



Advanced Micro-Fabrication Equipment Inc.

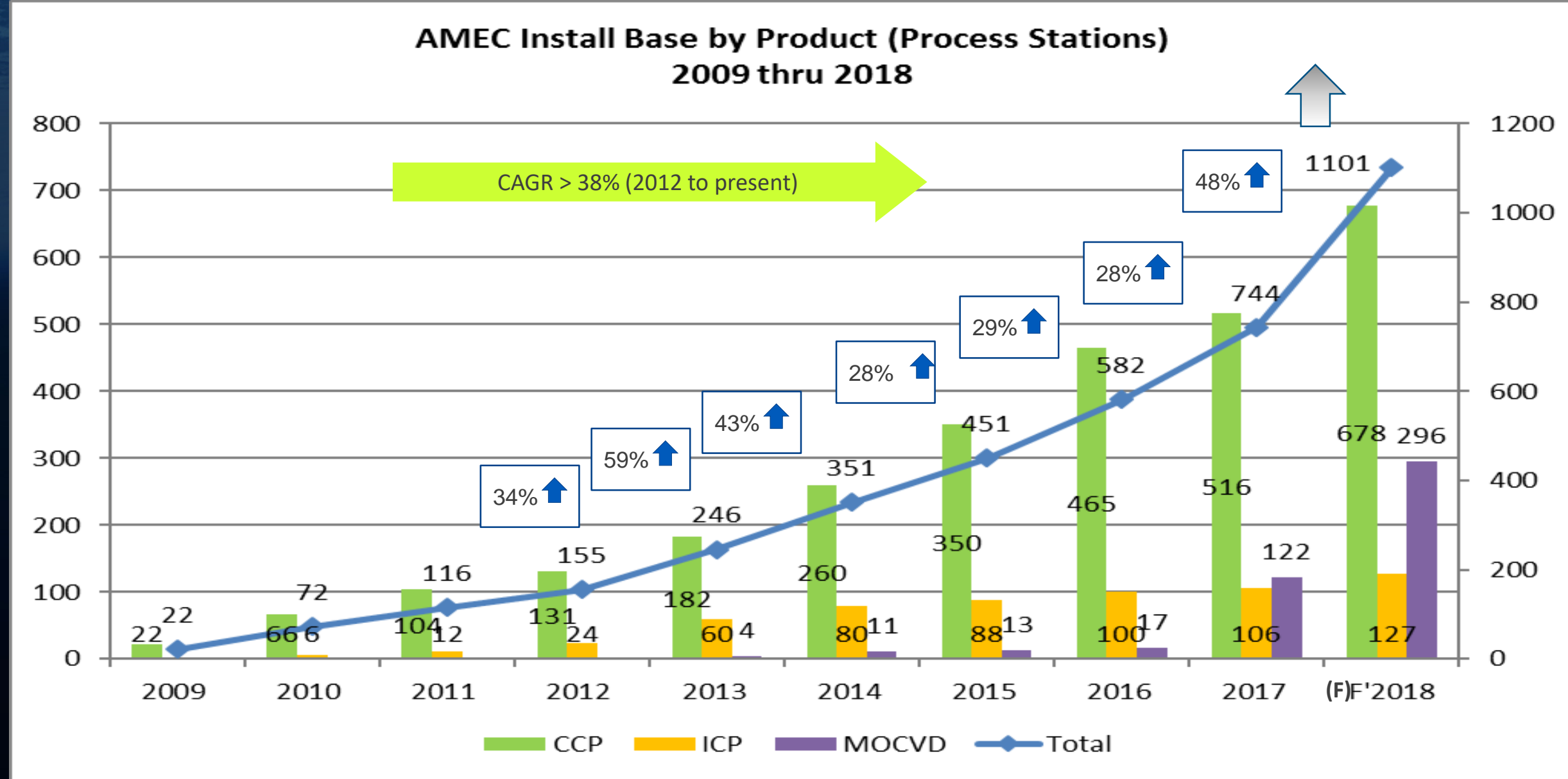
Patrick Walsh
Managing Director US/Europe

AMEC Headquarter in Shanghai



- Established in 2004, AMEC occupies 28,000 m², including a 1,000 m² Etch Lab, 4,500 m² manufacturing clean room and 6,500 m² warehouse.
- AMEC now has more than 600 employees with 10 nationalities.

AMEC Overall Install Base Growth Momentum



- E/Jul 2018, install base Process Stations of 839 in 41 Customer Production Sites (51 Fabs)
- YOY Growth reaches 48% for 2017 to 2018 and CAGR > 38% for 2012 thru 2018

AMEC Etch and MOCVD Become WW Top Tier Products

CCP Etcher



- > 600 Stations
- Run >45M wfs
- Qualified for 10/7nm
- Selected for 5nm
- 14nm 2D Flash Prod

TSV/MEMS & Dicing



- >110 stations for CIS/MEMS etching
- Production at Europe leading MEMS Fabs
- Engage Plasma Dicing

MOCVD



- 1st Gen qualified at 8 China LED fabs
- 2nd Gen (28") qualified with large volume orders

ICP Etcher



- New Etcher with adv. design for 10/5nm
- Installed at CN leading foundry
- Engaging with others

VOC



- Qualified at China leading LCD fab
- Work on Volume order
- Expand to other area

AMEC is focusing on high end critical products in the fields of etch and thin film.

AMEC Primo Three Generation Dielectric Etchers

1G

DSC D-RIE
65/40/28nm in
Production



2G

DSC AD-RIE
iDEA 4+2
28-7nm, 28nm in
Production



3G

SSC AD-RIE
16/14/10/7nm
16/14 nm in
Production



AMEC Newly Developed SSC and DSC ICP Etch Products

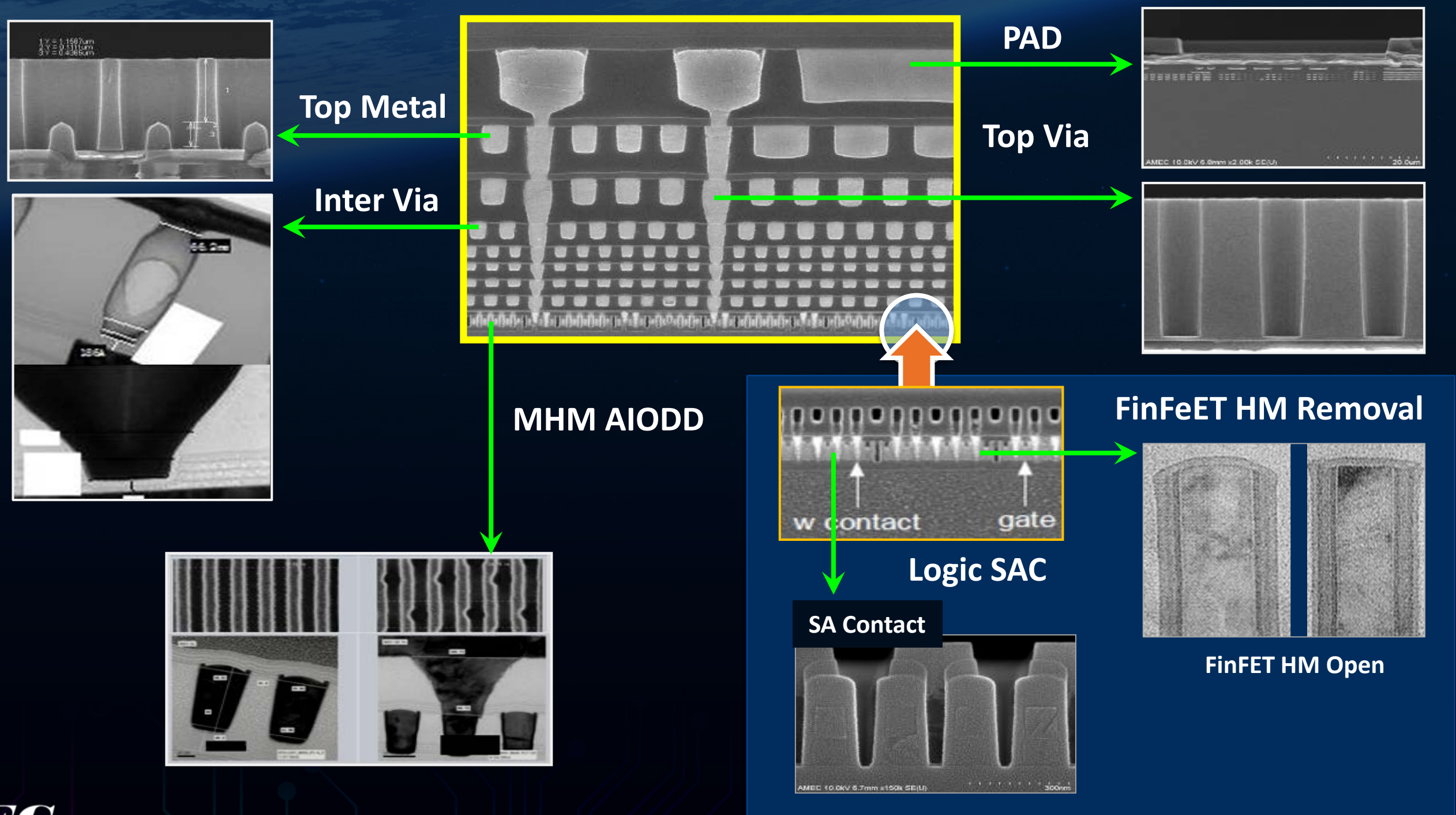


Primo Nanova

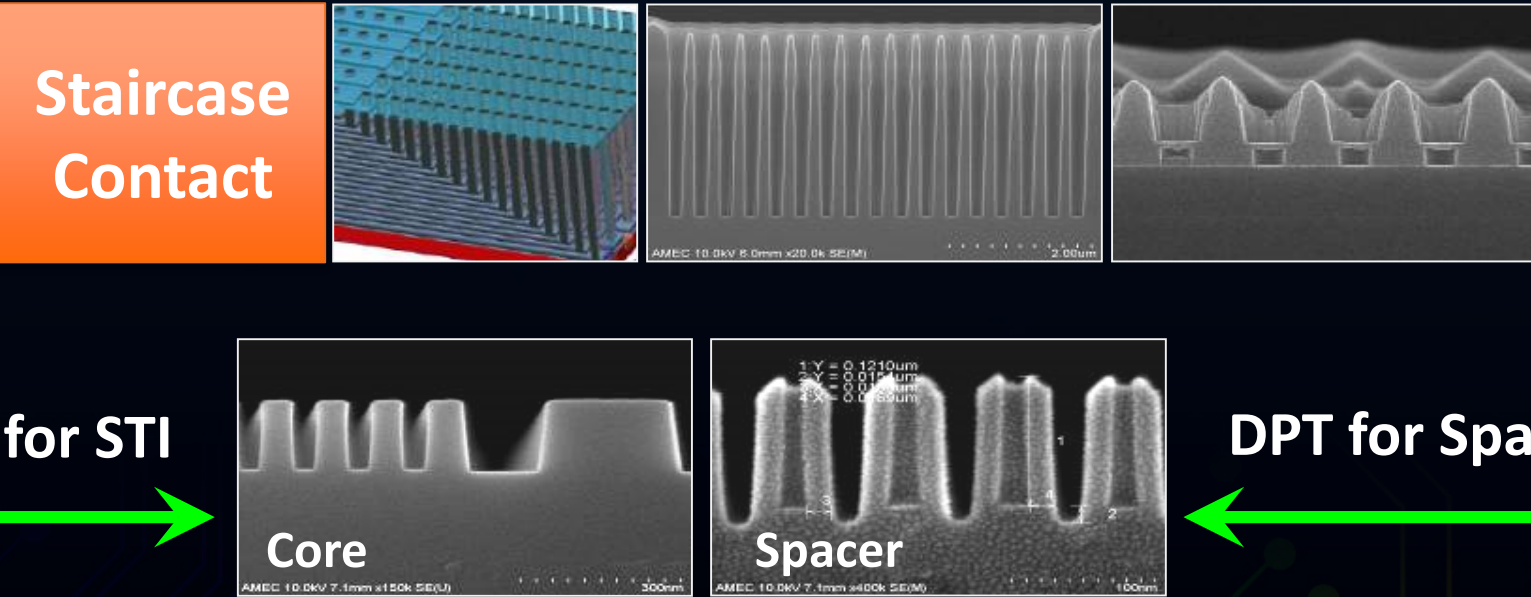
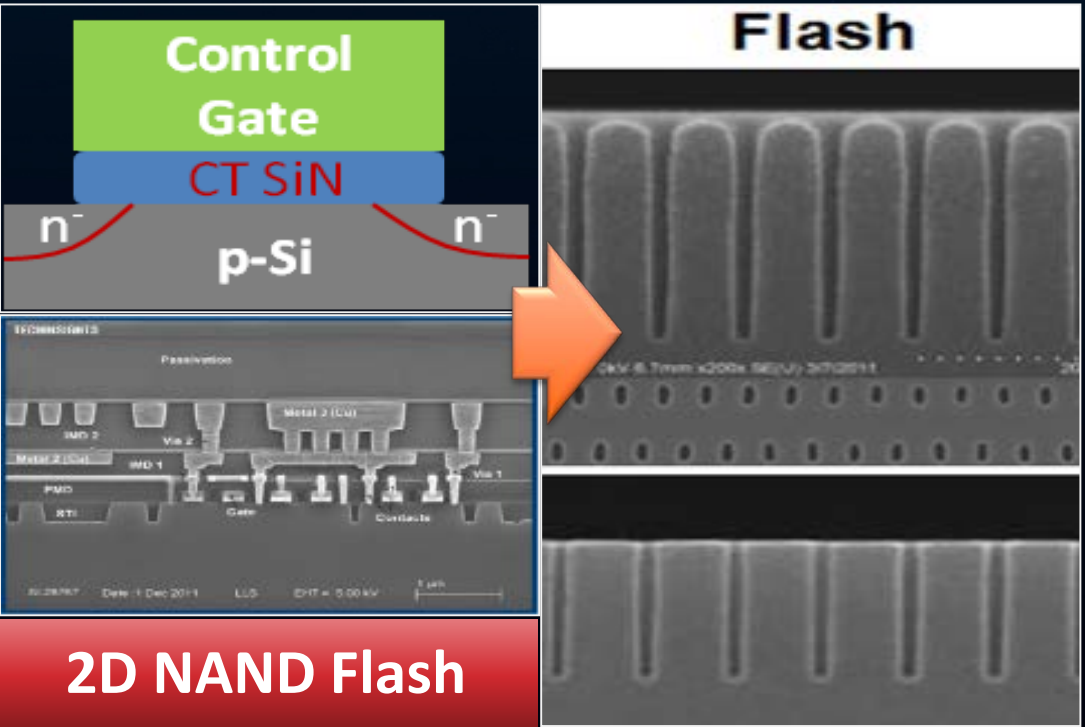
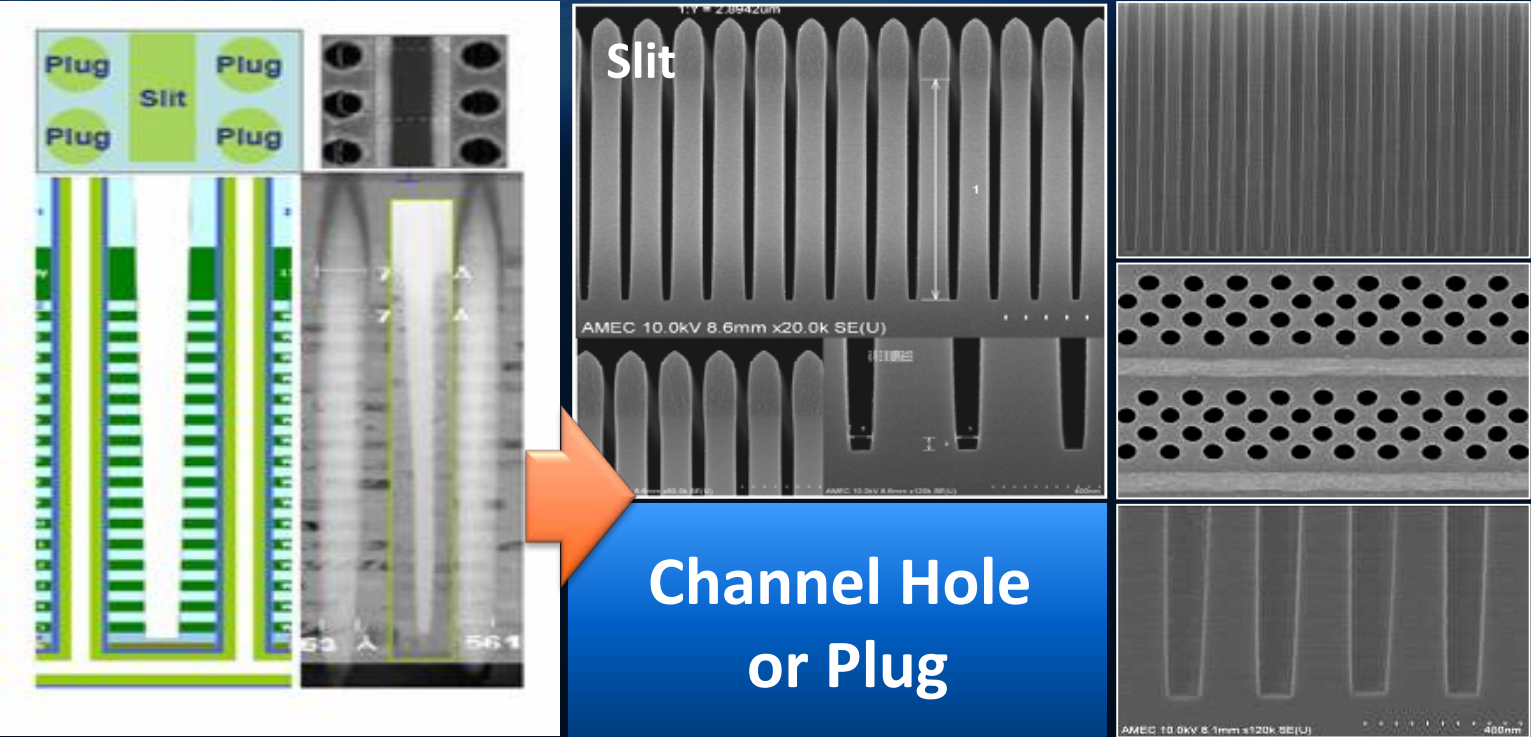
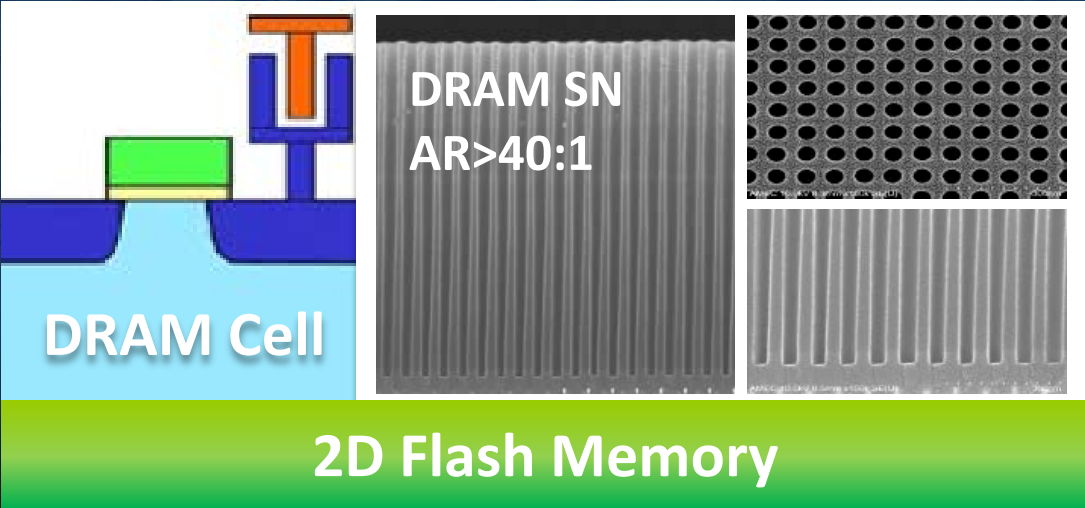


Primo Twinstar

AMEC Etchers Can Cover most of Logic Etch Applications

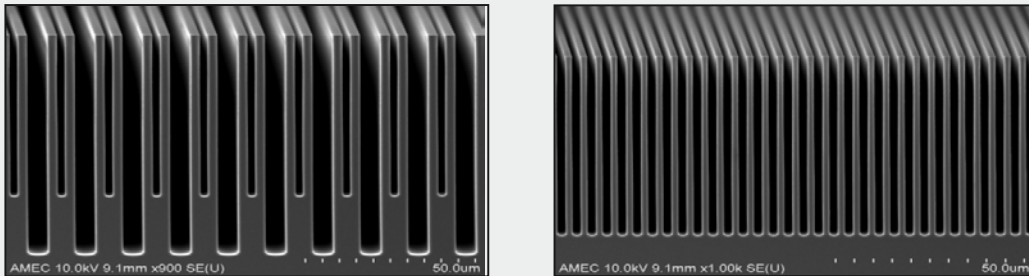


AMEC Etchers Can Cover most of Memory Etch Applications

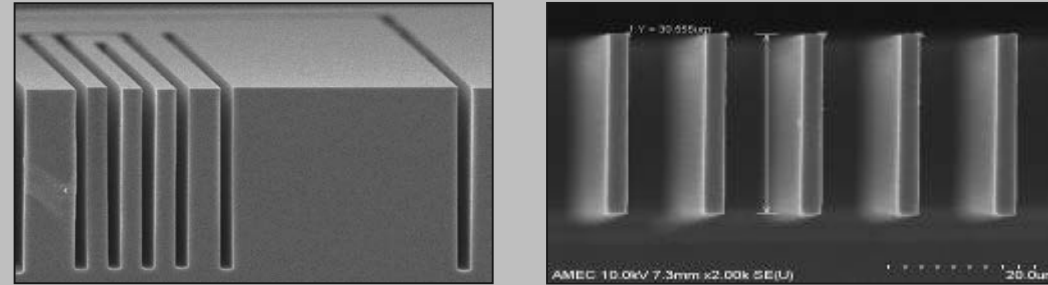


AMEC Deep Silicon Etch for MEMS and Other Applications

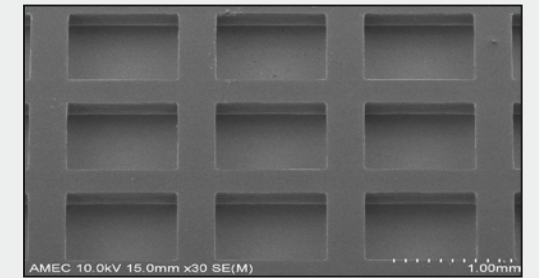
Gyrometer



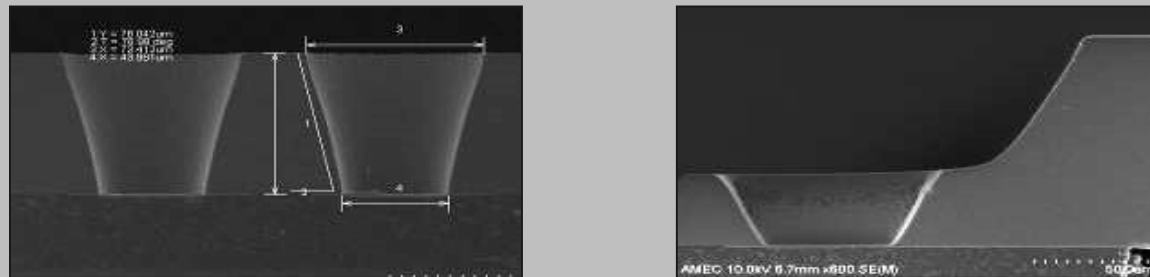
Accelerometer



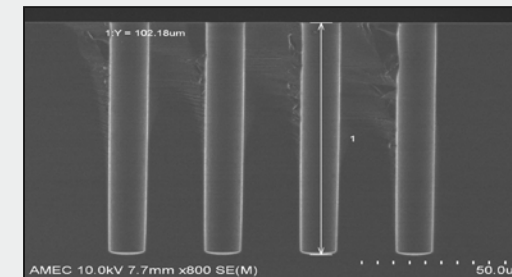
Microphone



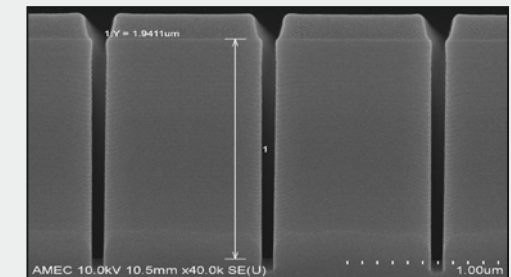
Deep Via



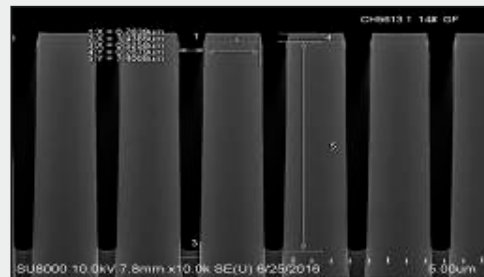
Interposer



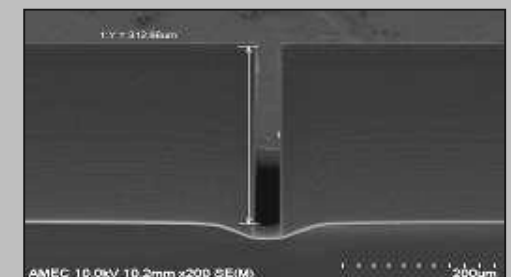
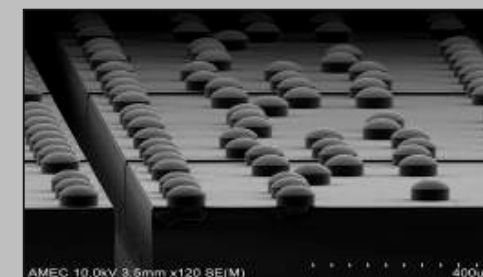
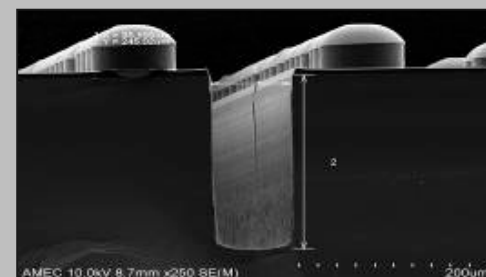
DTI



Power Devices



Plasma Dicing



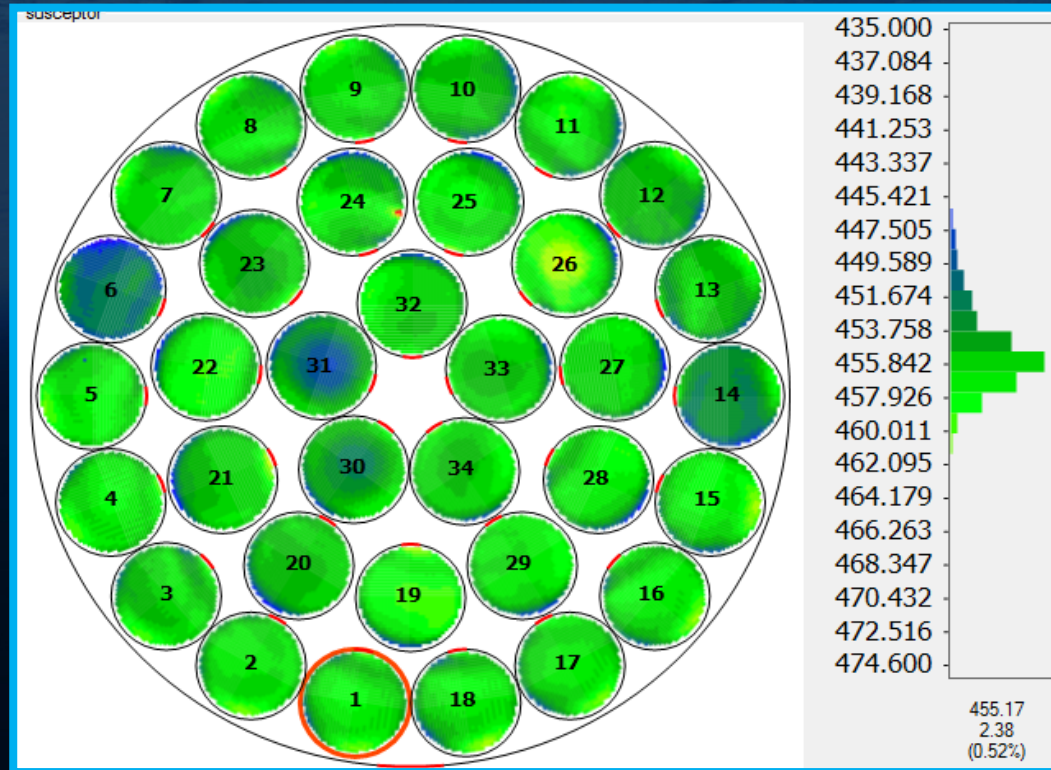
AMEC Prismo D-Blue® and A7 MOCVD for LED and Power Device



2nd Gen: **A7** (28 inch)

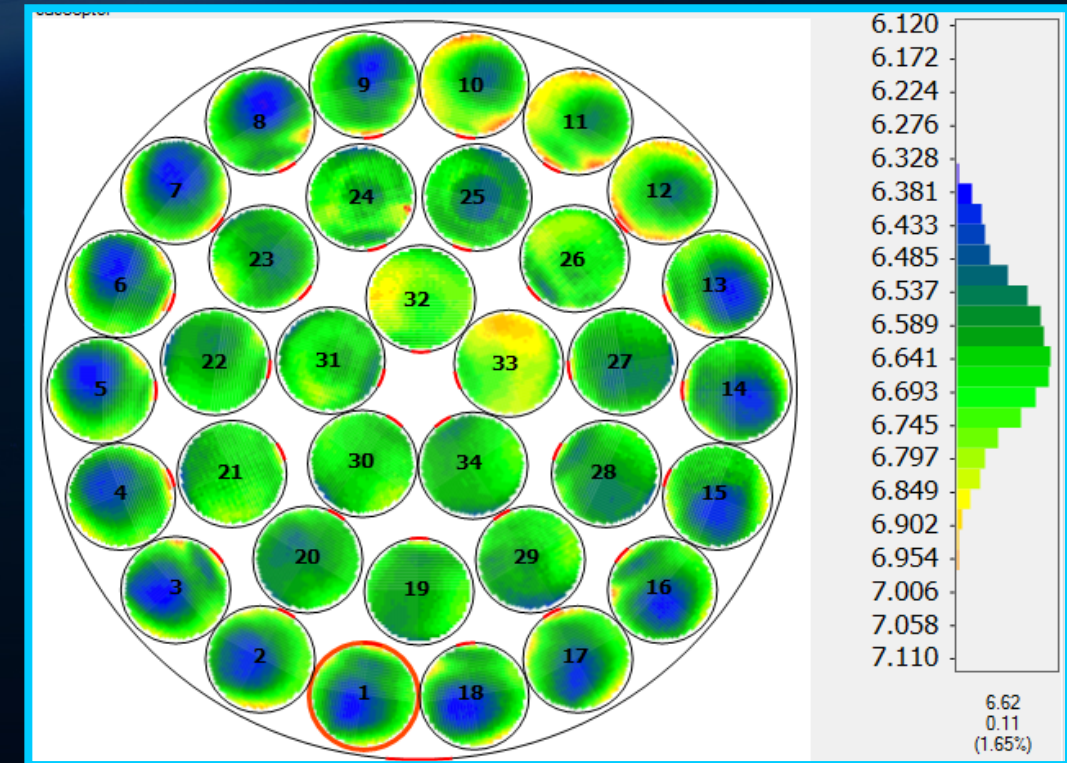
1st Gen: **D-Blue** (19 inch)

Prismo A7 2nd Gen (28") EPI Growth Uniformity



Wavelength uniformity:

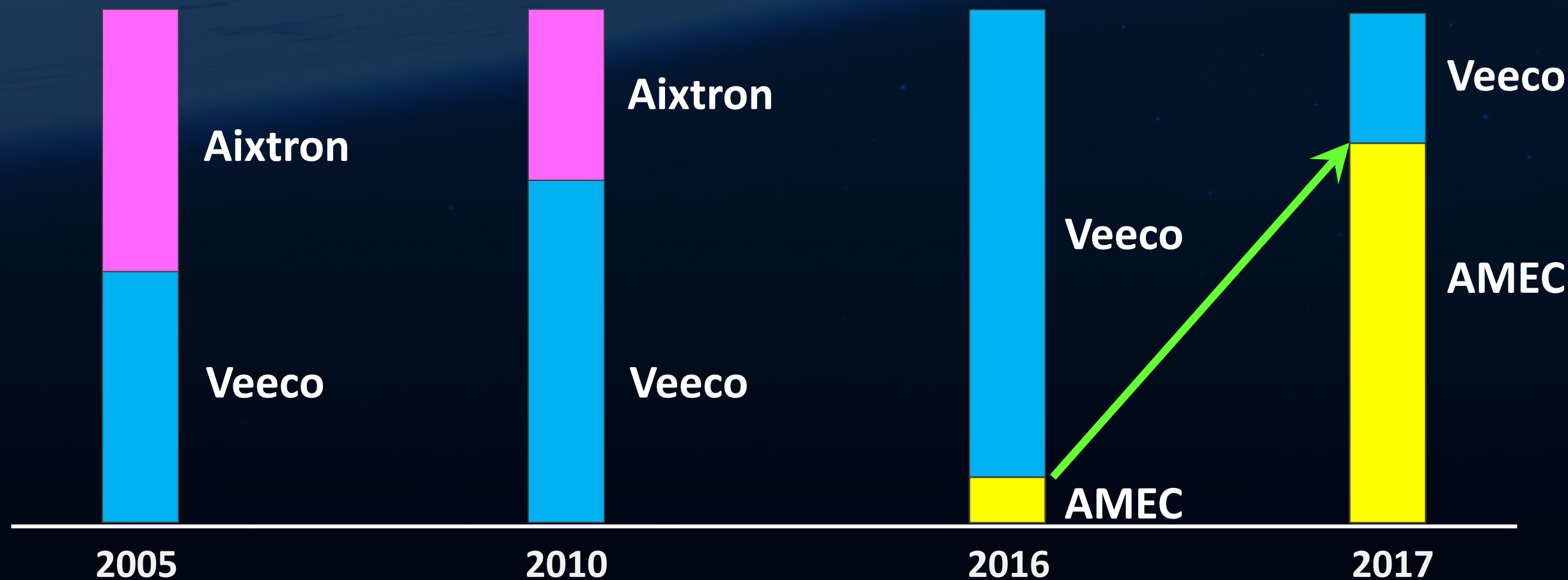
- WD=455.2nm
- Within-Wafer STD $1\sigma = 1.78\text{nm}$
- Wafer-Wafer STD $1\sigma = 1.56\text{nm}$



Thickness uniformity:

- THK=6.62 μm
- Within-Wafer STD $1\sigma = 1.37\%$
- Wafer-Wafer STD $1\sigma = 0.84\%$

11/2016 to 6/2018 AMEC Took Over China Blue LED MOCVD Market



AMEC business in Russia

- AMEC entered the Russian market by selling etch equipment into a Joint Venture with the business being driven by the US based partner.
- If the opportunity would have been only to a Russian company, AMEC might have passed due to uncertainty and unfamiliarity with the region.
- AMEC experience throughout the process of selling the equipment, installation and follow-on service has been very positive.
 - No problems with payments
 - AMEC included on site support to train customer staff and develop processes
 - Worked well together to solve issues and problems
- Due to the positive experience, AMEC is pursuing other opportunities in Russia

AMEC : We're China-based

- The IC industry in China is in its infancy but moving extremely fast to develop and grow. Russia's IC industry is also young and growing. As a China-based company, we understand the characteristics and unique dynamics associated with building an IC-related ecosystem from the ground up. We have helped lead this growth trend in China and we're still at the cutting edge of enabling the growth.
- We serve many of China's emerging semiconductor manufacturers and virtually every main LED fab in China. In addition to delivering advanced technologies and tools, we also offer critical expertise to help China fulfill its ambition to become a hub of advanced semiconductor manufacturing. The combination of technologies, tools and expertise is of value to customers in emerging markets like Russia

AMEC view of risk and compliance

- There are challenges to doing business with Russian companies regarding the political landscape.
- AMEC has chosen to take a less risk averse stance and is welcoming opportunities to support new customers in Russia
- We also take due diligence seriously and use contracted support to vet potential customers, which includes understanding the customers' partners, their customers and banking relationships.
- AMEC, as an international supplier, has to operate within international guidelines, not just those of China.
- Like China, growth in the Russia semiconductor market will take investment, but we feel this will come.