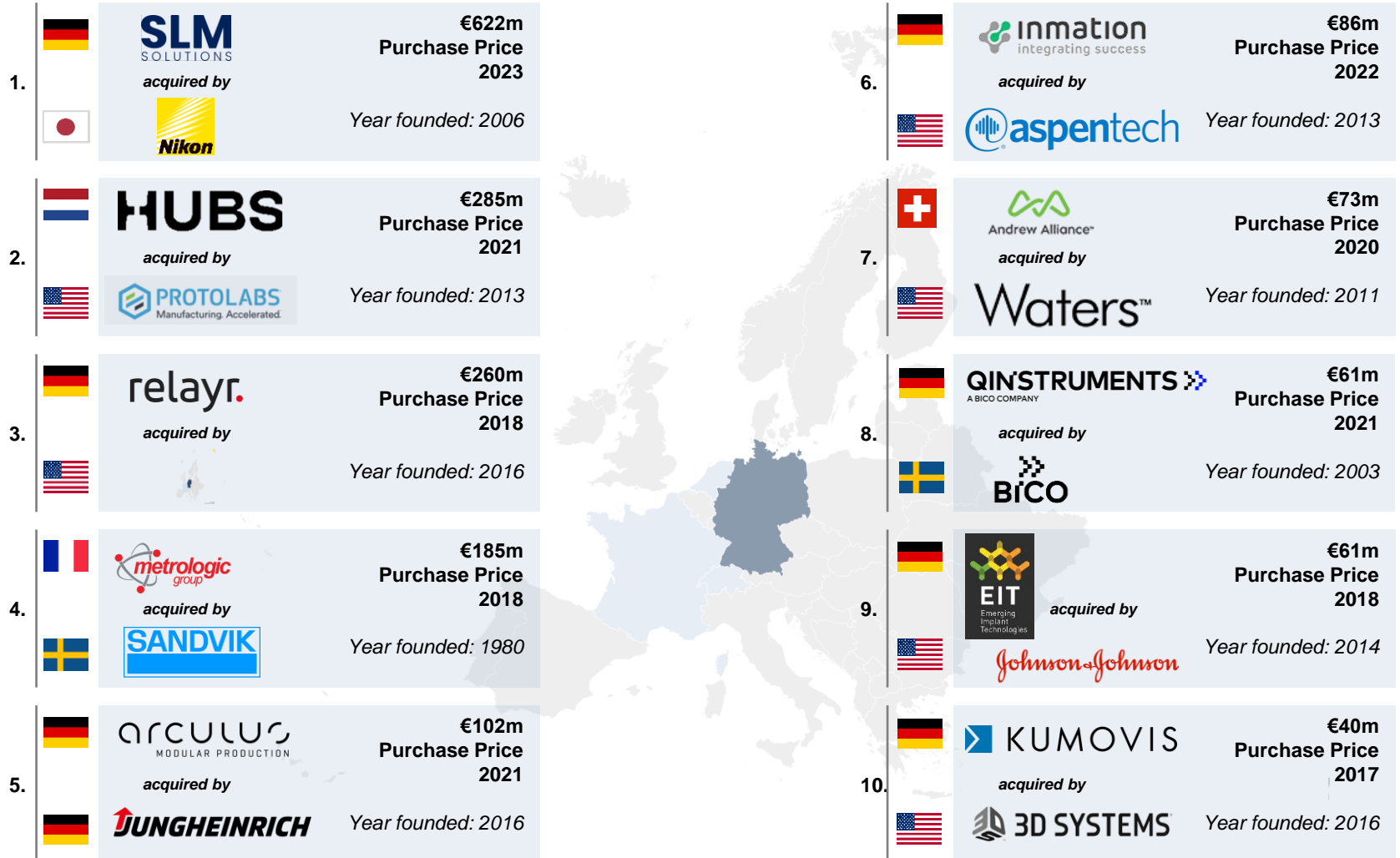
Top 5 Acquirer Countries (# of M&A Exits)



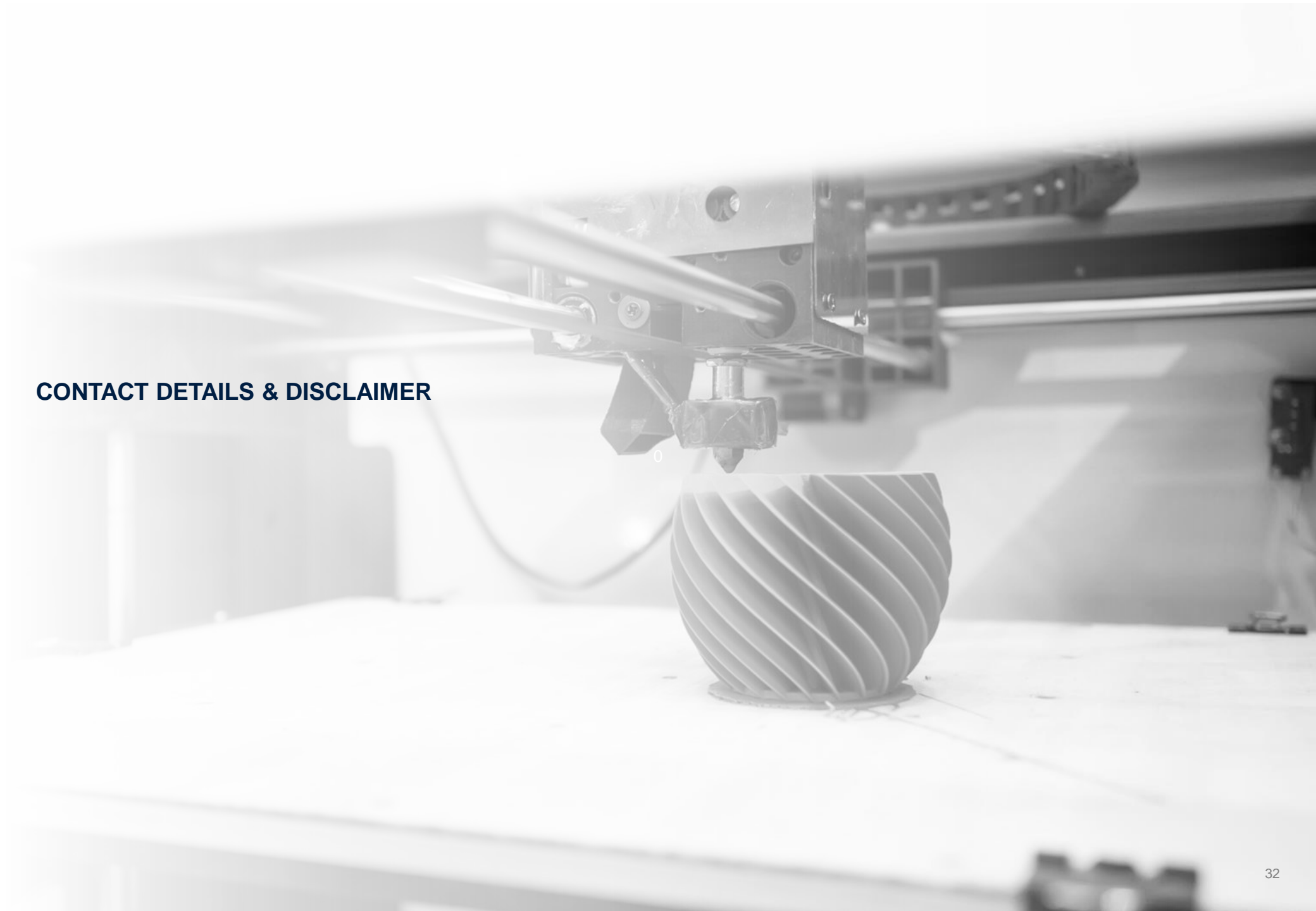
Top 10 Venture-Backed Adv. Manufacturing M&A Exits ('18 – '23*) by Purchase Price

Nikon's acquisition of SLM Solutions leads the league table of Top 10 Advanced Manufacturing M&A Exits over the last five years with a transaction volume of €622m, followed by the acquisition of HUBS by Protolabs and of relayr by HSB

The Top 10 is heavily dominated by non-EU acquirers, led by the US (6 deals) and Japan (1 deal), with the remaining transactions involving German (1) and Swedish (2) buyers



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