

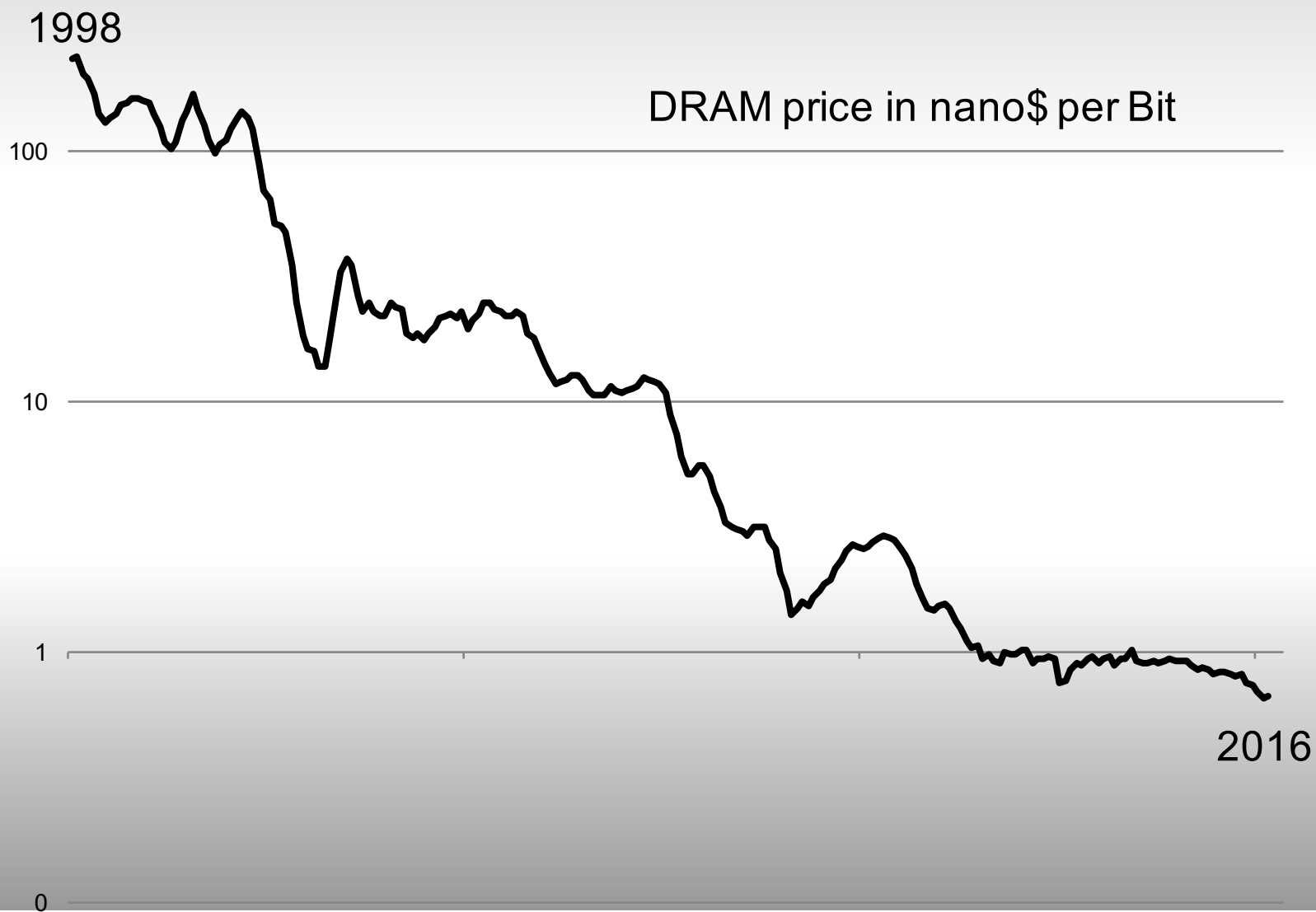


Quartalsanlass: **Innovation macht's möglich**

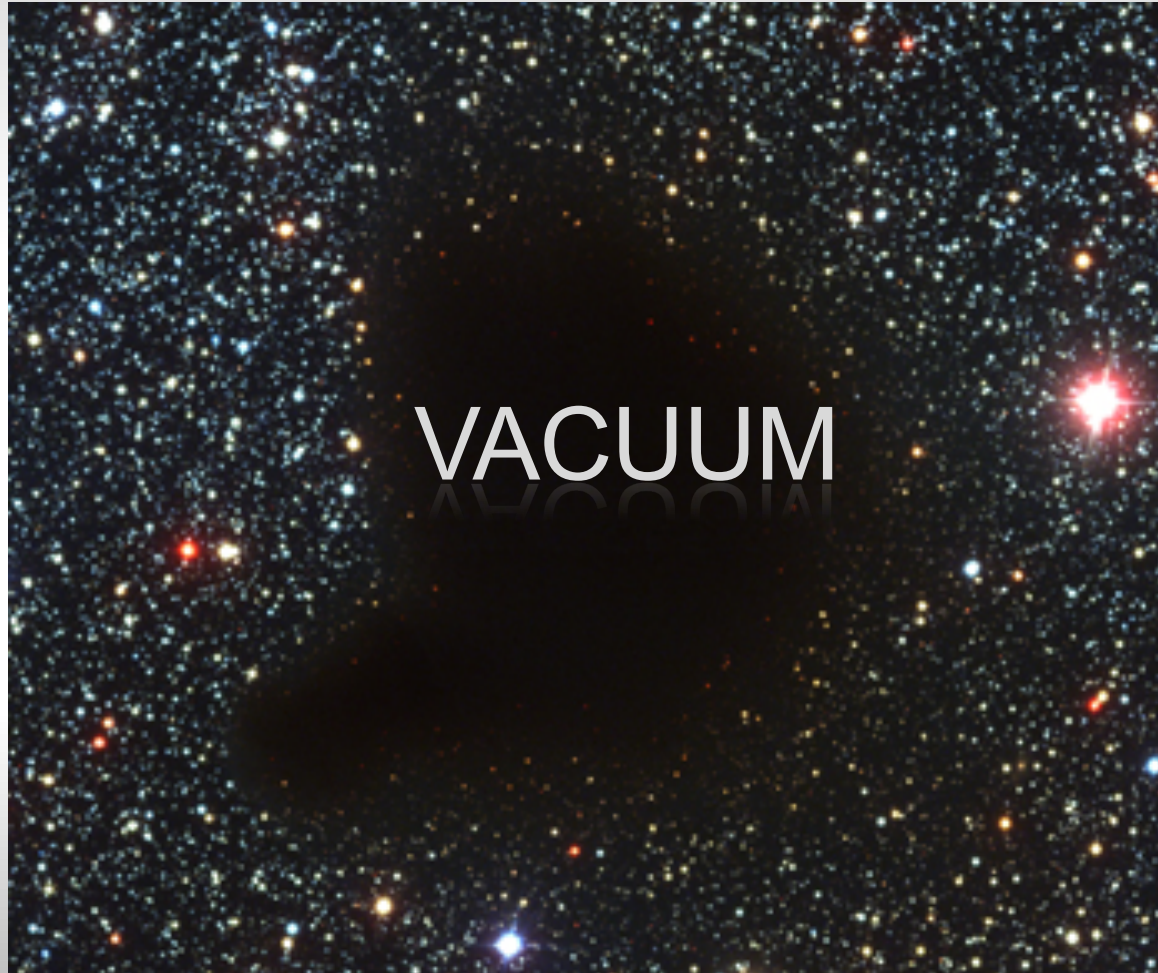
INFICON: Führt «Speed im Vakuum» zu
Effizienzsteigerung in der Halbleiterindustrie?

Christian Berg, INFICON AG, Balzers (FL)

Moore's law



Semiconductor Industry is built on



INFICON is a VACUUM company



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Stripe High-Speed Capacitance Diaphragm Gauge

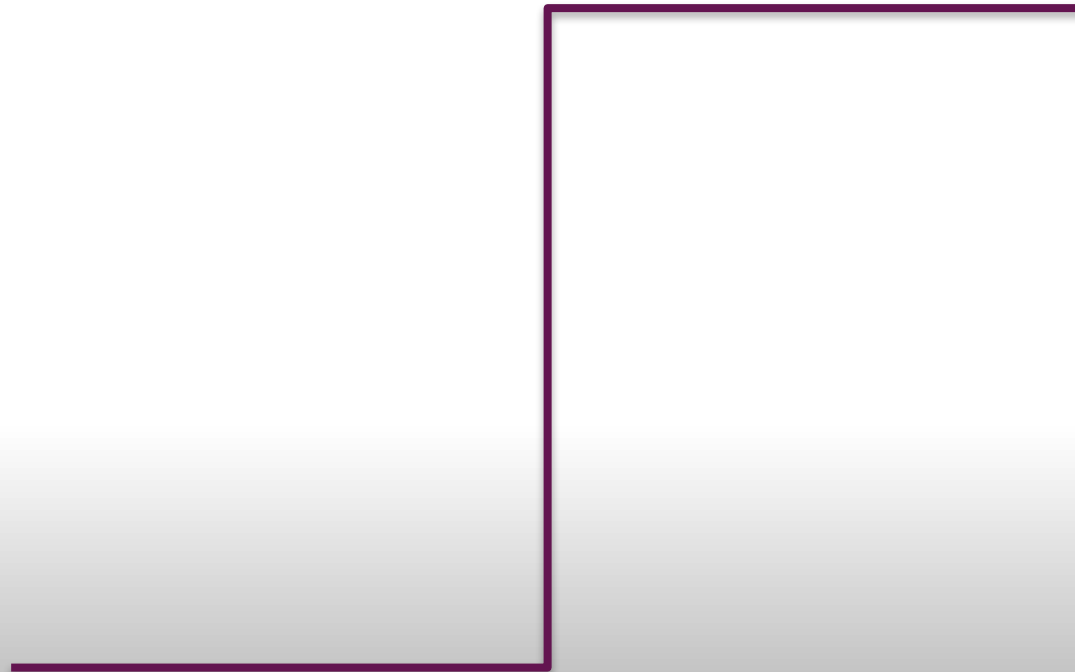
Fast Accurate Vacuum Gauge



Markets We Serve



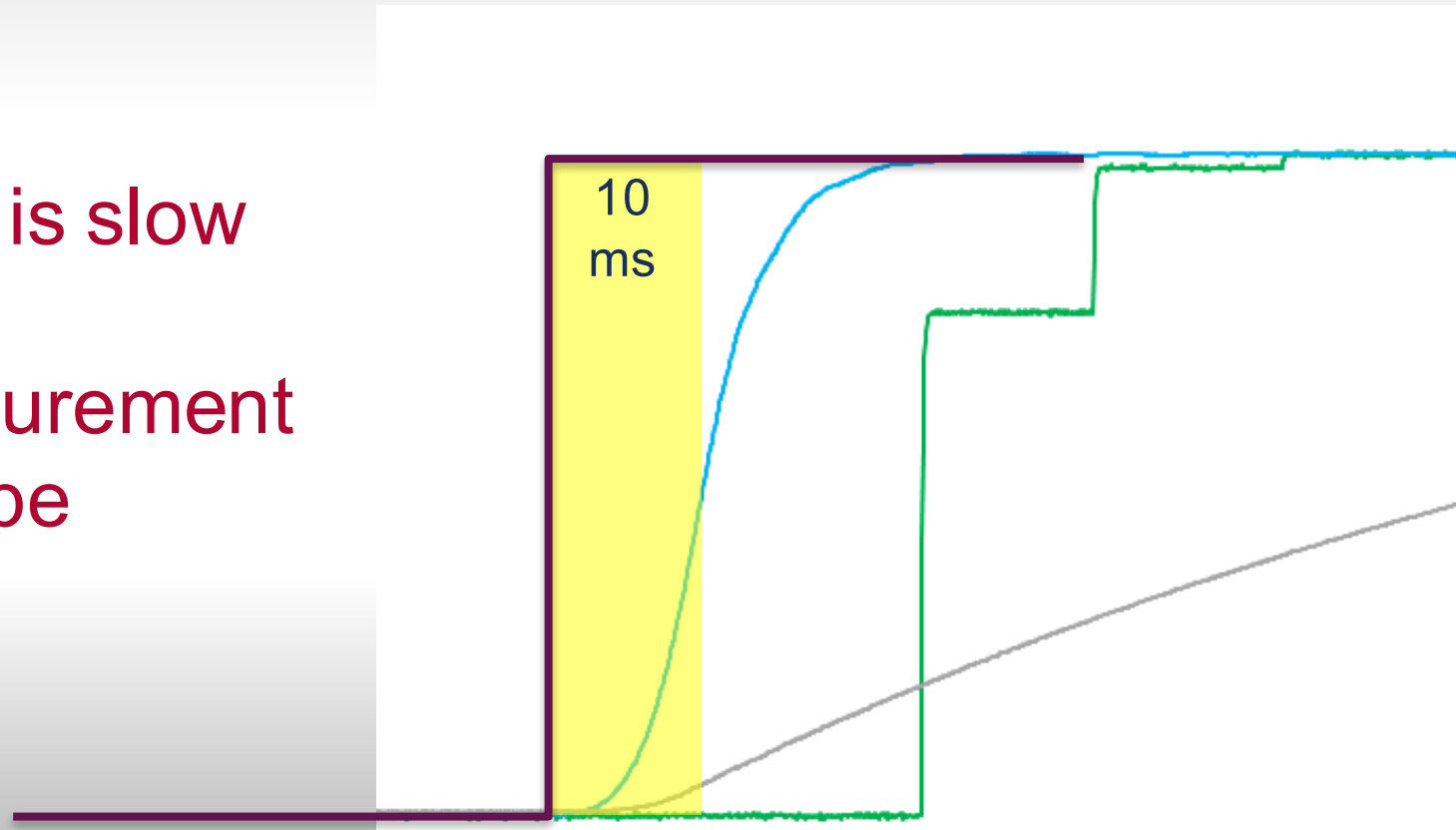
... some technical background



... some technical background

Vacuum is slow

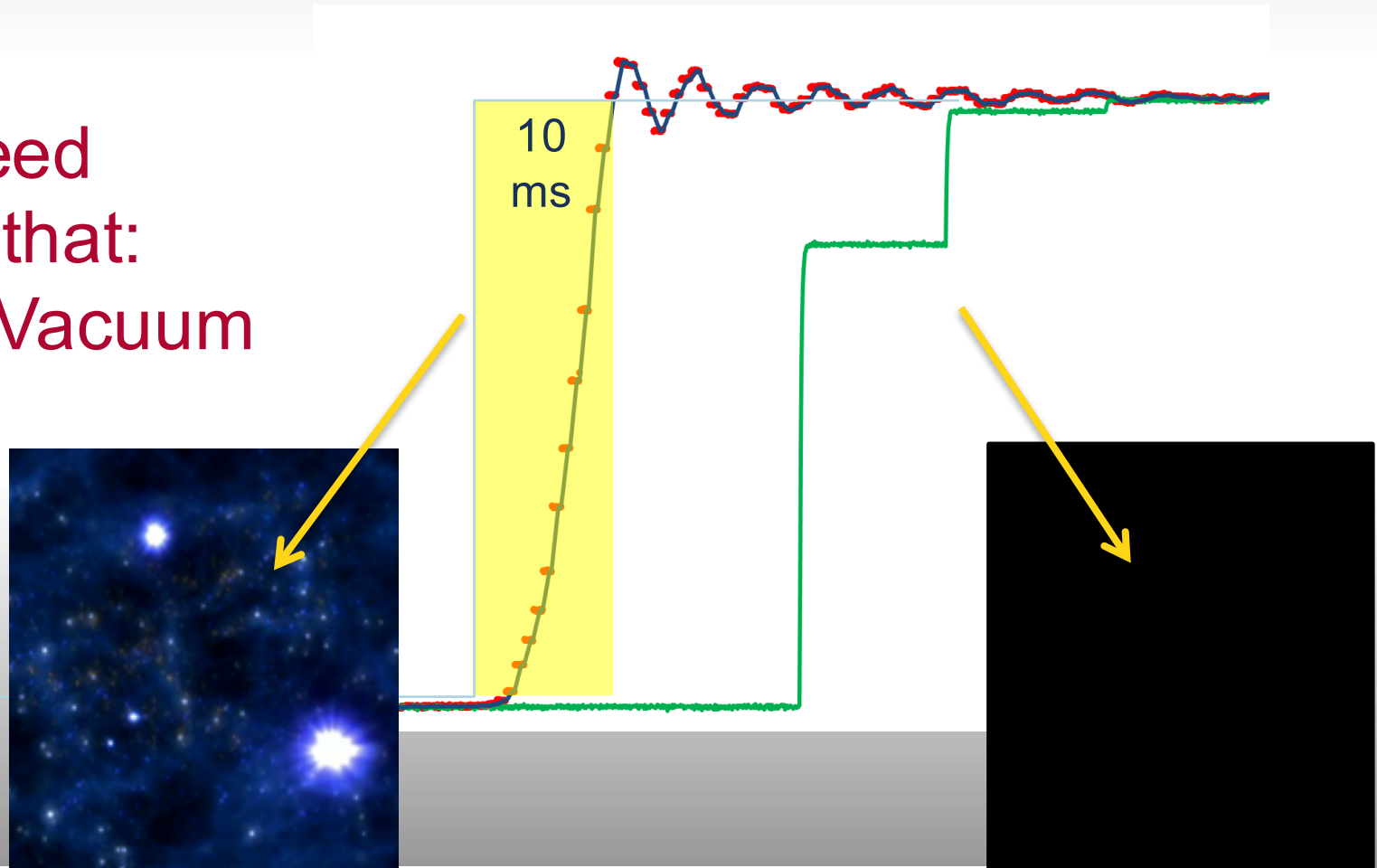
... measurement
used to be
slower



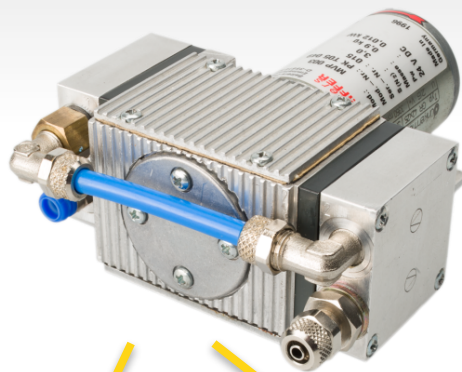
... some technical background



High-Speed
changed that:
→ “See” Vacuum



“See” vacuum

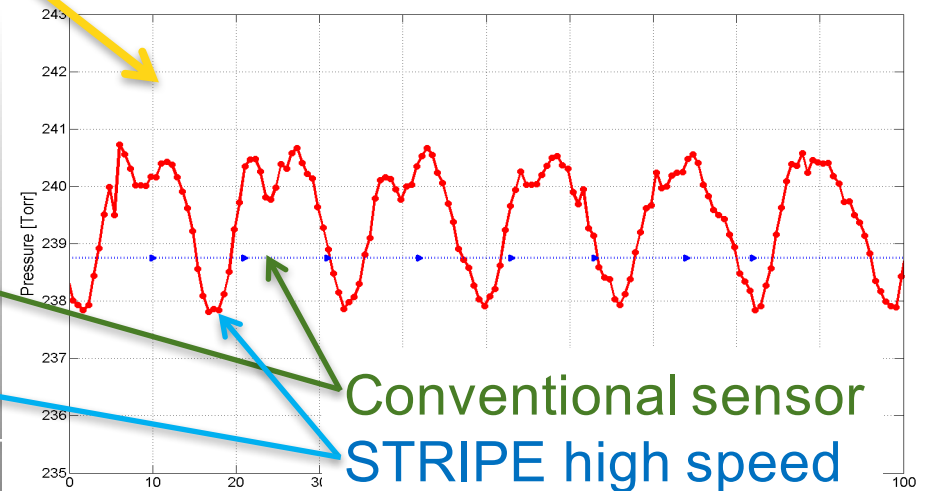
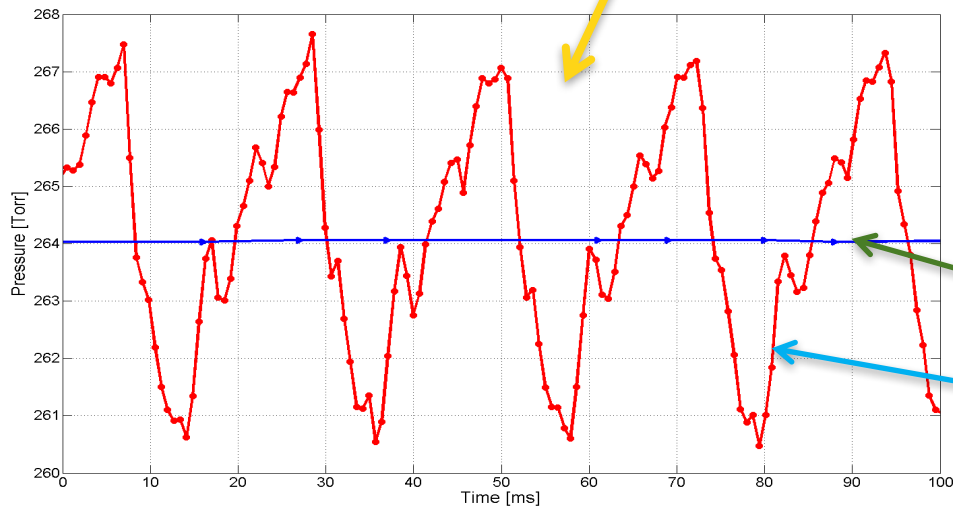


Example:
Membrane Pump

Pumping “signature”

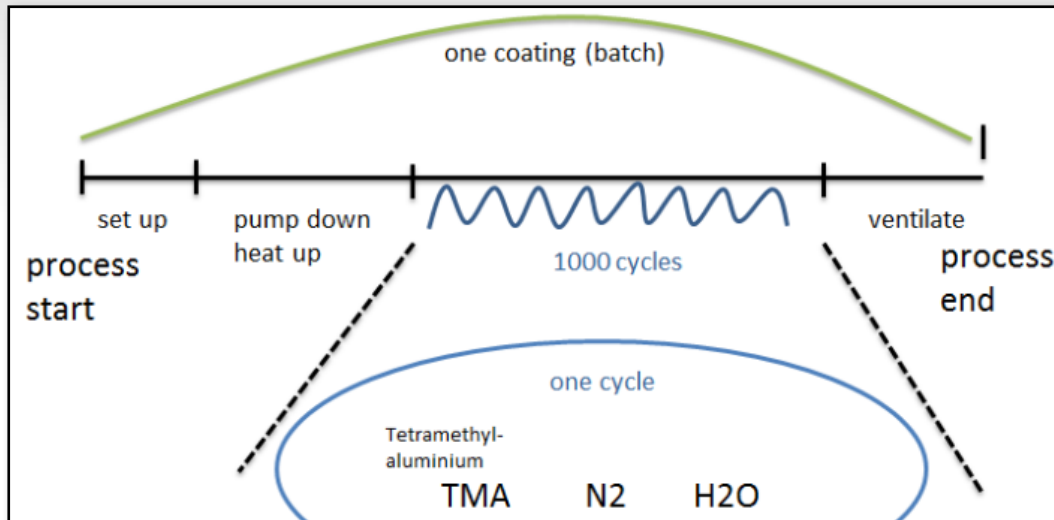
new

used

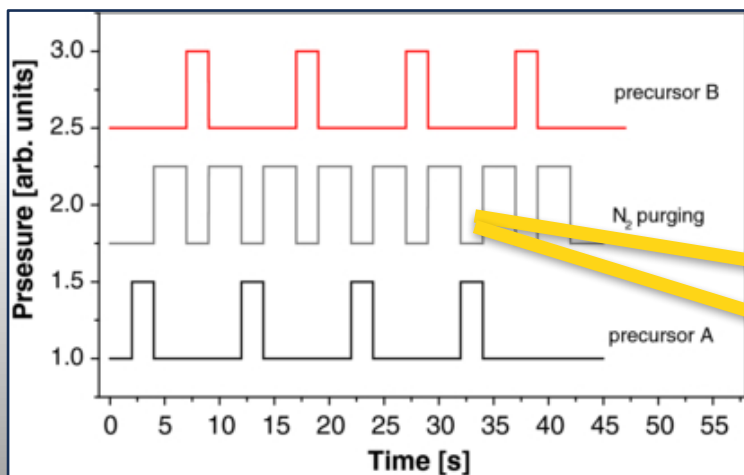


Conventional sensor
STRIFE high speed

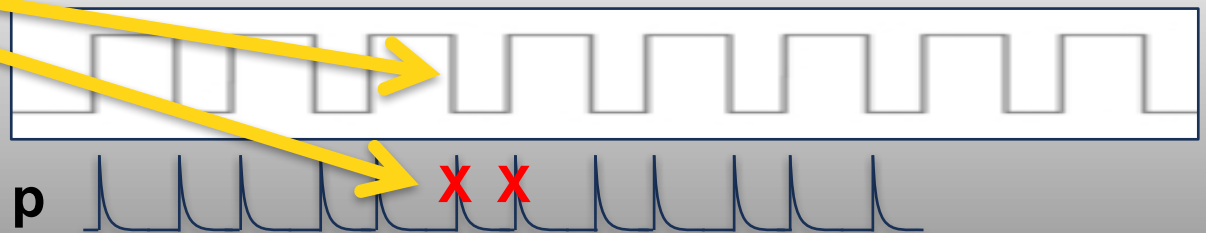
“See” vacuum



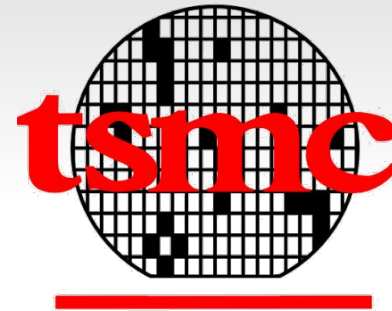
Example:
Atomic Layer
Deposition (ALD)



1 cycle = 1 Å = 0.1nm



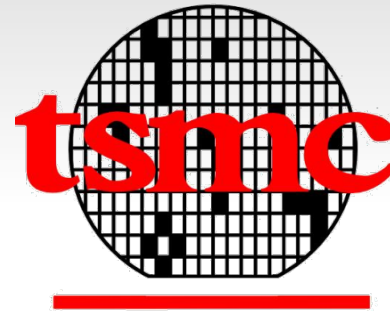
Semiconductor Industry



1.

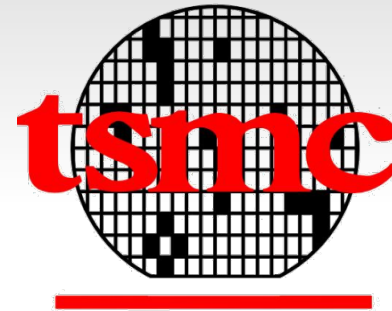
2.

Semiconductor Industry



- 50 B\$ annual CapEx in production tools
- One 300mm fab 1.5 - 2 B\$
- 7x24 operation
- **CapEx Burn rate 0.5 - 0.75 M\$ / day / fab**

Semiconductor Industry



- One unscheduled stop every 3rd year
- Causes 150-200 M\$ over lifetime for 65 fabs
- Mitigation 1 M\$ investment in high speed

1 : 200

There is more ...

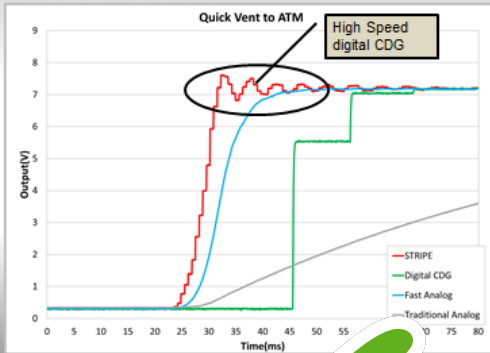


Monitoring

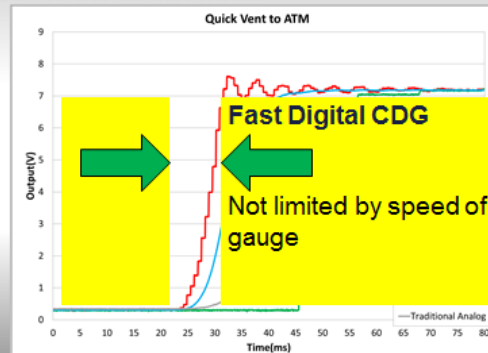
TOOL SPEED

PRECISION

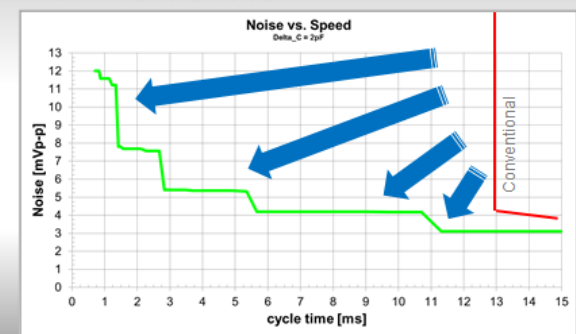
Process / Tool Monitoring



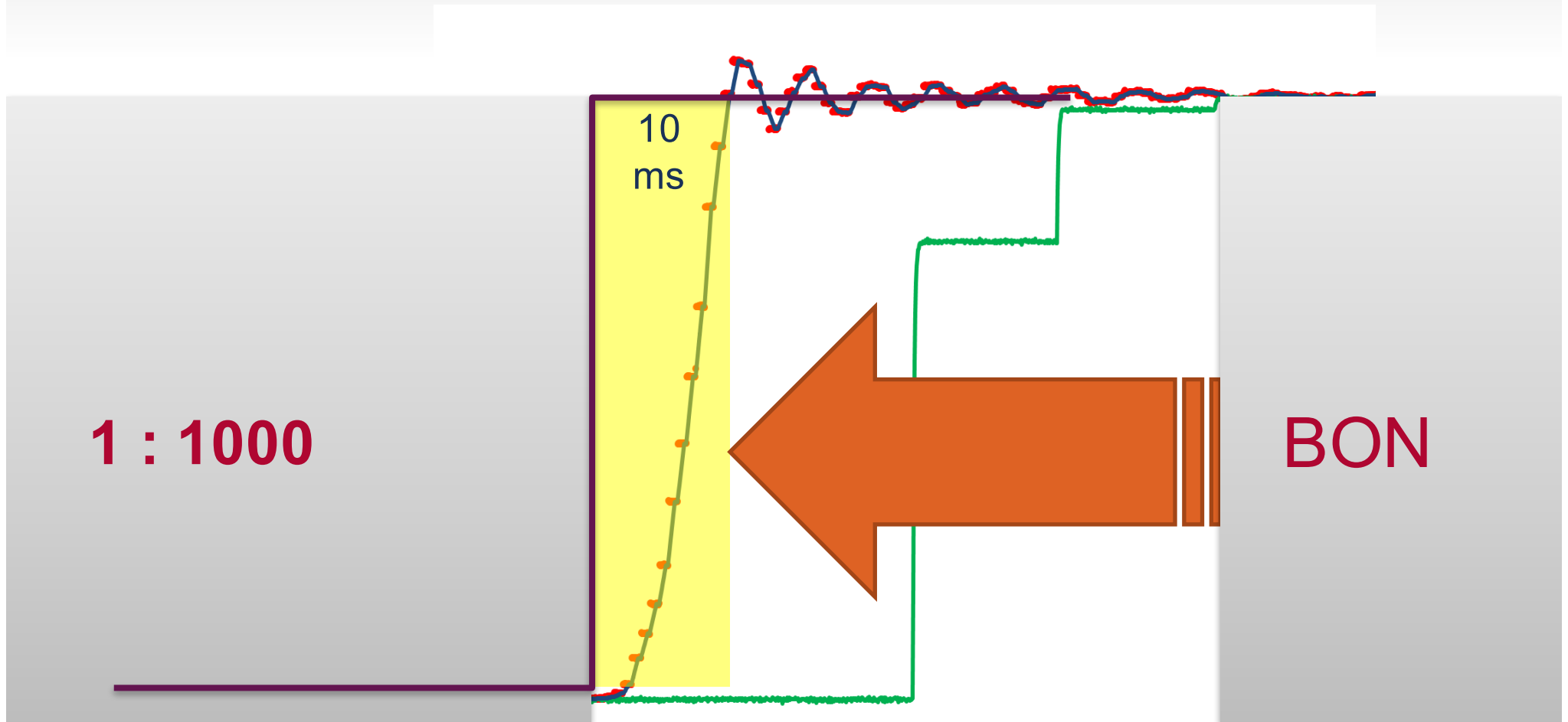
Fast State Transition



Fast Control Loop



Tool Speed



Precision

