

FULL YEAR RESULTS PRESENTATION
28 February 2020
John Hoffman- Chairman & CEO
Tim Welch - CFO

(ASX: PVS)

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PIVOTAL SYSTEMS OVERVIEW



- Leading provider of innovative gas flow control solutions which are integral in the production of semiconductor devices (semiconductors)
- Pivotal's portfolio of gas flow controllers (GFCs) and Flow Ratio Controllers (FRCs) assist semiconductor manufacturers to stabilise and control the delivery of gases used to deposit or remove materials during the semiconductor manufacturing process



FINANCIAL POSITION

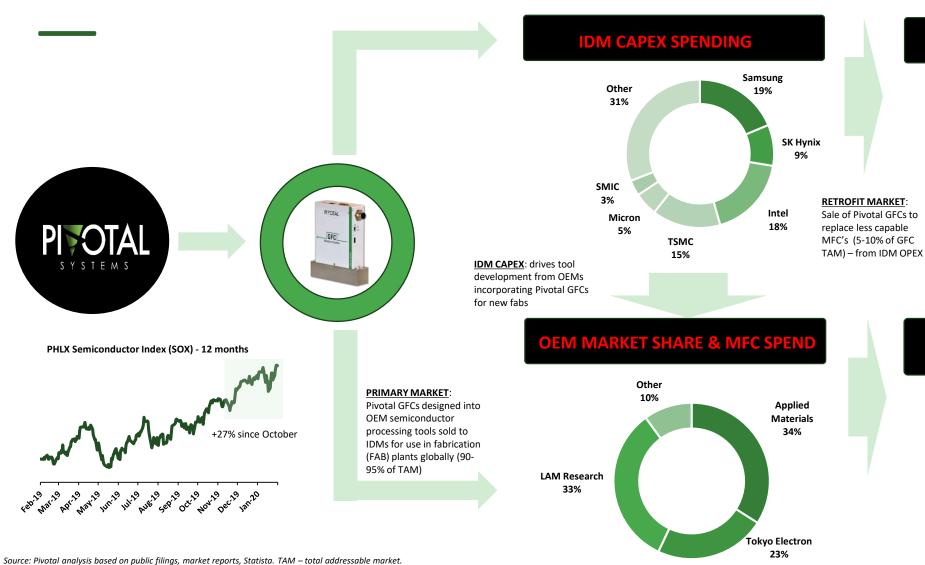
- Pivotal recorded FY2019 revenues of \$15.3M, a decrease of 24.6% (FY2018: \$20.3M)
- Operating Loss increased 145% to \$9.9M
- Cash balance of \$5.4M at 31 December 2019
- Secured new \$10.0M debt facility (comprising US\$7M working capital facility, US\$3M line of credit) in August 2019



- The broader mass flow controller (MFC) market is forecast to grow to well above \$1 billion by 2022
- Pivotal's customer base includes some of the largest integrated device manufacturers (IDMs) and original equipment manufacturers (OEMs)
- Opportunity for significant increase in customer penetration and expansion of overall market share



2019 MARKET SNAPSHOT



2019 EST. GFC DEMAND (IDM - RETROFIT)

Retrofits are approximately 5% of TAM and Driven by OPEX Spending at FAB Level

ESTIMATED MARKET BY Volume

18,750

ESTIMATED MARKET BY VALUE*

\$22.5M

EST. IMPACT VERSUS 2018

-25%

2019 EST. GFC DEMAND (OEM NEW TOOL)

ESTIMATED MARKET BY VOLUME

356,000 units (ASP est. at \$1200*)

ESTIMATED MARKET BY VALUE

\$450M - \$22.5M = \$427M

EST. IMPACT VERSUS 2018

-25% (on est. \$600M TAM from 2018)

* Industry estimate only – not representative of Pivotal pricing structures

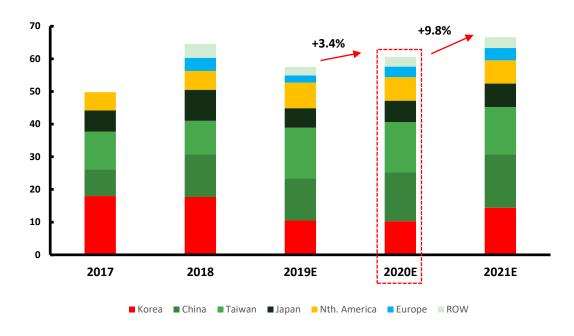


INDUSTRY DYNAMICS

SEMICONDUCTOR
CAPITAL EQUIPMENT
MARKET FORECAST TO
DECLINE 11% DURING
2019, REBOUND IN
2020 LED BY CHINA

- Most recent SEMI¹ data highlights turnaround in Q42019 (previous 2019 forecast down 18%)
- Forecast 2020 global semiconductor equipment sales of US\$60.8Bn showing the beginning of a recovery.
- Forecast 2021 global semiconductor equipment sales reaching over \$68Bn (All time record spend)
- Late 2019 and 2020 recovery driven by advanced logic and foundry and the recovery of the Memory Market
- South Korean Equipment CAPEX market most recently forecasted to contract 45% in 2019, up in 2020 and 2021
- China Fab Growth continues into 2020. Headwinds of US-China Trade War and Coronavirus concerns potentially affecting China CAPEX Plans. Forecast growth of 16% in 2020.
- Japan Fab Spending forecast to be up 10% in 2020
- Despite these early 2019 headwinds, Pivotal saw significant customer qualification during the year and is positioned to benefit from any industry upturn

TOTAL SEMICONDUCTOR EQUIPMENT MARKET (US\$Bn)1



REVIEW OF 2019

Despite difficult trading conditions experienced during 2019, Pivotal proactively engaged with customers, accelerated product innovation pathways and delivered a number of high-quality projects in a timely and cost-effective manner for the Company

BUILT ON ESTABLISHED RELATIONSHIPS AND PENETRATED NEW CUSTOMERS

- Achieved Preferred Supplier Status for both the Standard GFC and High Flow GFC at a leading US based Original Equipment Manufacturer (OEM)
- Pivotal now qualified at all three of the major OEMs for either etch or deposition
- Purchase orders received from Integrated Device Manufacturers (IDMs) from Japan, Europe,
 Taiwan, China, North America and Korea, significantly diversifying customer base

EXPANDED
GEOGRAPHIC
FOOTPRINT DURING
INDUSTRY DOWNTURN

- Achieved record bookings (new orders) from China for both the Standard GFC and the High Flow GFC at a leading Chinese Integrated Device Manufacturer (IDM)
- Expanded presence in Japan, Europe, Taiwan, China, North America and Korea
- Backlog (confirmed orders not yet shipped) at 31 December 2019 was \$3.1M

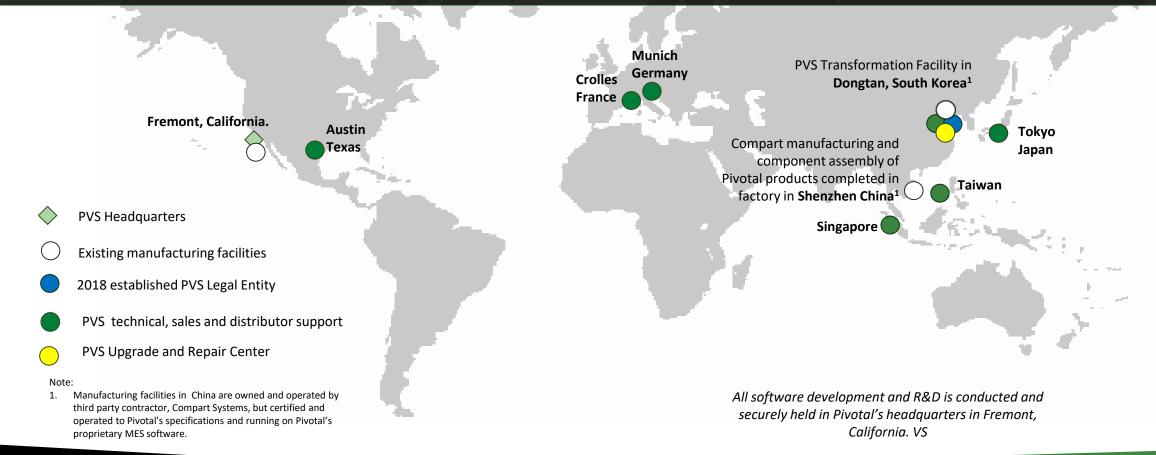
CONTINUED NEW PRODUCT DEVELOPMENT & COMMERCIALISATION

- Using Smartstik architecture, Pivotal was able to penetrate, qualify and receive multiple repeat orders from a Korean Etch OEM for the standard GFC
- Strong customer interest in SmartStik architecture for reducing costs of the existing standard etch gas stick commonly used by the OEMs as demonstrated at SEMICON West
- Named one of the 12 Most Disruptive Innovation Companies in USA



GLOBAL FOOTPRINT

PIVOTAL HAS A MANUFACTURING AND SALES AND TECHNICAL SUPPORT PRESENCE ACROSS THE US, EUROPE AND ASIA

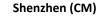




2019 GLOBAL MANUFACTURING TRANSITION

1H 2019

Fremont (PVS)



Korea (CM Operated)







- R&D
- Pilot Manufacturing
- Phase I / Phase II / Phase III Back Up
- Phase I Assembly
- Phase II Calibration

• Phase III Transformation

• End OEM/IDM Customer

2H 2019

Fremont (PVS)



- R&D
- **Pilot Manufacturing**
- Phase I / Phase II Back Up
- Phase III Activated

Shenzhen (CM)



- Phase I Assembly
- Phase II Calibration

Korea (PVS Operated)



- Phase III Being Brought On Line
- End OEM/IDM Customer

In Q4 2019 PVS ended Compart Manufacturing (CM) in Korea with Phase III manufacturing moved to Fremont

1H 2020

Fremont (PVS)







Shenzhen (CM)



Korea (PVS Operated)





- R&D
- **Pilot Manufacturing**
- Phase I / Phase II / Phase III Back Up

- Phase I Assembly
- Phase II Calibration

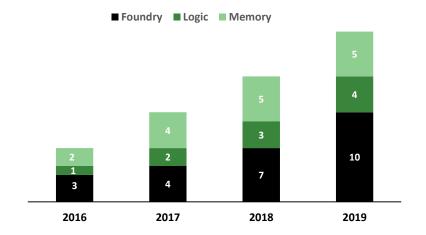
- Q-1 2020 On Line
- · Phase III Transformation
- · End OEM/IDM Customer



CUSTOMER BY END SEMICONDUCTOR DEVICE

DURING 2019, PIVOTAL PLACED A STRONG EMPHASIS ON CUSTOMER DIVERSIFICATION

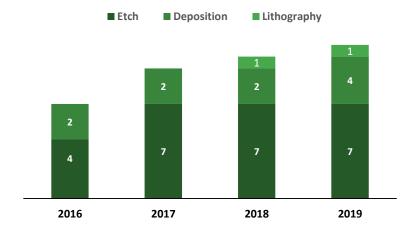
- Foundry customer growth of 43% in FY2019 reflected initiatives in China
- Memory customers remained flat versus pcp
- 33% increase in the number of logic customers
- Purchase orders received from IDMs in all of Pivotal's markets in 2019
- Diversification over time expected to reduce reliance on Korean Memory market for Pivotal revenues



CUSTOMER BY PROCESS TECHNOLOGY

PIVOTAL CONTINUED
TO WORK WITH OEM
PARTNERS DURING
SECTOR DOWNTURN
TO MAINTAIN OR
IMPROVE MARKET
SHARE

- Pivotal is now qualified at all three of the major OEMs for either etch or deposition
- Multiple, Repeat Purchase orders received from all three major OEMs in 2019
- Current Next Generation Process Tool Flow Control Solutions being developed with two of the three leading OEMs



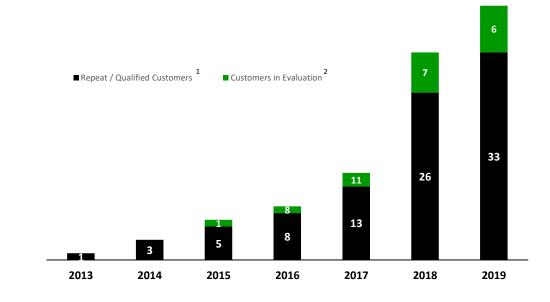
CUSTOMER SEGMENTATION

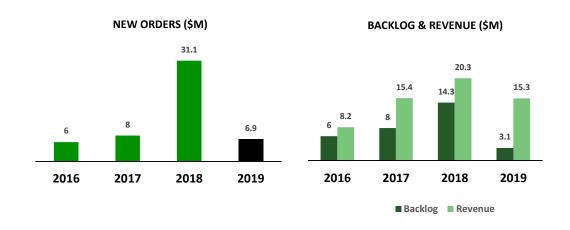
BREADTH OF CUSTOMER VALIDATIONS DRIVES REPEAT ORDERING BEHAVIOUR

- 7 additional customers who qualified Pivotal's technology during FY2019
- 6 customers currently under evaluation
- Qualifications include a Purchase order(s) with Pivotal working hard to diversify customers during the 2019 industry downturn

SEMICONDUCTOR
INDUSTRY
DOWNTURN
IMPACTED CUSTOMER
ORDERING &
SHIPMENTS

- All Backlog from 2018 was shipped via new purchase orders in 2019.
- New orders were down 78% versus the prior corresponding period (pcp) due to the semiconductor industry downturn
- Backlog declined 78%, reflecting a reduction in new orders and roll-off of existing orders received
- Decline in shipments to leading OEM's and IDMs in 1H2019 and early in 2H2019 due to industry slowdown
- As reported in January, revenue of \$6.4M in 4Q2019 indicated industry momentum had improved significantly





^{1.} Repeat / Qualified customers defined as a customer who has qualified Pivotal GFCs on production tools & ordered a Pivotal product on more than one occasion.



^{2.} Customers who are currently evaluating the Pivotal GFC Technology.

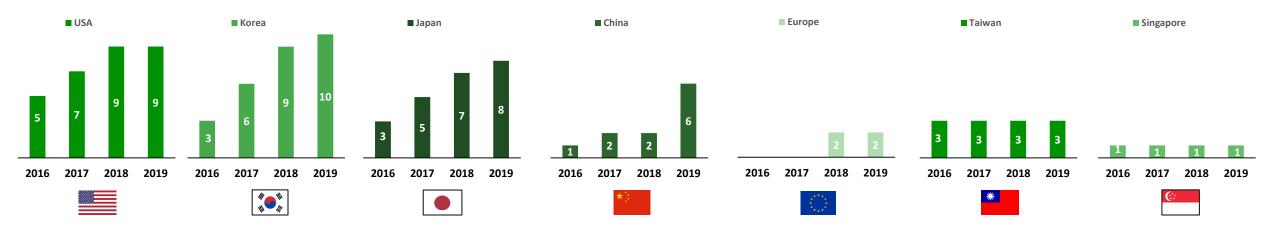
CUSTOMER TRENDS

CONTINUED
GROWTH IN PIVOTAL
CUSTOMERS AND
GEOGRAPHIC
DIVERSIFICATION

- Growth in global customers of 18% in FY2019 from 33 to 39
- China customers tripled, from 2 to 6, as Pivotal focuses on growth opportunities within that region
- Strategic growth in Japan resulting from additional IDM customers and a large OEM customer qualification
- Pivotal's most recent "preferred supplier" status at a leading USA Based OEM and Qualification by the leading Japan based OEM offer strong revenue growth opportunities in 2020

■ Global Customer Base





Note: Customers included in the global customer base include large multi-national semiconductor companies with regional operations who independently purchase GFCs from Pivotal



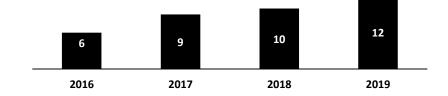
OEM & IDM CUSTOMER GROWTH CONTINUES

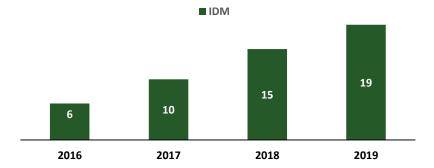
■ OEM

CONTINUED
GROWTH IN PIVOTAL
CUSTOMERS AND
GEOGRAPHIC
DIVERSIFICATION

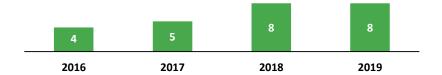
- OEM customer growth of 20% was recorded in FY2019, semiconductor OEMs who purchase GFCs are highly concentrated to two USA Based OEMs and one Japan based OEM who control the vast majority of the market
- 27% growth in IDM customers in 2019, driven by large expansion of customer base in Regions outside of Korea (memory and foundry)
- Sales of Pivotal GFCs to Hard Disk Drive, Flat Panel and Solar Customers are a potential ~\$500M of TAM beyond Semiconductor







■ Other (Inc. Research Universities, HDD, Flat Panel & Solar)



PRODUCT MIX METRICS

REVENUE CONTRIBUTION BY PRODUCT (%)

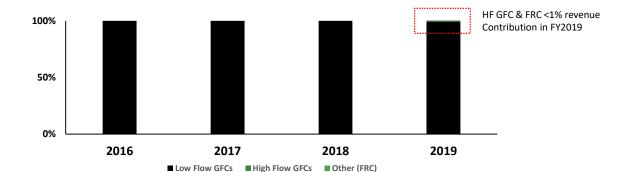
- Low flow (etch) GFC generated close to 100% of Pivotal sales mix from FY2016-FY2019
- New High flow (deposition) GFC sales contributed 0.3% of FY2019 revenues; significant opportunity for growth
- Other new products to contribute to revenues in a more material manner in future periods

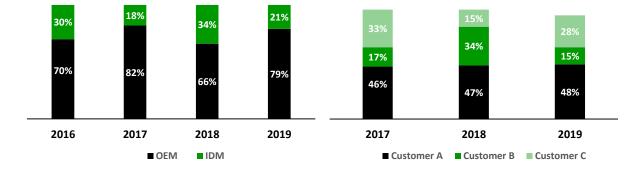
REVENUE CONTRIBUTION BY CUSTOMER (%)

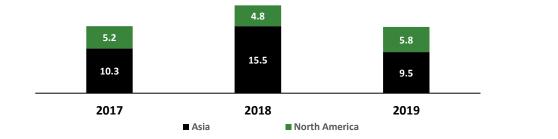
- OEM / IDM split of 79% / 21%
- Industry downturn reduced IDM Capex, thereby reducing new tool development by OEMs & demand for Pivotal's GFCs
- Top 3 Pivotal customers accounted for 91% of revenues (FY18: 96%)

REVENUE BY MARKET (\$M)

- Korea memory market remains a key customer market for Pivotal, momentum building in Japan and China
- Taiwan Market is strategic as it tends to drive China investment
- North American business expected to pickup in 2020 as strategic IDM's plan FAB investments.









PRODUCT INNOVATION

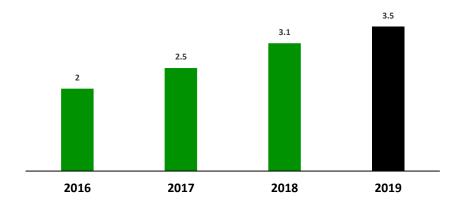
PIVOTAL TOTAL R&D
INVESTMENT REMAINS
STABLE, WITH
EXCEPTIONALLY
INNOVATIVE PRODUCT
CONCEPTS AND
DEVELOPMENT

- R&D expenditure was \$3.5M in FY2019 (FY2018: \$3.1M)
- FY2019 saw increased R&D activity
- New Projects included the High Temperature GFC, the 2 Channel Flow Ratio Controller (FRC) and New Valve & Control Volume Technology for Next Generation ALD

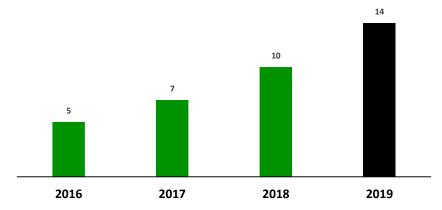
ALL NEW PRODUCT DEVELOPMENT IS DRIVEN BY STRATEGIC CUSTOMERS

- Pivotal is currently viewed as the Flow Control Innovation Leader in the Semiconductor Industry
- Innovation is essential when working with Industry Leaders (OEM & IDM) to gain efficiency in an increasingly competitive global market
- Pivotal aims to release at least two new products each financial year to meet the requirements of our customers and remain at the forefront of GFC innovation and drive a sustainable competitive advantage

RESEARCH AND DEVELOPMENT EXPENDITURE (\$M)



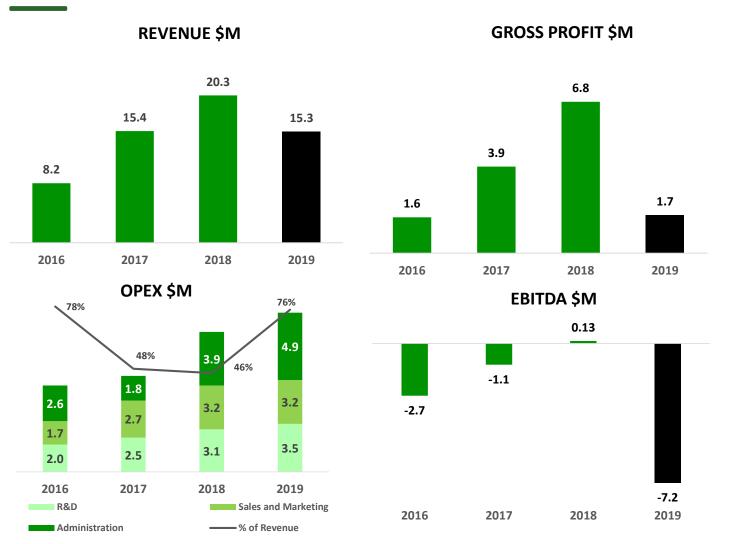
CUMULATIVE PRODUCTS LAUNCHED

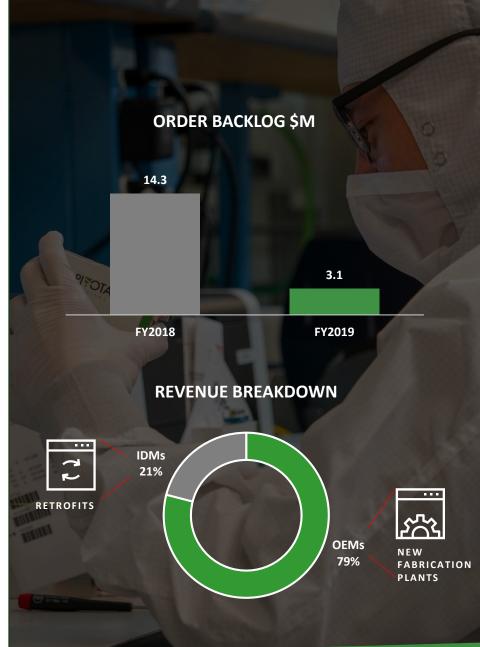






KEY FINANCIAL METRICS



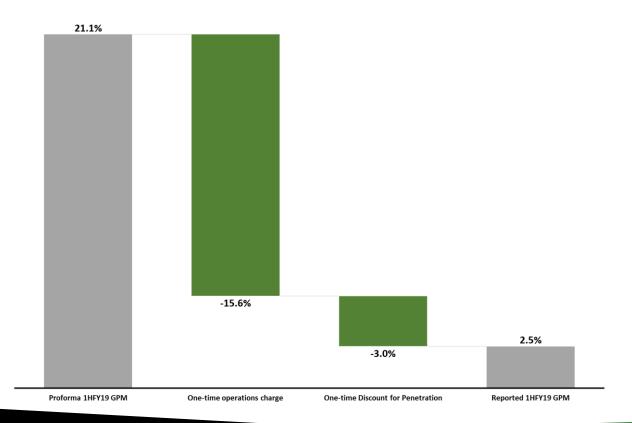


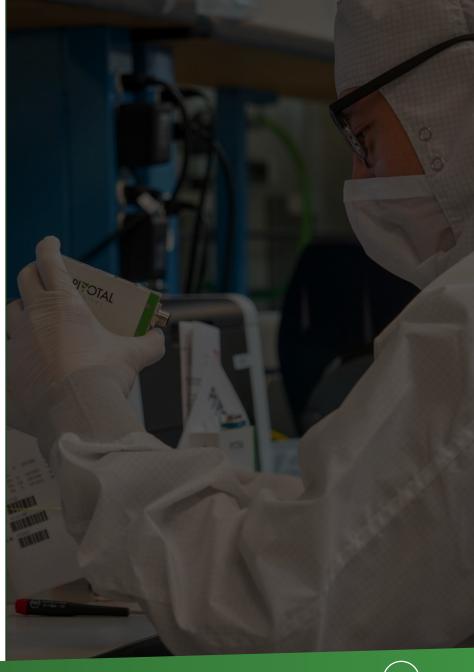


1H19 GROSS PROFIT MARGIN RECONCILIATION

A NUMBER OF ONE TIME GROSS PROFIT MARGIN (GPM) IMPACTS IN 1HFY19

- Proforma GPM of 21.1%
- Reported GPM of 2.5% impacted by a number of non-recurring (one-time) charges:
 - 15.6% operations charge
 - 3% penetration discount charge



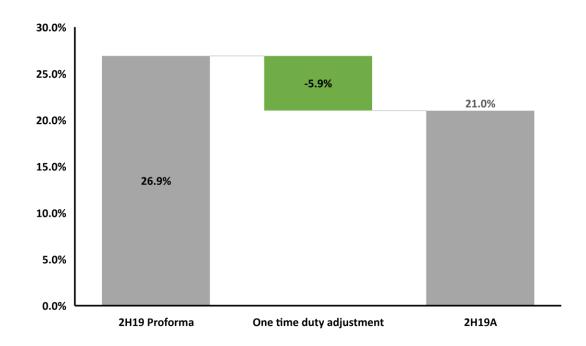


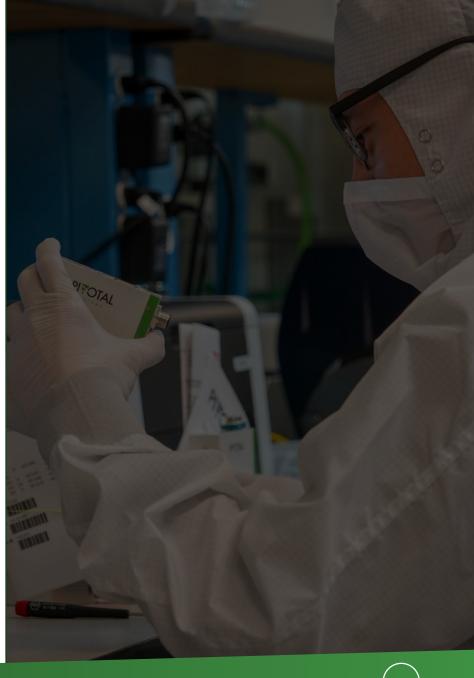


2H19 GROSS PROFIT MARGIN RECONCILIATION

REPORTED 2H GPM SHOWED A SIGNIFICANT IMPROVEMENT ON 1H

- Proforma GPM of 26.9%
- Reported GPM of 21%, up significantly on the 1H
- 2H gross profit margin impacted by a one time duty charge of \$0.43M during the Phase III manufacturing transition back to Fremont







STATUTORY PROFIT AND LOSS

FINANCIAL INFORMATION	2018 (\$M)	2019 (\$M)	% change
Revenue	20.3	15.3	(24.6%)
Cost of goods sold	14.2	13.6	(4.2%)
Gross profit	6.1	1.7	(72.1%)
Gross margin	30.2%	11.3%	
Research and Development	3.1	3.5	13.0%
Sales and Marketing	3.2	3.2	0.0%
General and Administration	3.9	4.9	25.6%
EBIT	(4.1)	(9.9)	
EBITDA	(1.2)	(7.2)	
		-	

- Revenue decreased 24.6% versus the pcp as a result of industry downturn
- FY19 Gross Margins declined to 11.3% reflecting lower IDM mix, lower volumes and higher supply chain costs
- Total Operating expenses increased 14% which reflected:
 - R&D costs grew 13% due to increased development costs
 - Sales and marketing expenses were flat
 - General and admin expenses increased by \$1.0M, of which \$600K was to increase the Bad Debt reserve
 - Full-time headcount remained relatively flat at 45 people at end of December

SUMMARY BALANCE SHEET

FINANCIAL INFORMATION	2018 (US\$M)	2019 (US\$M)	
CURRENT ASSETS			
Cash and cash equivalents	17.5	5.4	
Trade and other receivables	3.9	5.8	
Inventory	6.3	8.7	
Other current assets	0.3	.3	
Total current assets	28.0	20.3	
NON-CURRENT ASSETS			
Intangible assets	9.1	10.3	
Other non-current assets	0.3	1.5	
Total non-current assets	9.4	11.8	
TOTAL ASSETS	37.4	32.2	
CURRENT LIABILITIES			
Trade and other payables	5.3	5.0	
Financial liabilities	0.0	2.8	
Other current liabilities	0.5	.8	
Total current liabilities	5.9	8.6	
TOTAL LIABILITIES	5.9	9.6	
NET ASSETS /(LIABILITIES)	31.6	22.5	
EQUITY			
Contributed equity - Common	170.8	171.3	
Share based payments reserve	1.3	1.7	
Accumulated losses	-140.5	-150.5	
TOTAL EQUITY	31.6	22.5	

- At the end of 2019, the company had \$5.4M in cash and \$2.8M in Bank Debt
- Secured US\$10M in debt financing from Bridge Bank in 2019
 - \$7M working capital revolving credit line (0% drawn as of December 31)
 - \$3M term loan line of credit (\$2.8M balance as of December 31)
- Inventories increased 38% as PCB's are now purchased and consigned, and product offerings have expanded
- Receivables grew \$1.9M due the shipment skew at the end of 2019
- Intangible assets increased during the period as a result of ongoing product development efforts
- After the reported period, the Company closed on \$10M of additional financing, with an option for another \$3M



CASH FLOW

FINANCIAL INFORMATION	2018 (\$M)	2019 (\$M)
CASH FLOWS USED IN OPERATING ACTIVITIES		
Receipts from customers	19.3	13.1
Payments to suppliers and employees	-22.6	-24.6
Other cash flows from operating activities	-0.5	0
Net cash flows used in operating activities	-3.7	-11.5
CASH FLOWS USED IN INVESTING ACTIVITIES		
Payments for property, plant and equipment	-0.3	-0.1
Payments for capitalised research and development	-3.5	-3.5
Net cash flows (used in)/from investing activities	-3.8	-3.6
CASH FLOWS FROM FINANCING ACTIVITIES		
Receipts from the issue of shares	39.5	.5
Payment to selling shareholders (via SaleCo)	-13.0	
Payment of share issue costs	-1.8	
Receipts from the conversion of Preference Shares, Warrants and Options	2.1	
Borrowings from bank loans	1.9	3.0
Repayment of loans to third parties	-4.9	-0.3
Net cash flows from financing activities	23.8	3.0
Net increase / decrease in cash and cash equivalents	16.3	-12.1
Cash at the beginning of the financial period	1.2	17.5
Cash and cash equivalents at the end of the period	17.5	5.4

- Cash outflow from operations was \$11.5M for the year, which was significantly higher than the pcp, due to lower customer collections based on lower revenue.
- Cash outflow from investing activities was \$3.6M due to payments for product development. The Company continues to invest in new product innovation as 2019 saw a number of new product introductions by Pivotal
- Cash flow from financing activities of US\$3.0M reflects the drawing down of the \$3.0M term loan and \$0.5M in proceeds from the exercise of share options (staff).

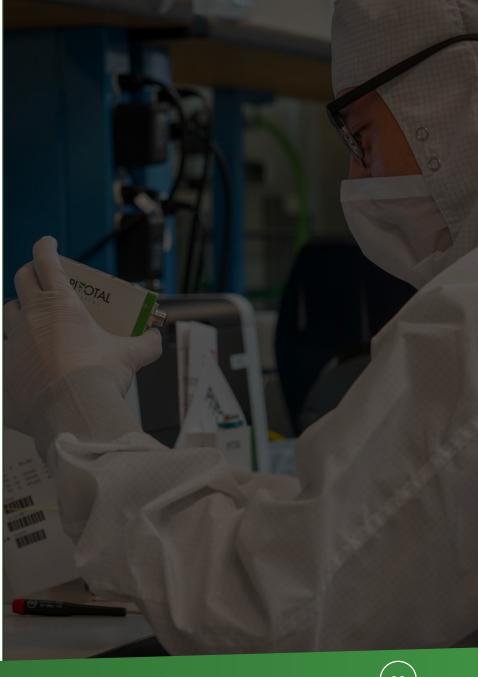


POST FULL YEAR EVENTS

ANZU \$13M REVENUE BASED PREFERRED STOCK FINANCING

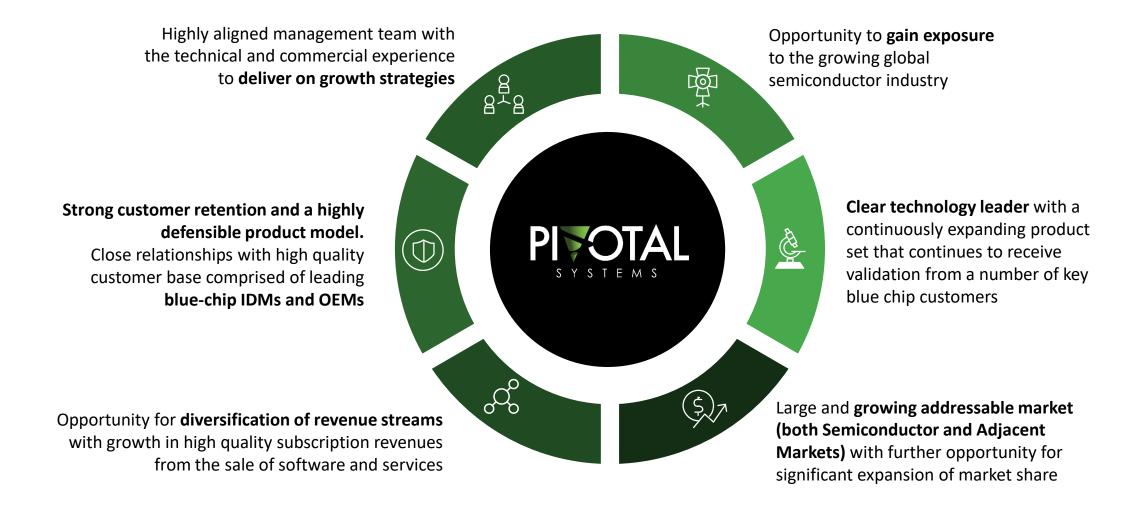


- On 30 January, Pivotal announced \$13M financing from Anzu Industrial RBI USA LLC, a fund organized by Anzu Partners LLC (Anzu)
- Anzu is Pivotal's second largest shareholder with 12.1%
- Revenue Based Redeemable Preferred Stock (RBI Preferred Stock):
 - \$10M within 10 days of closing
 - \$3M optional tranche
 - \$1,000 face value, non-dilutive to Pivotal shareholders
 - No financial covenants (beyond liquidation preference)
 - No warrants/options
- Approved by Pivotal shareholders on 13 February
- \$10M tranche 1 received on 24 February
- Pivotal aims to redeem RBI Preferred Stock commencing March 2021, equal to 4% of net revenues based upon 10 calendar months in 2020 and Quarterly thereafter





PIVOTAL SUMMARY



2020 OUTLOOK

SIGNIFICANTLY IMPROVED SEMICONDUCTOR MARKET OUTLOOK IN 2020

- The improving market dynamics which prevailed in the fourth quarter of 2019 have continued into the first half of 2020
- Forecast 2020 global semiconductor equipment sales of US\$60.8Bn (up 3.4% on 2019), expected to surge in 2021 by another 9.8% according to SEMI
- NAND and DRAM pricing continues to improve with spot pricing up 11% and 23%, respectively since December¹

PIVOTAL EXPECTS SIGNIFICANTLY IMPROVED FINANCIAL PERFORMANCE IN 2020

- IDM: successfully leveraging established customers' acceptance of Pivotal GFC technology into new semiconductor processes
- **OEM:** increased acceptance by the Top 3 OEMs into new applications or tool sets
- **NEW PRODUCT DRIVERS:** rapid acceptance of the High Flow GFC, the High Temperature GFC and the Flow Ratio Controller (FRC)
- BUSINESS RISK: No current impact in China from the coronavirus epidemic and Pivotal continues to monitor the situation
- **FINANCIAL:** Pivotal expects a significantly improved financial performance in FY2020









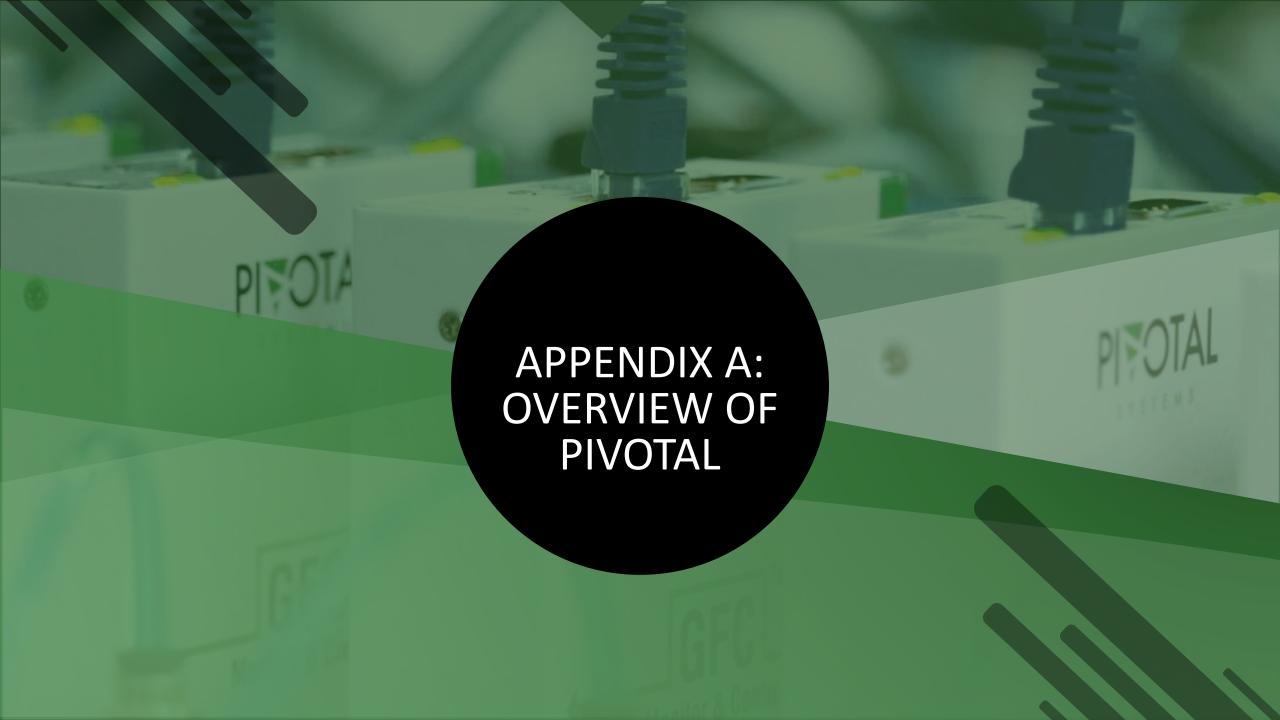
CONTACT US

Pivotal Systems48389 Fremont Blvd. #100
Fremont, CA 94538, USA
+1 (510) 770-9125

www.pivotalsys.com/

INVESTORS

Dr Tom Duthy Nemean Grouptduthy@pivotalsys.com
+61 (0) 402 493 727



COMPANY TIMELINE

Management identifies a decade-long lack of innovation in gas flow control technology and begins research into GFCs, incorporating the gas flow monitoring technology developed to date 2011



2014

Inc.

<u>=</u>



Herring Award

2016

100 WINNER Pivotal awarded its second Global Red



Leading Japanese University Validates GFC

100

WINNER =

Leading US OEM qualifies High Flow GFC





2020

\$10M

financing

2003

Pivotal Systems Corporation founded to commercialise IP development around gas flow analysis and monitoring and process tool communication

2012

The leading Korean IDM purchases first units to begin validation of the Pivotal technology in a production environment



Leading Asia-based OEM commences validation of Pivotal's technology. Shipments of units to the leading US OEMs commence. **Pivotal awarded Red Herring** 100 Award for North **American and Global** Companies categories and ranks 1st in Inc.500 for fastest growing U.S. Engineering companies.

2015



Continued validation of Pivotal's products by leading IDMs and OEMs.

2017



Contracted integration facility in Korea

Capacity expanded to 5,000 units per month

Pivotal Awarded 3rd Red Herring Award for the **High Flow GFC**



2019

Most Disruptive Innovation Company

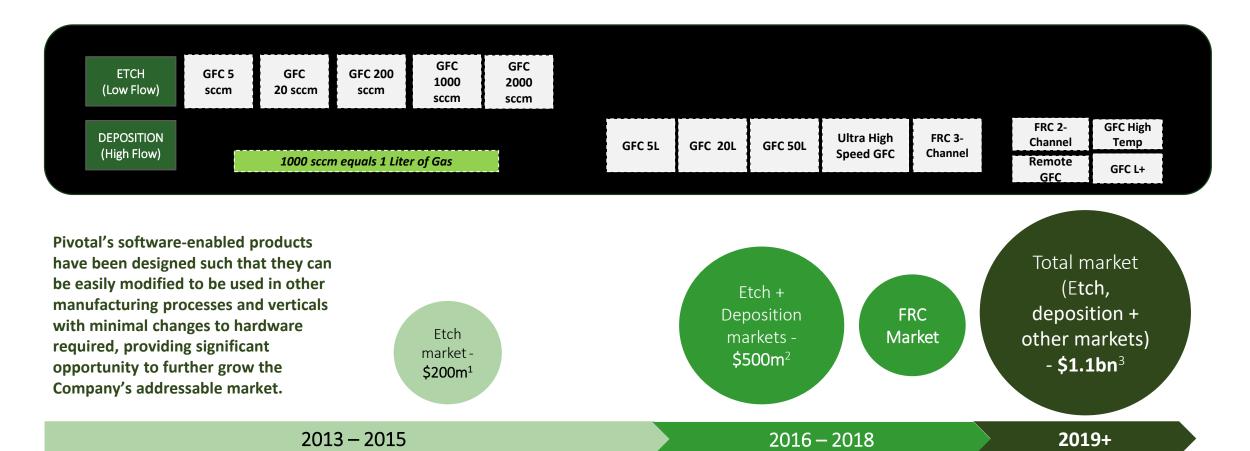


Top 10 Best Workplaces 2019

Launch of innovative SmartStik, remote GFC, FRC



HISTORY OF CONTINUOUS INNOVATION



Notes:

- 1. Market and Markets Nov-17 report estimates the market size for low flow controllers to be over \$200 million in 2017. Low flow controllers are primarily used in the Etching (Etch) application.
- 2. Market and Markets Nov-17 report estimates the market size for low and high flow controllers to be over \$500 million in 2017. High flow controllers are primarily used in the Deposition applications.
- 3. Market and Markets Nov-17 report estimates the total market size for flow controllers to be over \$1 billion in 2017. This includes the Etch, Deposition and flat panel LED applications.



MANAGEMENT TEAM



John Hoffman Executive Chairman and Chief Executive Officer

- John has over 30 years of global technology management experience in both the semiconductor and information technology markets
- Senior Vice President with Spencer Trask Ventures, a New York based venture capital firm where he was primarily involved in the solar and integrated circuit efforts of the firm
- Previously CEO of RagingWire Enterprise Solutions
- Worked in various general manager roles at Applied Materials for 18 years, including President of the Etch Group, VP and General Manager of Process Control and Diagnostic Business Group and General Manager of the Customer Service Division
- B.S. from the United States Military Academy at West Point and an Executive MBA from Stanford University



Joseph Monkowski
Chief Technology Officer
and Executive Director

- Joseph has extensive experience in the semiconductor industry focused on providing process equipment and metrology solutions for next generation device manufacturing
- Previously Senior Vice President of Business
 Development for Advanced Energy Industries, and held senior executive positions at Pacific Scientific, Photon Dynamics and leading OEM Lam Research
- Joseph has authored numerous patents and publications in the semiconductor and flow controller space
- B.S., M.S. and Ph.D. in Electrical Engineering and an M.S. in Materials Science, all from Penn State University
- He also served as a Professor of Electrical Engineering for six years at Penn State University



Tim Welch
Chief Financial
Officer

- Mr. Welch is a highly experienced CFO for hightechnology companies with operations experience and a proven track record of building infrastructures, scaling revenues, and executing successful mergers & acquisitions.
- Mr. Welch was the former CFO and VP, Operations of ReVera, Inc. a semiconductor capital equipment company located in Santa Clara, CA. ReVera was acquired by Nova Measuring Instruments (NASDAQ:NVMI) in April, 2015.
- CFO of Boxer Cross which was acquired by Applied Materials (NASDAQ:AMAT) and CFO of Asyst Technology which went public on the NASDAQ
- MBA from the University of California, Berkeley and a B.A. in Chemistry from California State University, Chico.

BOARD OF DIRECTORS

John Hoffman

Executive Chairman and Chief Executive Officer

See previous page

Joseph Monkowski

Chief Technology Officer & Executive Director
See previous page

Kevin Landis

Non-Executive Director

Kevin is the CIO of Firsthand Capital Management, an investment management firm he founded in 1994. Kevin has over two decades of experience in engineering, market research, product management, and investing in the technology sector. Kevin holds a bachelor's degree in electrical engineering and computer science from the University of California at Berkeley and an MBA from Santa Clara University.

Ryan Benton

Independent Non-Executive Director

Ryan joined the Board in 2018 bringing over 25 years of finance, operations, and transaction experience. Ryan previously served as CFO of BrainChip Holdings Ltd (ASX: BRN) and CEO and Board Member at Exar Corporation (NYSE: EXAR), which was acquired by MaxLinear Corporation (NASDAQ: MXL) in May 2017. Previous roles included senior and consulting positions at ASM International NV (NASDAQ: ASMI), and eFunds Corporation (NASDAQ: EFDS).

David Michael

Non-Executive Director

David is Managing Director at Anzu Partners, which invests in innovative industrial technology companies. He is also a Board member of Nuburu, OTI Lumionics, Niron Magnetics, and Terapore. David was formerly Senior Partner and Managing Director of The Boston Consulting Group (BCG). He led BCG's Greater China business and their Asia Technology Practice. He served a range of clients in semiconductors, components, hardware, software,

and services. He remains a Senior Advisor to the firm. David holds a B.A. in Economics from Harvard University and an M.B.A. from Stanford.

Peter McGregor

Independent Non-Executive Director

Peter has over 30 years' experience in senior finance and management roles, including having been CEO of tech company, Think Holdings, CFO of the ASX50 transport company, Asciano, and a partner in the Investment Banking firm of Goldman Sachs JBWere. He also spent time as a Managing Director within the Institutional Banking & Market division of CBA and was COO of Australian Infrastructure Fund (ASX:AIX). He holds a Commerce Degree from the University of Melbourne, is a Fellow of FINSIA and a Member of the AICD.

SmartStik Concept

SmartStik leverages the inherent technical advantages (accuracy, speed, repeatability, continuous flow monitoring and control, and positive shut off) that only Pivotal's GFC offers.



Pivotal introduced SmartStik at Semicon Korea in January 2019



SmartStik enables OEMs to reduce costs by eliminating components that have been made redundant by the GFC's inherent capabilities.



A typical tool requires 84 sticks, which is material given Pivotal's SmartStik is up to 30% lower cost (per gas stick) and does not require a RoR measuring device.



Value add and cost reductions will allow Pivotal to maintain or improve its ASPs

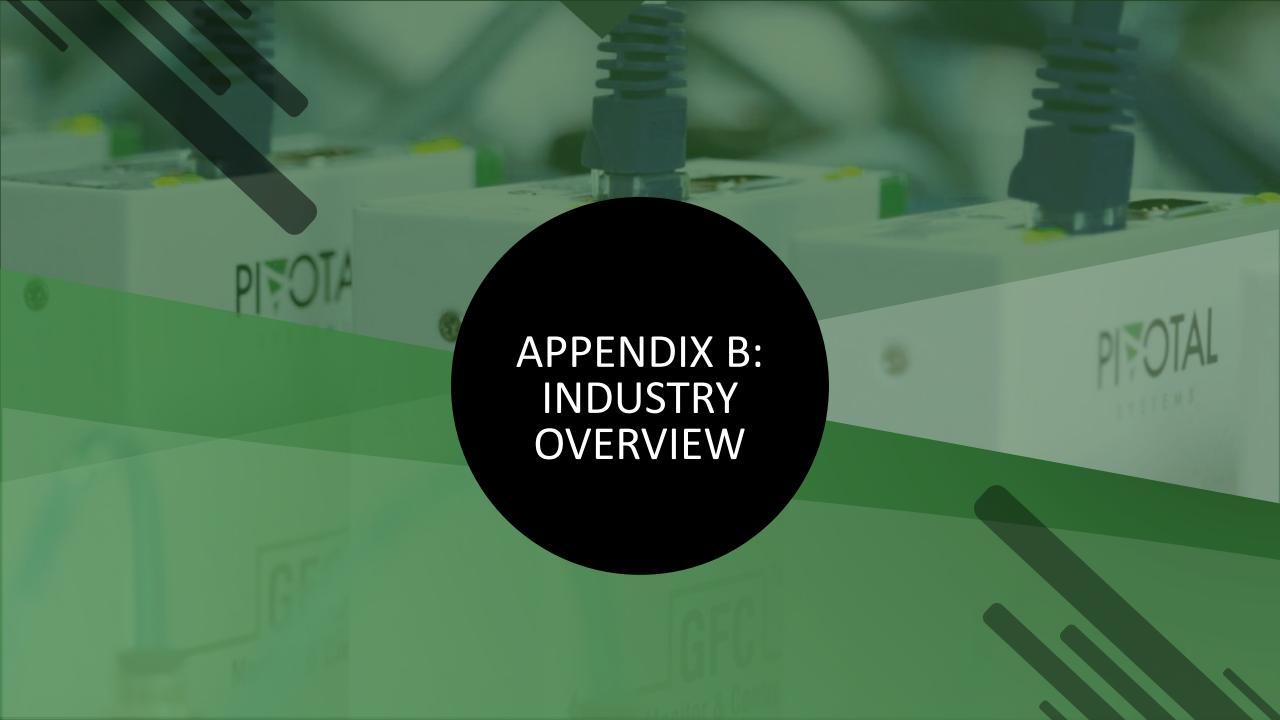


Introduction of SmartStik to the product portfolio is highly strategic as it balances the more expensive GFC relative to peers, allowing Pivotal to take \$600m addressable market more aggressively.

	Description	PI TAL	Competitor 1
Accuracy at 10% of Full Scale	Degree to which you can accurately control desired gas flow when flowing 10% of Full Scale	0.5%/reading	1.0%/reading
Accuracy at 2% of Full Scale	Degree to which you can accurately control desired gas flow when flowing 2% of Full Scale	0.5%/reading	5.0%/reading
Positive shutoff	Leak By Rate of 1e-9 standard cm ³ /second or 0.00000006 sccm	Yes	No
Turn on speed	The time required to switch on gas flow	100 msec	>500 msec

Notes

l. Includes core competitor models addressing both deposition and etch processes. All competitor data has been sourced directly from customer specification sheets, websites and presentations.



WHAT IS THE INDUSTRY PROBLEM?

THE PRODUCTION OF SEMICONDUCTORS IS EXPENSIVE, COMPLEX, AND HIGHLY COMPETITIVE, WITH A SMALL NUMBER OF BLUE CHIP MANUFACTURERS COMPETING LARGELY ON COST AND YIELD















Wide range of production yields due to difficulty in producing repeatable gas flows. Yields may vary in a wide range between 85-99% of total factory output.

The various gases that are used in the manufacturing process can be expensive and toxic. Wasted gas is expensive and not good for the environment.

Gas flow errors in the production process lead to expensive wafer materials being scrapped and potentially lower yields on "good" wafers. Slow machine turnon and turn-off times (settling times) contribute to lower productivity and output. Maintenance costs involved with the manual recalibration of competitors' flow controllers are a double hit, labor and lost production time.

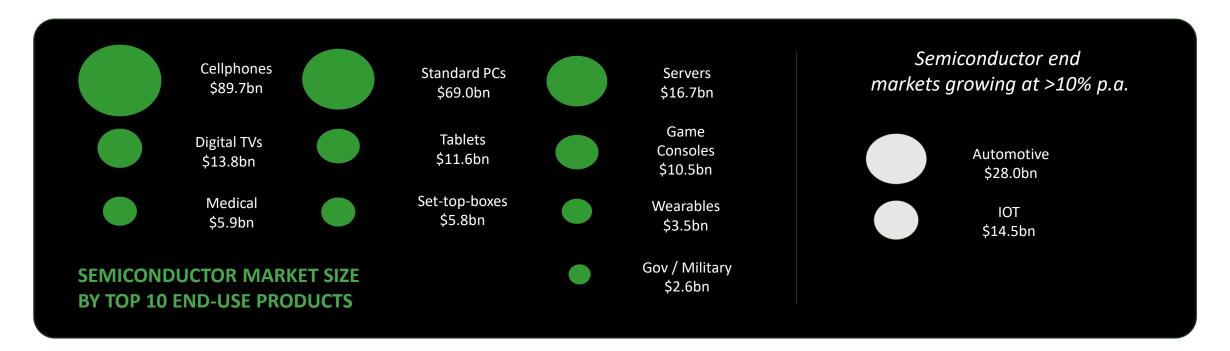
Limited gas flow intelligence and diagnostic capabilities.

Expensive upstream and downstream equipment (valves, regulators etc.) required to help stabilize gas flows.

One important issue for semiconductor manufacturers is variability in gas flows.

An inability to accurately measure and control gas flows creates a range of issues for semiconductor manufacturers.

SEMICONDUCTOR END MARKETS



GLOBAL SEMICONDUCTOR MARKET AND CAPITAL EXPENDITURE

- · Global growth in the Semiconductor market is driven by growth in end-use products including communication devices, personal computers, artificial intelligence, self driving vehicles and Internet of Things.
- · Technology trends require increasing number of semiconductors to be used per connected

device, underpinning this consistent market growth.

• The core growth catalyst of the semiconductor capital equipment market is the pipeline of new fabrication plants being constructed by IDMs as they keep pace with Moore's Law which requires the number of transistor per sq. mm of silicon to double every 1-2 years.

Source: IC Markets – 2018 McClean Report

