



Advanced Wet-Cleaning Tools for Leading Edge IC Fabs

August 2019



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Market Data. Information presented below under “Who is ACM Research?”, “ACM is Growing at a Rapid Pace” and “Investment Highlights” contains estimates, including forecasts, of Gartner, Inc. concerning ACM Research’s addressable markets, including its total addressable market (“TAM”). The Gartner report in which the information appears represents research opinions or viewpoints that are published, as part of a syndicated subscription service, by Gartner and that are not representations of fact. The Gartner report speaks as of its original publication date (and not as of the date of this presentation), and the opinions expressed in the Gartner report are subject to change without notice. This information involves a number of assumptions and limitations, and you are cautioned not to rely on or give undue weight to this information. ACM Research has not independently verified the accuracy or completeness of this information. The industry in which ACM Research operates is subject to a high degree of uncertainty and risk due to variety of factors, including those described in ACM Research’s public filings with the Securities and Exchange Commission, as described above.

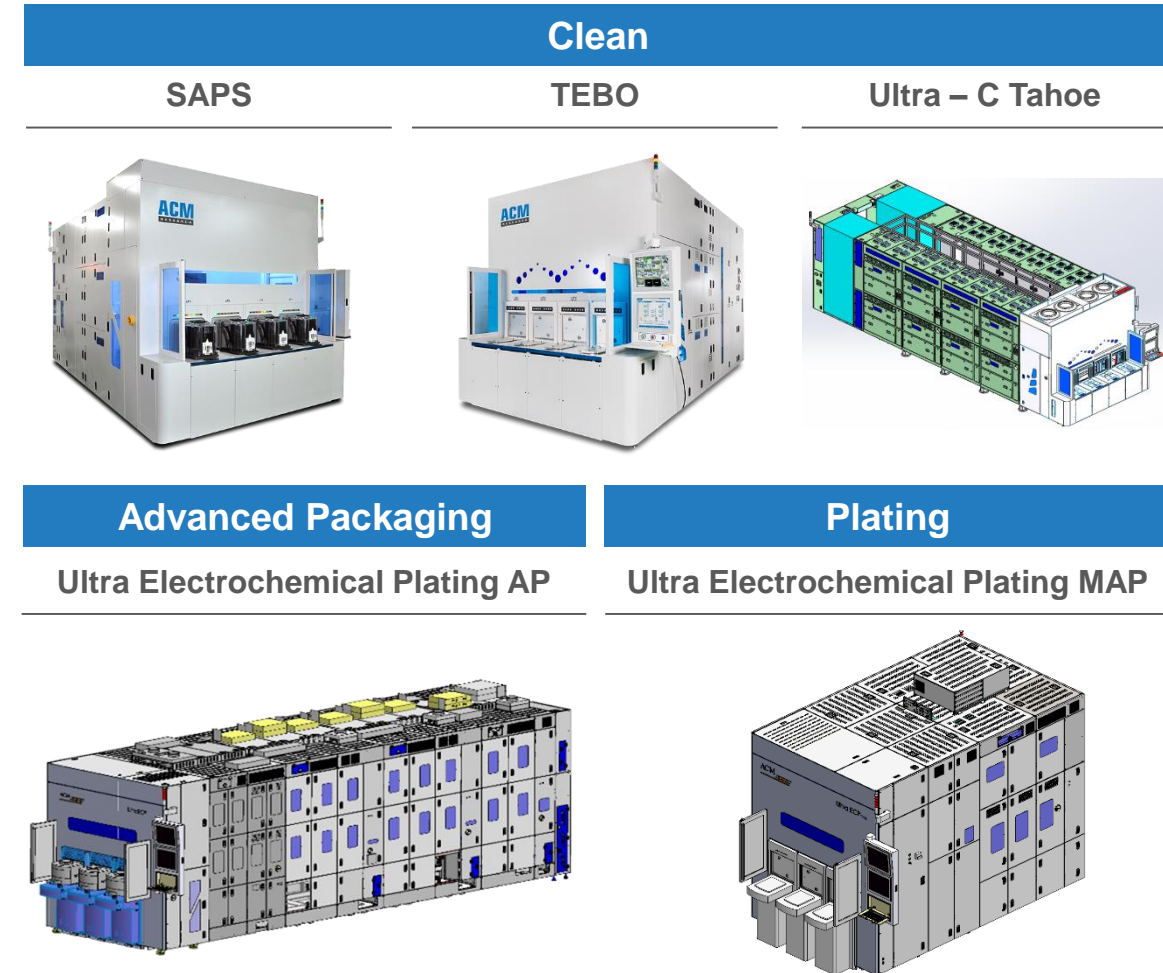
Note Regarding Presentation of Non-GAAP Financial Measures. Information presented below under “ACM is Growing at a Rapid Pace,” “...Resulting in Impressive Financial Results” and “Strong Balance Sheet and Free Cash Flow” includes certain “non-GAAP financial measures” as defined in Regulation G under the Securities Exchange Act of 1934, including Adjusted EBITDA, Adjusted Net Income, Adjusted Operating Income and Free Cash Flow. A reconciliation of each non-GAAP financial measure to the most directly comparable GAAP financial measure is included under “GAAP to Non-GAAP Reconciliation.”

Who is ACM Research?

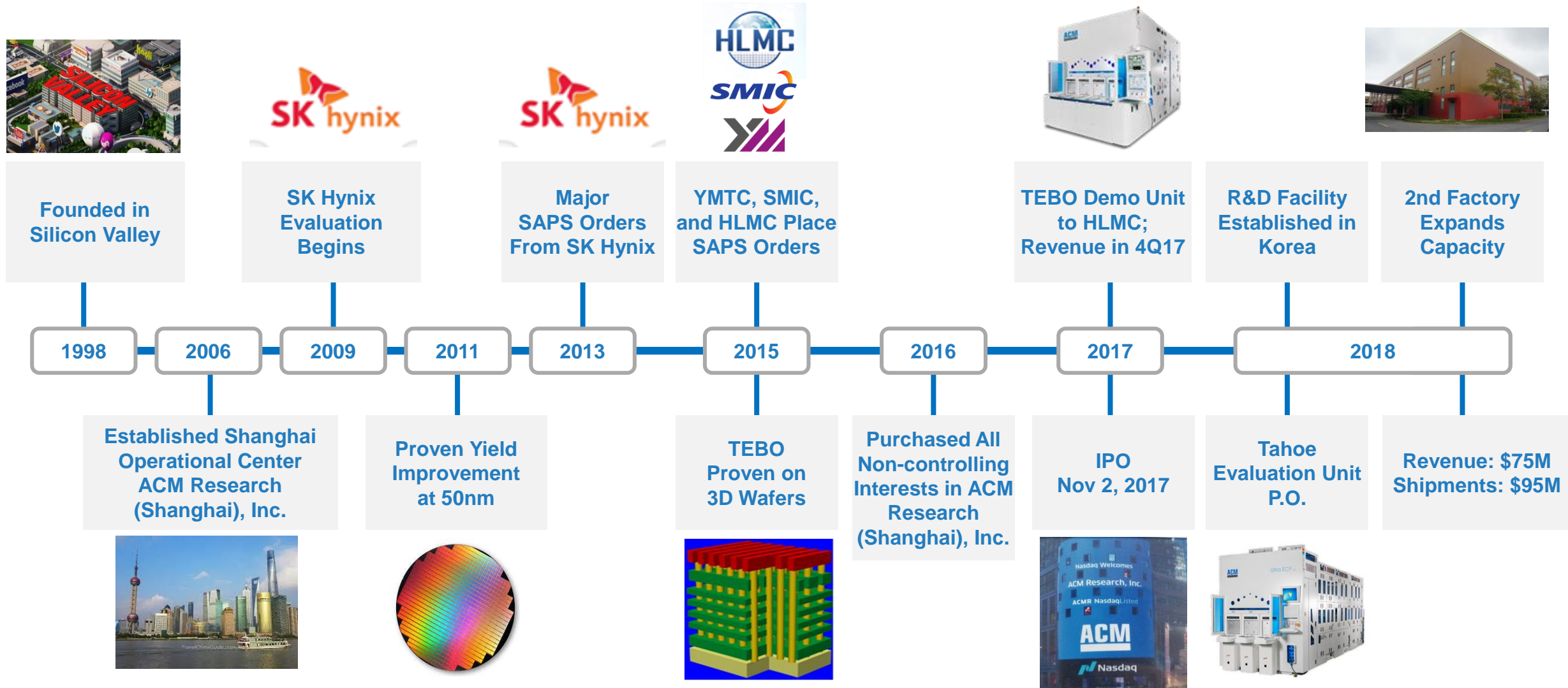
Mission Statement: To Become a Leading Global Provider of Semiconductor Capital Equipment

- **Best-in-class semiconductor wafer cleaning tools** providing higher yields and better efficiency at advanced fabs than conventional wafer cleaning tools
- **Differentiated megasonic technology** delivers highly effective single-wafer wet cleaning for flat and patterned wafer surfaces (SAPS) and damage-free cleaning for 2D and advanced 3D patterned wafers (TEBO)
- **~\$3B single-wafer wet cleaning TAM⁽¹⁾**, an estimated 50% of which is addressed by current products with future expansion from new products
- **More than 220 patents** issued in the U.S., China, Japan, Korea, Singapore and Taiwan as of 6/30/19
- 86,000 sq. ft. across **two production facilities in Shanghai** offers significant capacity for growth
- **Headquartered in Fremont, CA** with more than 270 employees globally

(1) Source: Gartner – 2018 Auto Wet Stations, Single-Wafer Processors and Other Clean Process markets.



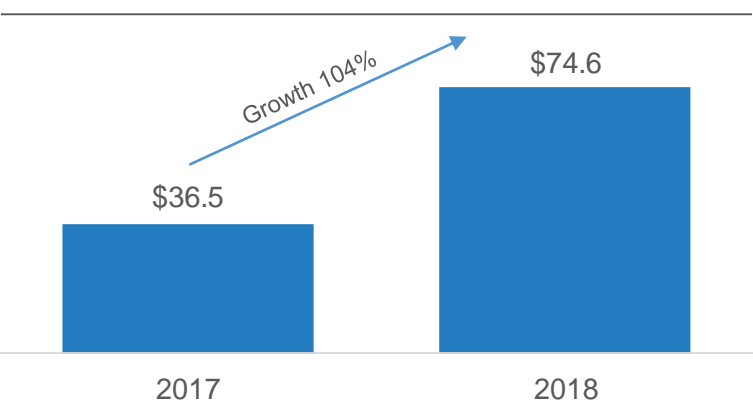
History of Innovation & Customer Adoption



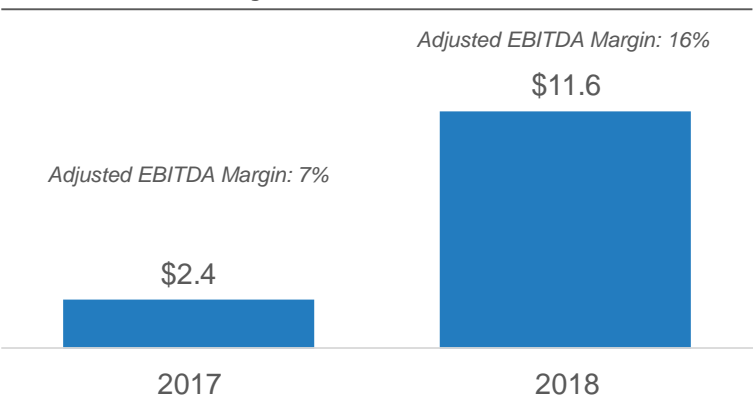
ACM is Growing at a Rapid Pace

(\$ in millions)

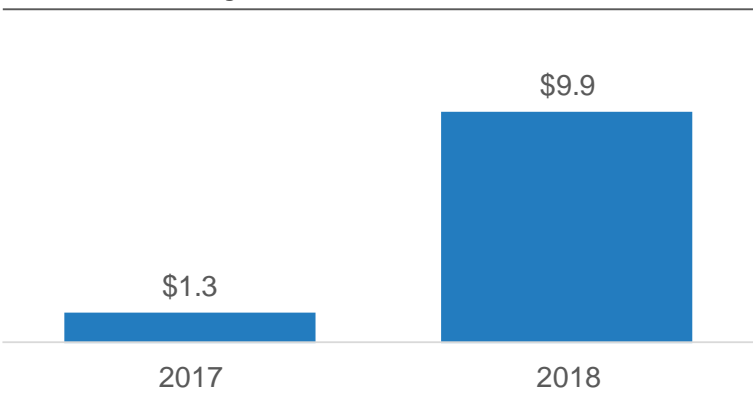
Revenue



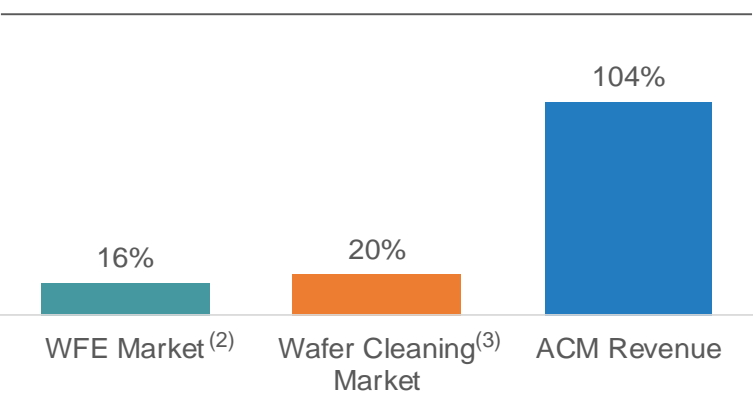
Adjusted EBITDA ⁽¹⁾



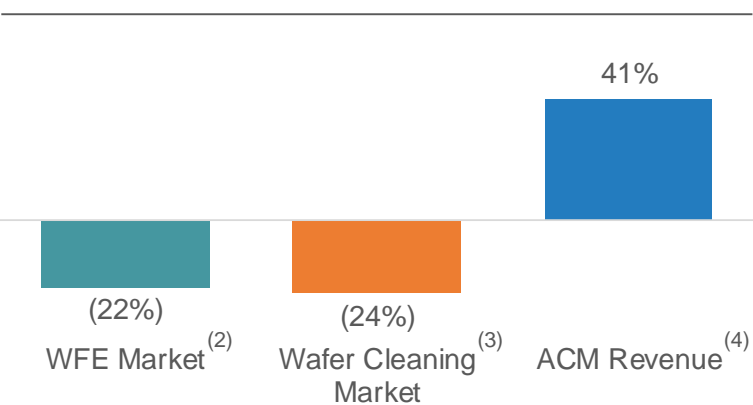
Adjusted Net Income ⁽¹⁾



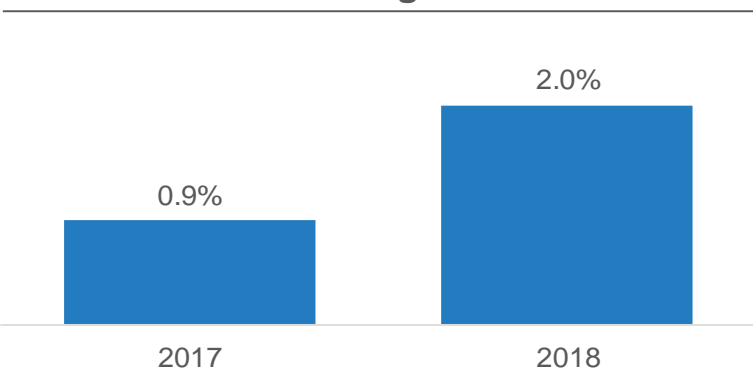
2017 – 2018 Growth



2018 – 2019E Growth



ACM Wafer Cleaning Market Share ⁽⁵⁾



(1) Based on non-GAAP financial statistics. (2) Source: Gartner – Global Wafer Fab Equipment Market (Including Wafer-Level Packaging). (3) Source: Gartner – Auto Wet Stations, Single-Wafer Processors and Other Clean Process markets. (4) As of 8/7/19, ACM Research expected 2019E revenue to be approximately \$105 million. (5) Calculated as ACM Research wafer cleaning revenue / Wafer Cleaning Market size in each respective year.

What is Wafer Wet Cleaning?

Wafer cleaning is a critical process in wafer fabrication that is repeated more than any other process

- Random defects arise during virtually all process steps in the wafer manufacturing process, resulting in yield loss and impaired chip performance
- Cleaning is the process of eliminating random defects on wafers
- There are two basic types of cleaning: wet cleaning and dry cleaning
- Cleaning typically occurs between other process steps (e.g., etch, deposition)

Key Benefits

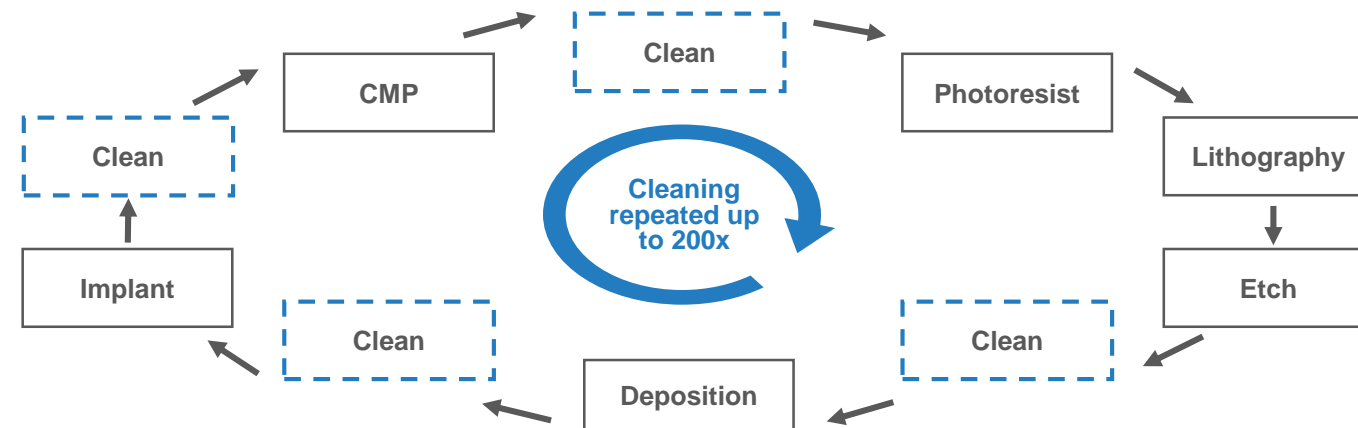
- ✓ Improved Yield
- ✓ Customer Satisfaction
- ✓ Reduces Costs
- ✓ Extends Moore's Law

Wet Cleaning

- Uses liquid chemistry to spray, scrub, etch and dissolve random defects
 - ▶ Liquid chemistries include combinations of solvents, acids and water
- More effective than dry cleaning in achieving surface cleanliness and smoothness

~90% of cleaning steps in wafer fabrication

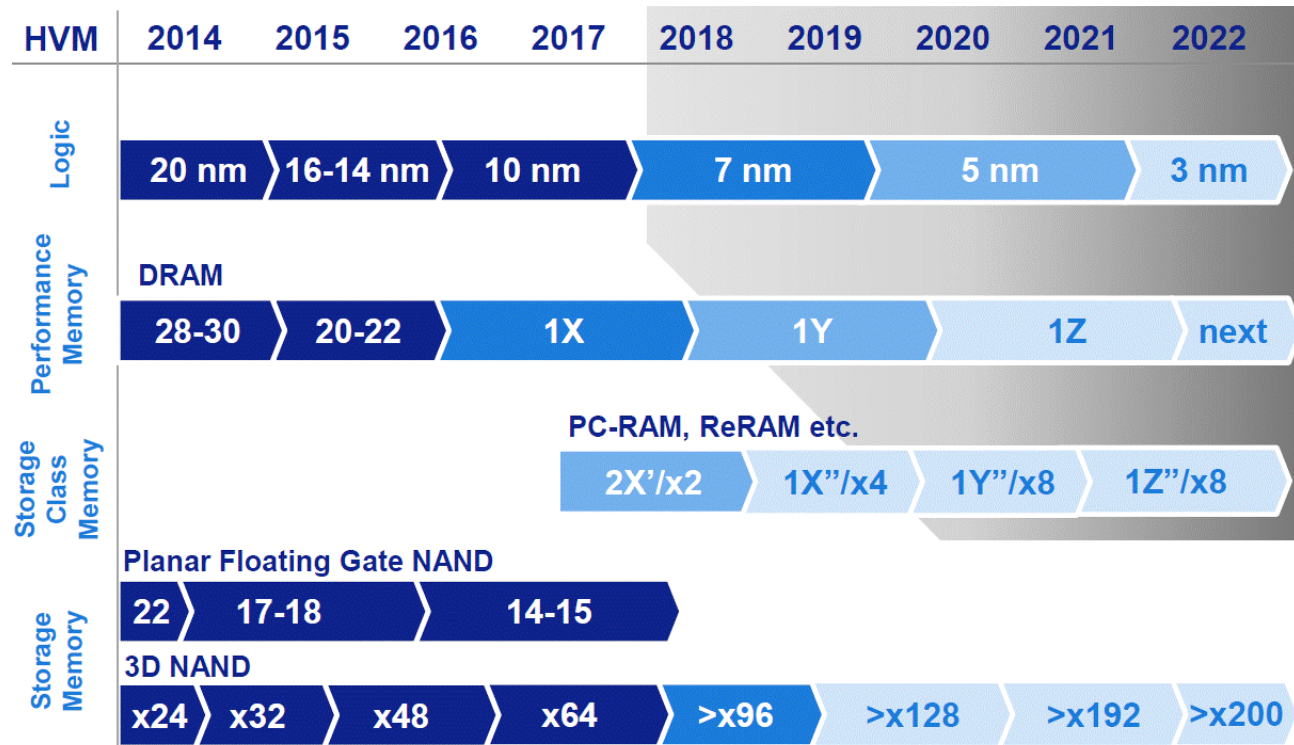
Front-End Processing Steps



Semiconductor Roadmap Requires More Advanced Cleaning Capabilities

ACM products drive yield benefits across logic, NAND and DRAM

IC Roadmap: Transistor Shrink, FinFETs & Larger Wafers ⁽¹⁾



Key Process Equipment Groups

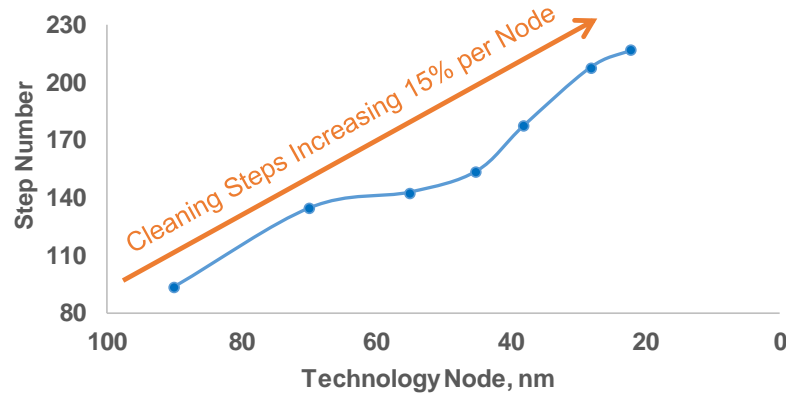
- Implantation
- Deposition
- **Lithography**
- Etch
- **Clean**
- CMP
- Metrology

Most Critical for
22nm and Smaller
Node Devices

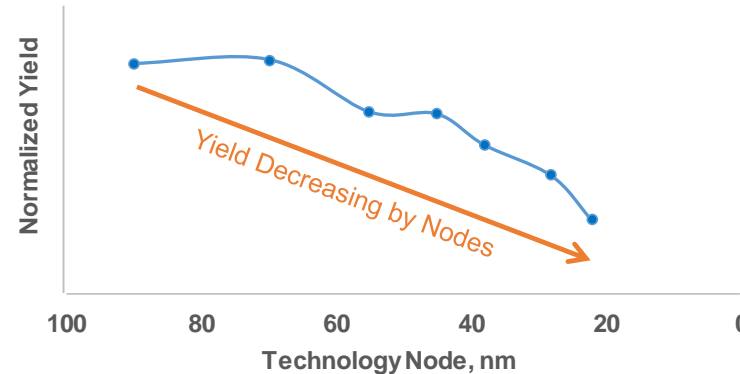
(1) Source: ASML 2018 Presentation.

Wafer Cleaning is More Important Now Than Ever

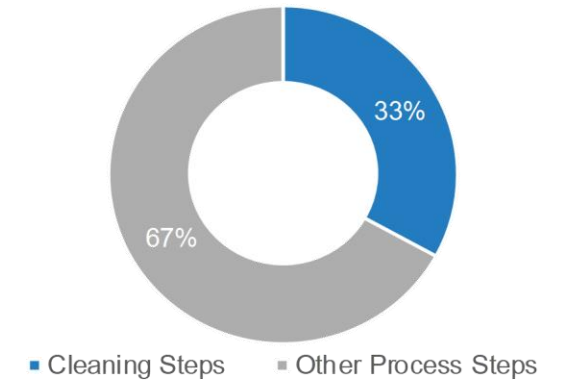
Total Cleanings Steps



Wafer Die Yield



Cleaning Steps vs. Other Processes

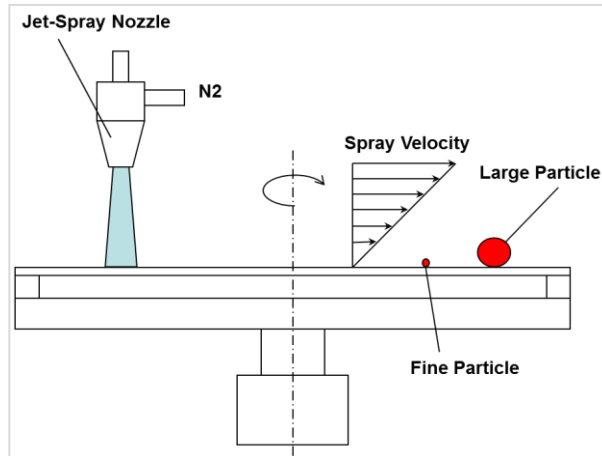


- Eliminating random defects through precise wafer cleaning steps is a critical component of the semiconductor manufacturing process
- Over the past 25 years wafer wet cleaning has become increasingly sophisticated and efficient in order to keep up with the rapid downsizing of device features
- Cleaning steps account for one third of all process steps and can be repeated up to 200 times
- 1% yield loss can lead to annual profit decrease of \$30M to \$50M ⁽¹⁾

(1) Source: ACM customer data and ACM estimates.

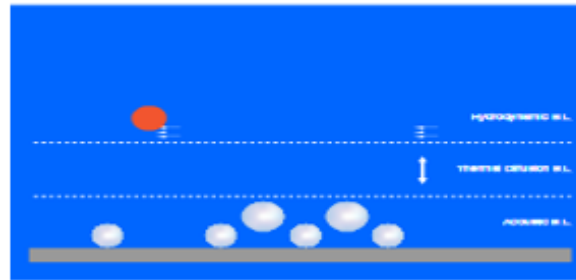
SAPS Clean Technology: Uniformly Removes Fine Particles/Defects

Single Wafer Jet-Spray Clean



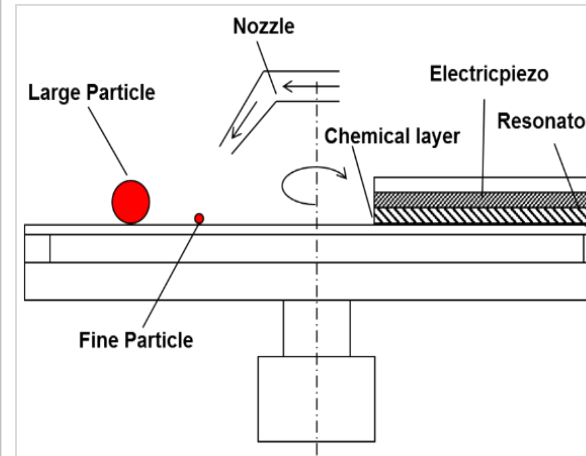
- Legacy solution used in semi-critical steps
- Ineffective in removing small particles at more advanced nodes

Megasonic Removes Small Particles



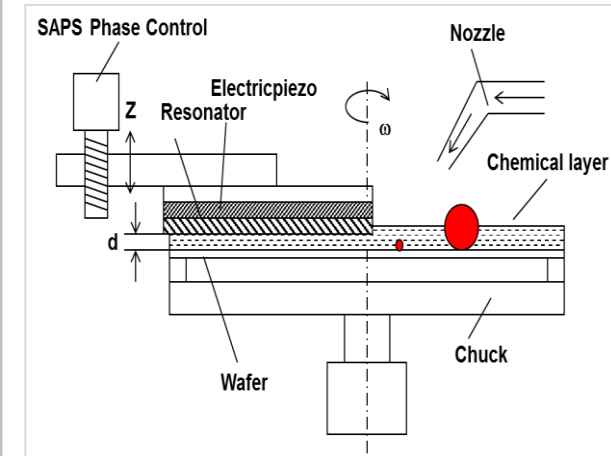
- Megasonic wave creates cavitation
- Cavitation moves particles away from surface

Conventional Megasonic Clean



- Effectively removes defects below 45nm
- Challenges with warped wafers
- Damage to patterned structures

ACM Megasonic: SAPS



- Proprietary SAPS ultrasonic design
- Uniform energy delivery
- Proven results for DRAM, 3D NAND, and Foundry processes

Tier One Customer Base

Front-End Customers



- Major new entrant into NAND flash and DRAM industry
- Expanding capacity with construction of \$24B production facility in Wuhan⁽¹⁾
- Proprietary Xtacking architecture used to produce 3D NAND products⁽²⁾
- ACM 2018 Revenue %: 39% (primarily 3D NAND)



- Leading advanced foundry in China
- Manages first fully automated 300mm wafer production line in mainland China⁽³⁾
- Production capacity for 35,000 wafers per month⁽⁴⁾
- ACM 2018 Revenue %: 24% (primarily Foundry / Logic)



- Global market leader in memory (DRAM & NAND) semiconductor products
- ACM's first major customer
- Expected to spend \$107B in the coming years to build four new memory chip plants⁽⁵⁾
- ACM 2018 Revenue %: 23% (primarily DRAM)

Back-End Customers



- Largest bumping house in China and leading WLCSP production base
- Subsidiary of OSAT company JCET
- Owns one of the most advanced packaging technology R&D service platforms⁽⁷⁾
- Global customer base with exposure to the U.S., Western Europe and Asia



- Mainland China's largest foundry
- Tier one customer base including Qualcomm, Broadcom and Texas Instruments
- Six strategically located fabs in China and Western Europe
- Building \$10B fab to produce 14nm, 10nm and 7nm chips⁽⁶⁾

New DRAM Customer

- New China-based entrant to DRAM industry
- Ordered 12-Chamber SAPS-V tool for evaluation
- ACM expects to deliver first-tool in Q4 2019, with revenue recognition upon acceptance



- Leading OSAT provider – #7 globally⁽⁸⁾ and top 3 in China⁽⁹⁾
- Fastest growing OSAT provider globally with 32% year-over-year revenue growth⁽⁸⁾
- Six production facilities serving more than half of the top ten global semiconductor manufacturers⁽⁹⁾

(1) Source: Nikkei Asian Review. (2) Source: YMTC Press Release. (3) Source: HLMC Press Release. (4) Source: HLMC Press Release. (5) Source: Reuters. (6) Source: AnandTech. (7) Source: JCAP Company Profile. (8) Source: Electronics Weekly. (9) Source: TFME website.

Single-Wafer Wet Cleaning Products

Innovative, patent-protected tools address critical challenges in leading edge IC manufacturing

SAPS



*Megasonic Cleaning for
Flat and Patterned Wafer
Surfaces*

- ✓ High efficiency with enhanced process flexibility
- ✓ Uniform and consistent results
- ✓ Customizable specifications

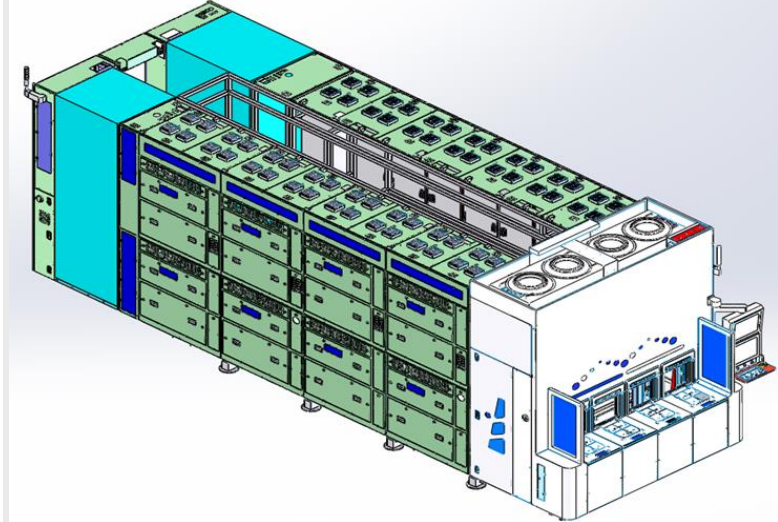
TEBO



*Bubble Oscillation Cleaning for
Patterned Wafers at Advanced
Process Nodes*

- ✓ Highly effective, damage-free solution for small and fragile features
- ✓ Multi-parameter bubble cavitation control

Ultra – C Tahoe



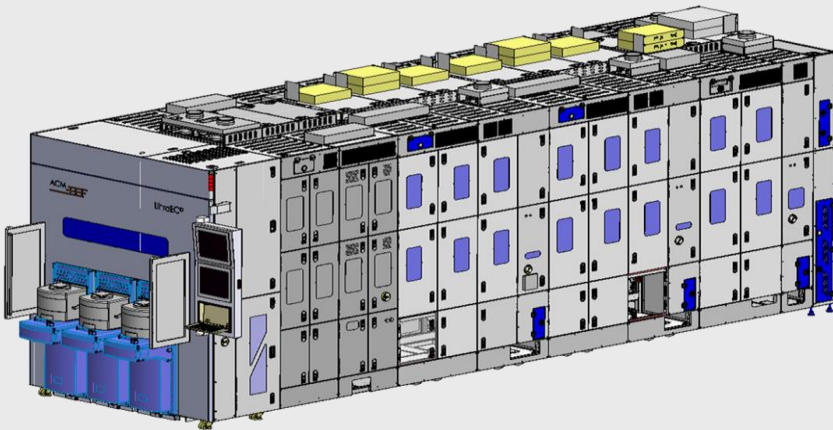
*Hybrid Wafer Cleaning With Significant
Cost & Environmental Benefits*

- ✓ Environmentally friendly – uses 1/10 of the sulfuric acid used than conventional tools
- ✓ High cleaning performance at low cost

New Electrochemical Plating Products Significantly Increase TAM

Delivers significant benefits to customers, including greater performance, increased flexibility and improved cycle times

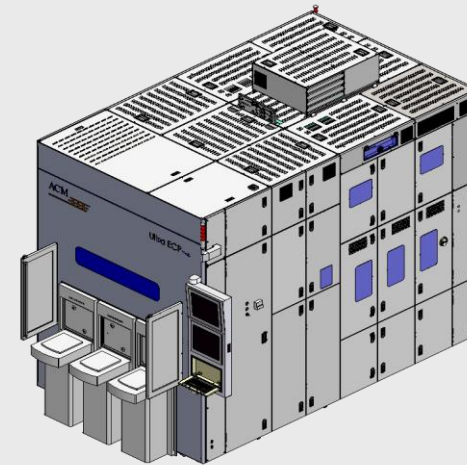
Ultra ECP AP



*Advanced Wafer Level Packaging
(Back-end Assembly Tool)*

- ✓ Back-end assembly tool used for applying copper, tin and nickel to wafers at the die level before packaging
- ✓ Produces uniform and consistent results

Ultra ECP MAP

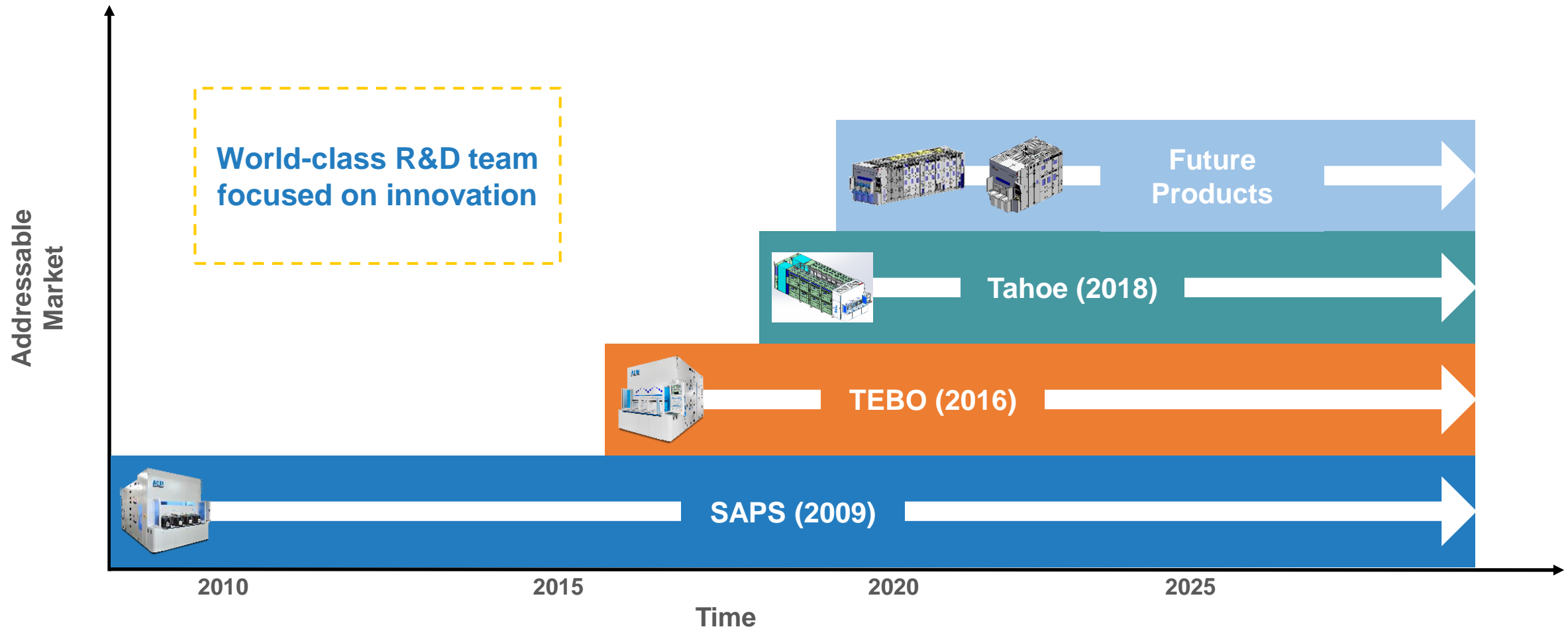


*Multi Anode Partial Plating
(Front-End Wafer Fabrication Processes)*

- ✓ Delivers world-class electrochemical copper plating for advanced copper interconnect applications
- ✓ Offers significant performance advantages relative to competitors

Innovation and Product Introductions Expanding Addressable Market

ACM projects that SAPS, TEBO, and Tahoe address more than 50% of the single-wafer wet cleaning market

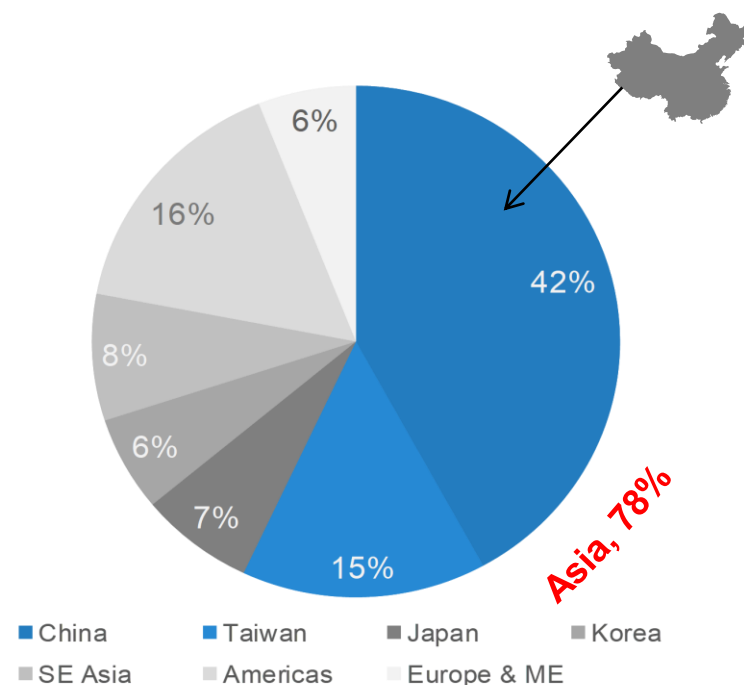


Well-Positioned to Participate in Asia Fab Investments

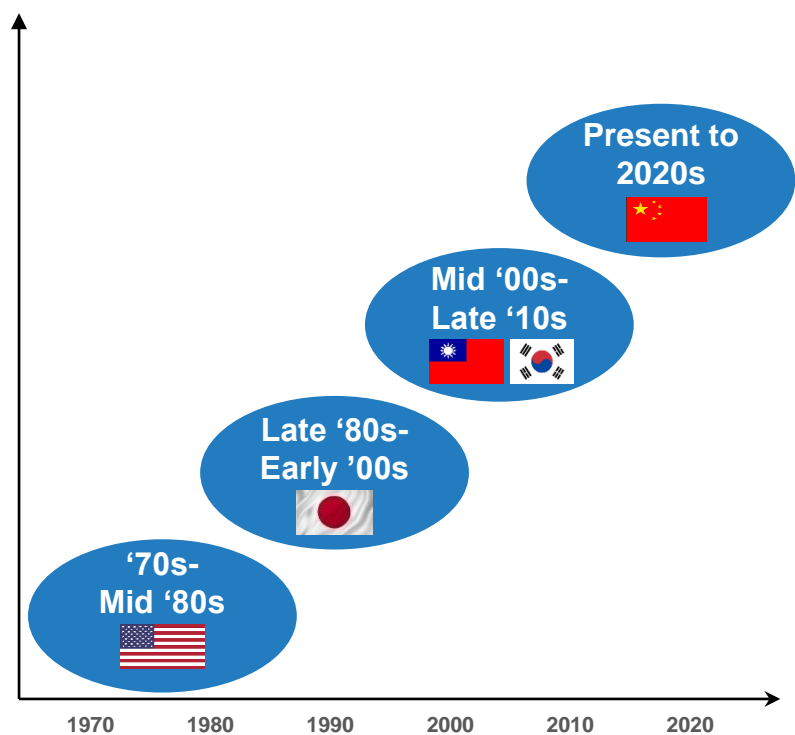
Semiconductor Industry Development

(\$ in billions)

New Facilities and Production Lines Starting Operation (2017-2020)⁽¹⁾



Industry Center Shifts Through the Decades⁽¹⁾



China is the Largest and Fastest Growing Geography⁽²⁾

Rank	Country	2020 Size	'16-'20 CAGR
1		\$14.5	22%
2		11.8	11%
3		11.6	(1%)
4		9.0	18%
5	North America	5.2	4%
	Rest of World	6.8	4%



Strong presence in Asia and close proximity to Chinese customers add to key competitive advantages.

(1) Source: SEMI – World Fab Forecast Report. (2) Source: SEMI – Equipment Market Data.

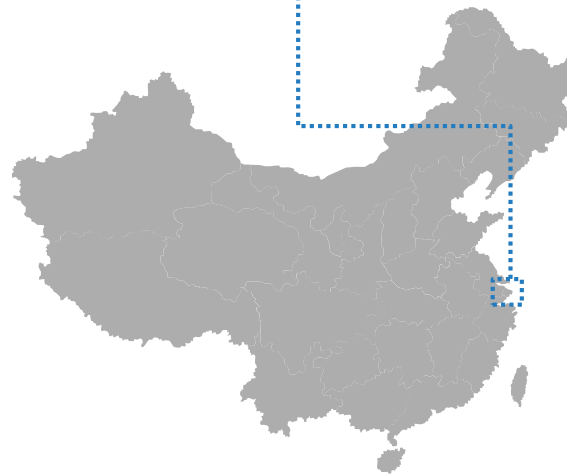
Shanghai Manufacturing Facilities

Factory #1 (Shanghai HQ)



- Original ACM factory
- 36,000 sq. ft. facility
- 8,000 sq. ft. of class 10,000 clean room space for product assembly and testing
- 800 sq. ft. of class 1 clean room space for product demonstration purposes
- Co-located with ACM Shanghai Headquarters and China R&D Center

Shanghai Locations



Facility #2

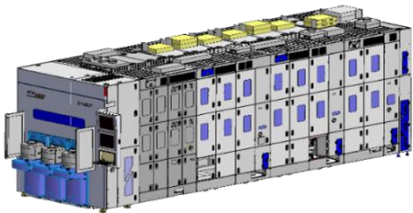


- Second factory; opened in September 2018
- 50,000 sq. ft. facility
- Shifting large portion of future production to this facility
- Additional dedicated space for product sub-assembly, component inventory and manufacturing related offices
- 2nd floor available for additional expansion

Growth Strategy

New Product Introductions Increasing TAM

- Next generation TEBO and Tahoe products expand SAM in wafer clean
- Front- and back-end plating tools offer growth opportunities in adjacent process steps



Continue to Build Scale in Asia

- Gain meaningful share by offering differentiated, leading edge technology and localized service with fast-growing Asian-based customers



Add New Customers

- Megasonic approach driving meaningful engagement with Global Tier 1 foundry, logic and memory companies



Selective Acquisitions

- Use M&A to broaden product portfolio, add complementary technologies and increase access to the global market

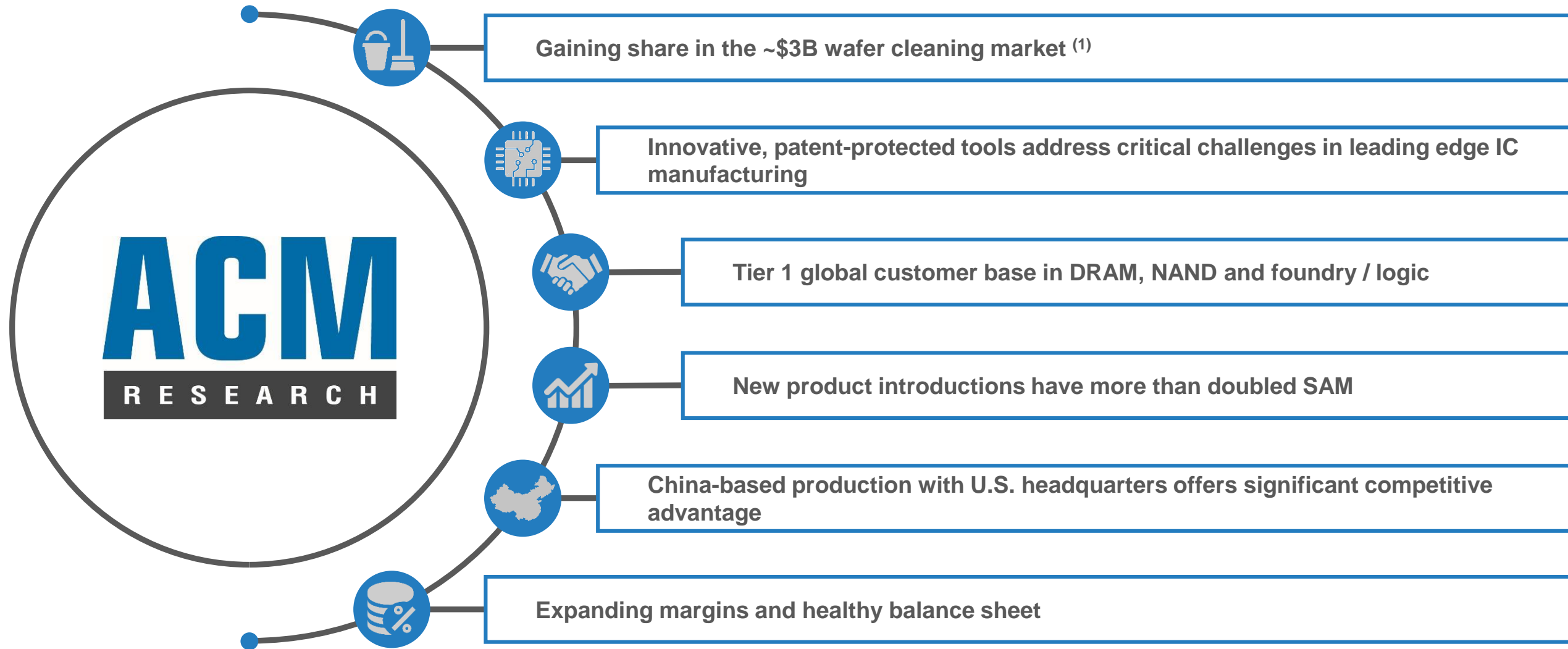


Strategic Investment Plan – Access China’s Capital Markets

- Announced in June 2019
- Plan to list shares of ACM Research (Shanghai), Inc., the principal operating subsidiary of ACM Research, on Shanghai Exchange’s Sci-Tech innovAtion boARd (“STAR Market”)
 - ▶ Direct access to local capital to support China operations
 - ▶ Relatively attractive valuation vis-à-vis current NASDAQ trading prices for ACM Research common shares
 - ▶ Raise profile within the business and investment communities
- **\$27.3 million* private placement first step to qualify for STAR Market listing**
 - ▶ \$23.5 million* to be invested from third-party investors at **\$675 million*** pre-money valuation
 - ▶ \$3.8 million to be invested from ACM employees at a discount
 - ▶ Potential for STAR Market premium to enable significant capital raise at just 20% dilution
- **ACM Research remains committed to NASDAQ listing status and global market opportunities**

*Based on China RMB to US dollar exchange rate on 6/12/2019, the effective date of the agreement.

Investment Highlights



(1) Source: Gartner – 2018 Auto Wet Stations, Single-Wafer Processors and Other Clean Process markets.

Financial Overview

Financial Highlights



Historical and projected growth well in excess of the wafer cleaning market



Expanding margins and operating leverage drive significant free cash flow



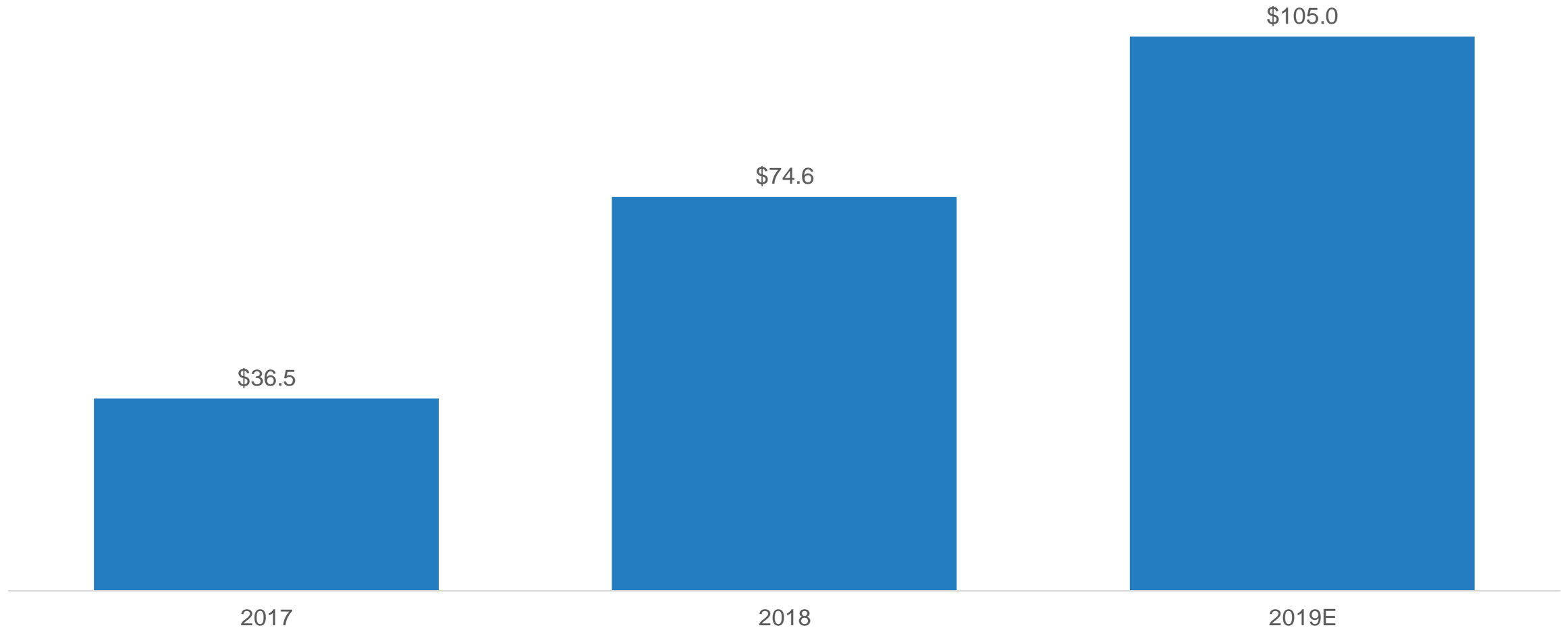
Minimal capital expenditure requirement facilitates ongoing investment in R&D



Strong balance sheet positions business for organic growth and M&A

Strong and Consistent Revenue Growth...

(\$ in millions)

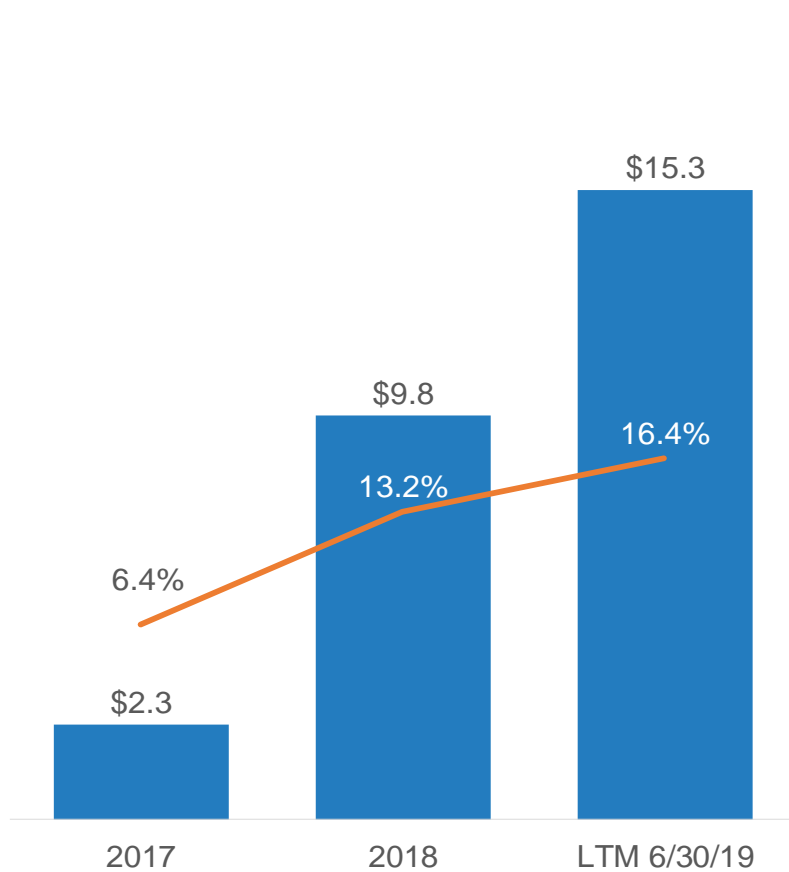


Note: As of 8/7/19, ACM Research expected 2019 revenue to be approximately \$105 million.

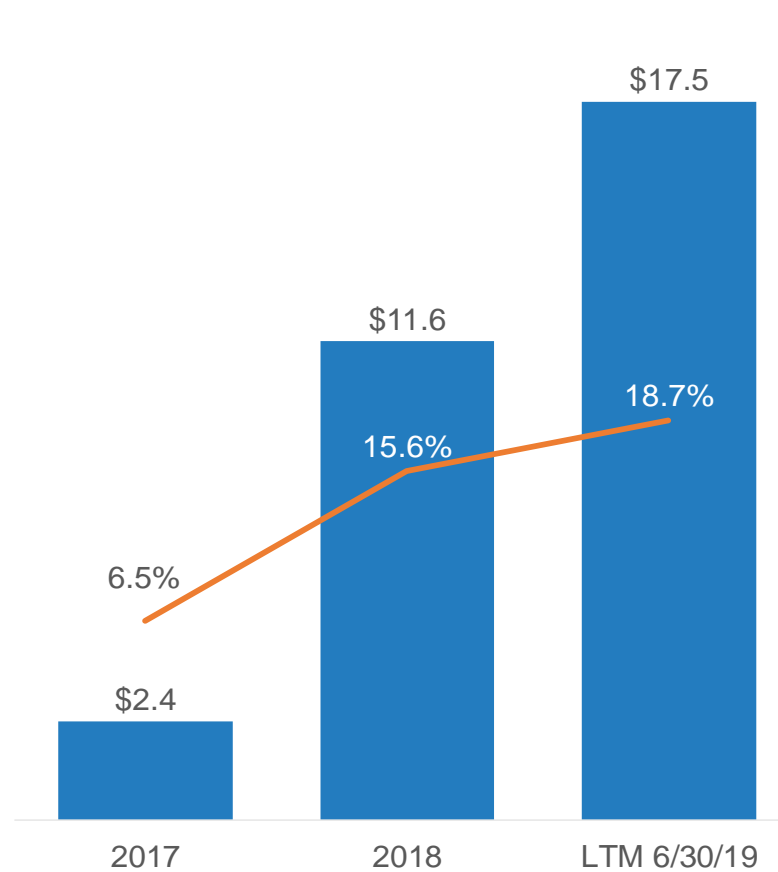
... Resulting in Impressive Financial Results

(\$ in millions)

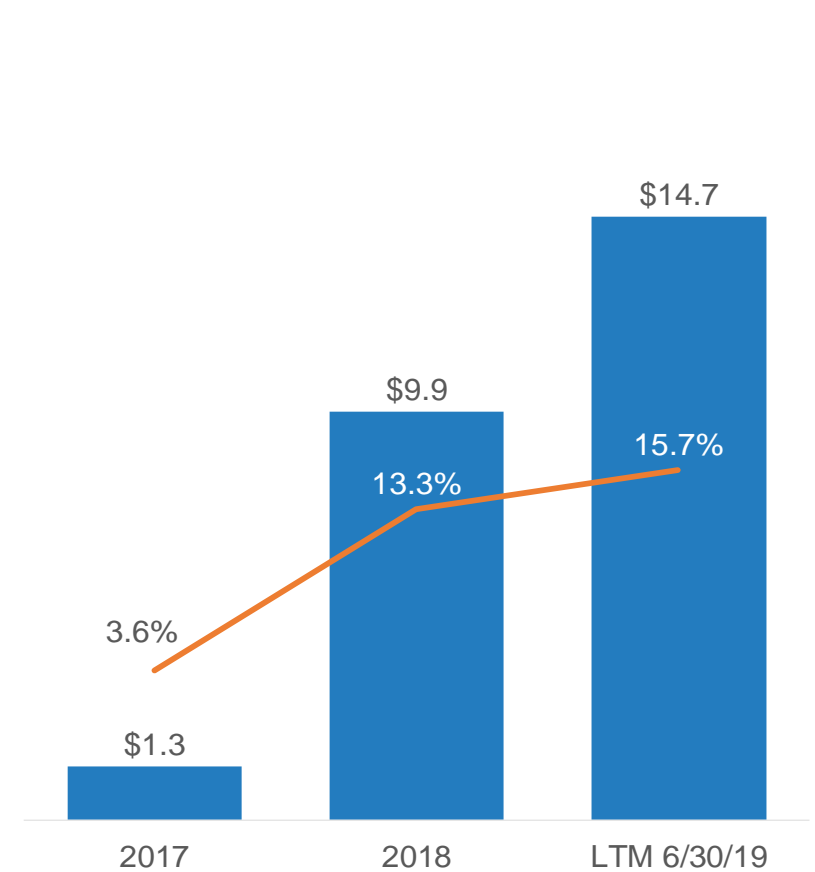
Adjusted Operating Income



Adjusted EBITDA



Adjusted Net Income



Note: Figures presented above based on non-GAAP financial statistics.

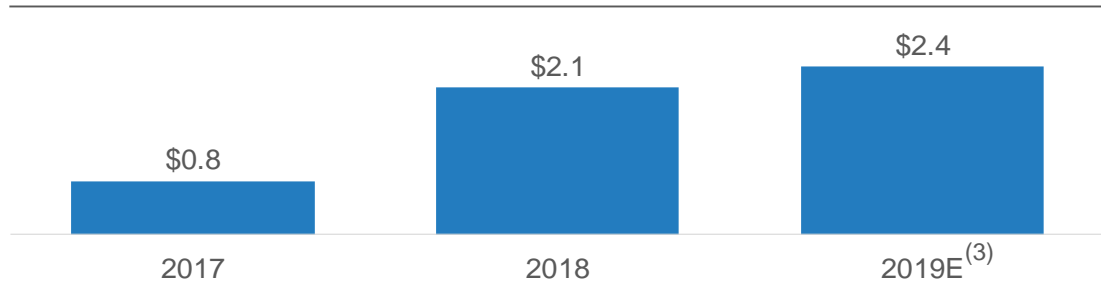
Strong Balance Sheet and Free Cash Flow

(\$ in millions)

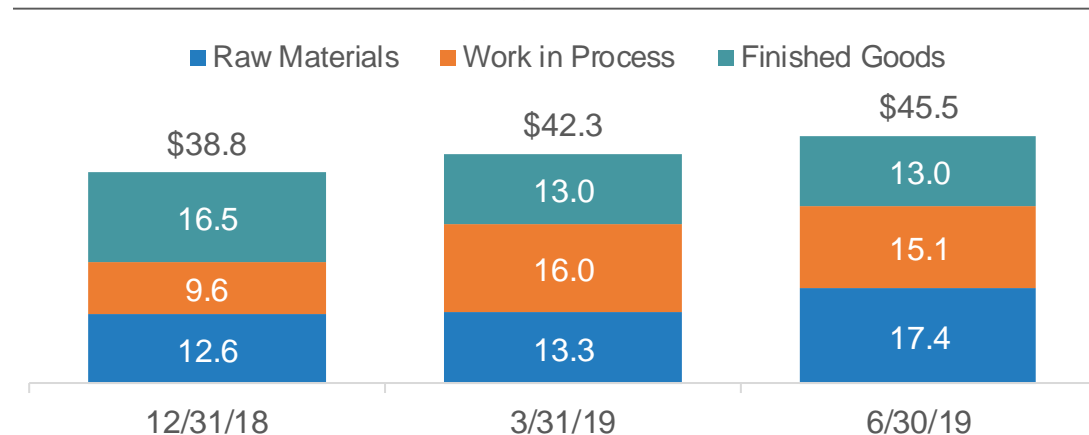
Selected Balance Sheet Items

	12/31/2018	6/30/2019	Pro Forma ⁽¹⁾
Cash	\$27	\$28	\$51
AR, net	25	31	31
Inventory	39	45	45
PP&E, net	4	3	3
AP	17	18	18
Total debt	9	15	15
Total equity	52	60	83

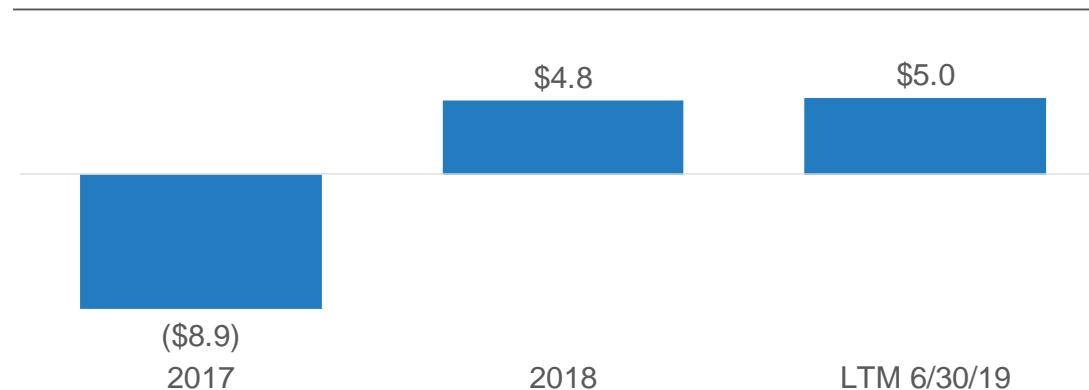
Capital Expenditures



Inventory Breakdown



Free Cash Flow⁽²⁾

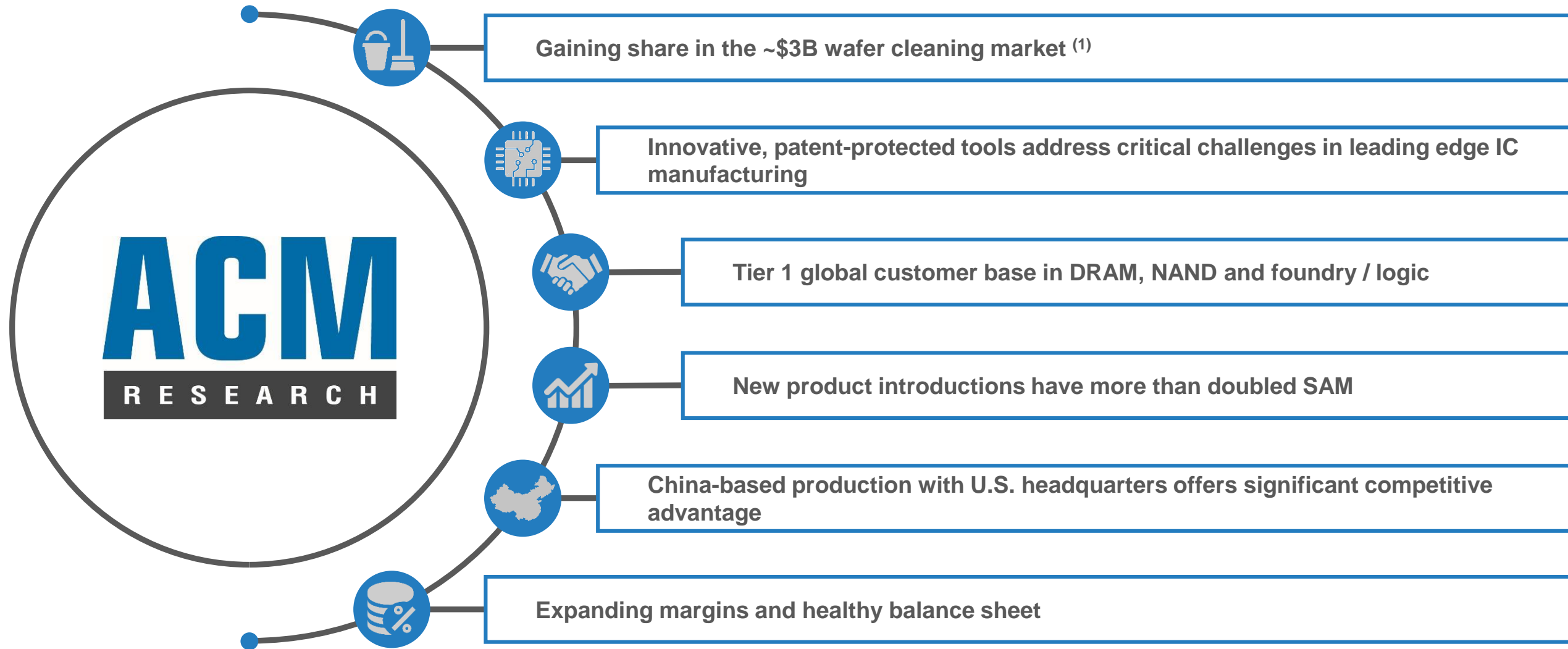


(1) Pro Forma for net proceeds received from the follow-on.

(2) Calculated as Net Cash Provided by (Used in) Operating Activities less Capital Expenditures.

(3) Based on estimate provided in ACM's 10-Q for the 6 months ended 6/30/19.

Investment Highlights



(1) Source: Gartner – 2018 Auto Wet Stations, Single-Wafer Processors and Other Clean Process markets.

GAAP to Non-GAAP Reconciliation

(\$ in millions)

	2016	2017	2018	LTM 6/30/19	6 Months Ended	
					6/30/2019	6/30/2018
GAAP Income (Loss) from Operations	\$3.5	\$0.7	\$6.5	\$13.0	\$6.9	\$0.4
Plus: Stock-Based Compensation	0.4	1.6	3.4	2.4	1.4	2.4
Adjusted Income (Loss) from Operations	3.9	2.3	9.8	15.3	8.3	2.8
GAAP Net Income (Loss)	\$2.4	(\$0.3)	\$6.6	\$12.3	\$6.2	\$0.4
Plus: Interest Expense, Net	0.2	0.3	0.5	0.5	0.3	0.2
Plus: Income Tax Expense	0.6	0.5	0.8	1.6	1.0	0.2
Plus: Depreciation and Amortization	0.2	0.3	0.4	0.6	0.4	0.2
Plus: Stock-Based Compensation	0.4	1.6	3.4	2.4	1.4	2.4
Adjusted EBITDA	3.7	2.4	11.6	17.5	9.2	3.4
GAAP Net Income (Loss)	\$1.0	(\$0.3)	\$6.6	\$12.3	\$6.2	\$0.4
Plus: Stock-Based Compensation	0.4	1.6	3.4	2.4	1.4	2.4
Adjusted Net Income (Loss)	1.4	1.3	9.9	14.7	7.5	2.8
GAAP Net Cash Provided by (Used in) Operating Activities	(\$3.7)	(\$8.1)	\$6.9	\$6.4	(\$4.6)	(\$4.1)
Less: Purchase of Property and Equipment	(0.8)	(0.7)	(1.8)	(1.3)	(0.3)	(0.9)
Less: Purchase of Intangibles	(0.0)	(0.1)	(0.2)	(0.2)	(0.1)	(0.2)
Free Cash Flow	(4.5)	(8.9)	4.8	5.0	(5.0)	(5.2)

Source: Company filings.