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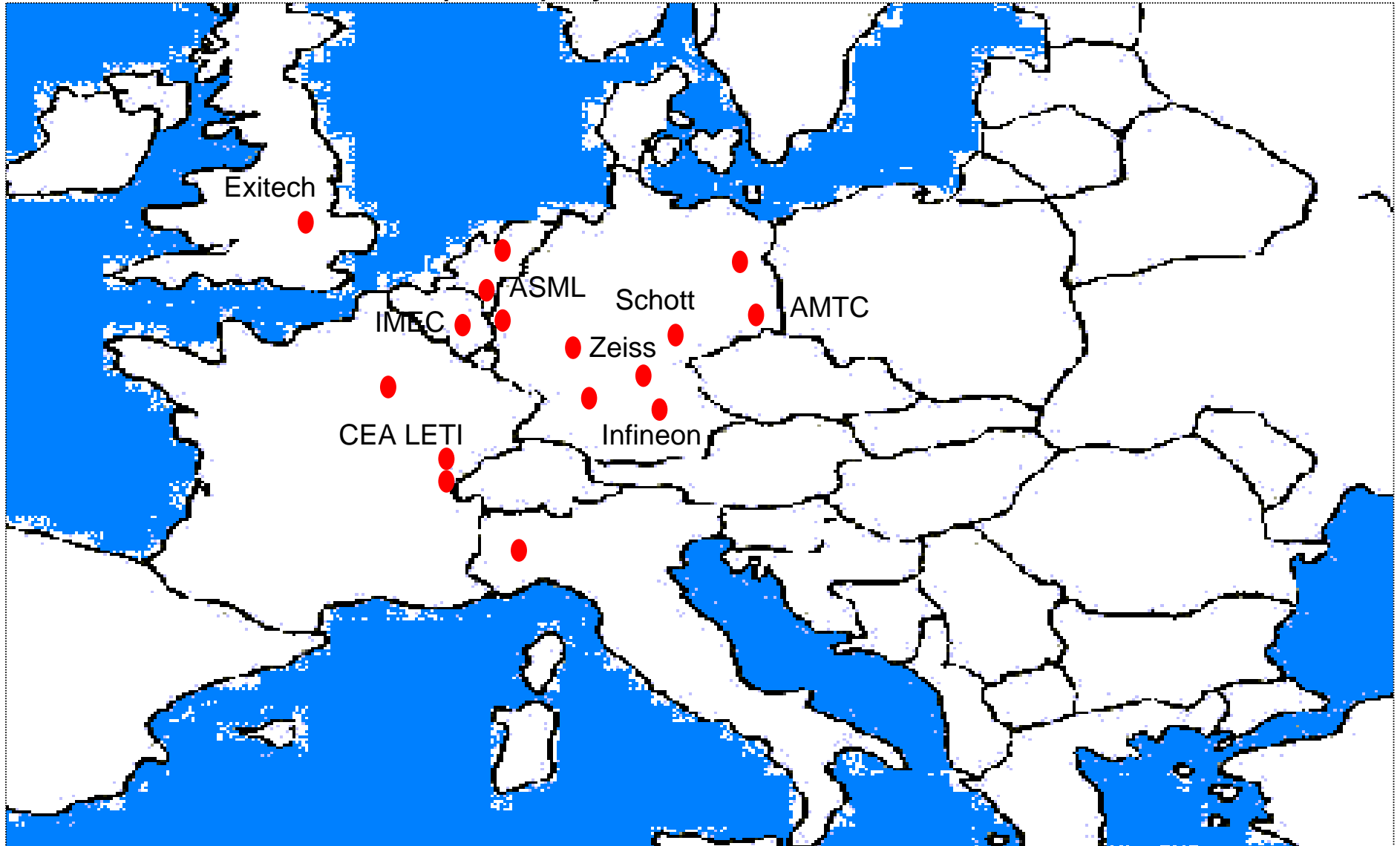
AdvancedMaskTechnologyCenter, Dresden

## Update - EUV Activities in Europe

Christian Holfeld  
(AMTC)

EUV Mask Workshop, Antwerp, October 3, 2003

*European players in the EUV business*



*EUV Activities in Europe*

**There are more than 40 companies in Europe working in the field of EUV lithography.**

**Strong European participation in process and tool development.**

**In the following, an update on the various activities is given. A selection out of a large number had to be made.**

*A few examples ...*

## **Xtreme (Germany)**

- EUV source for MS-13 microstepper to be delivered to Exitech.

## **Carl Zeiss (Germany)**

- manufacturing of projection optics box (POB) for micro exposure tool (MET)

## **Schott Lithotec (Germany)**

- shipment of full-stack EUV blanks
- high-speed reflectometer to be installed in 1Q2004 (AIXUV)

## **Infineon (Germany)**

- development of EUV mask technology
- first European EUV masks have been successfully printed on a full-field tool (ETS).
- TEUVL tool: EUV exposure tool for resist development (AIXUV)

*Some more examples ...*

## **Exitech (UK)**

- Exitech delivers EUV microstepper MS-13 (MET) to NanoFab 2 by December 2003
- 0.3 NA, small field tool, resolution 35 nm and below
- installation for resist development and early process learning
  
- EUV AIMS: supply alpha tool to ISMT (NanoFab 1, Albany)
- mask blank and defect inspection with target < 120 nm
- delivery scheduled for 3Q2005

## **German National Standards Institute PTB (Germany)**

- new reflectometer installed at synchrotron (Bessy II) end of 2002
- allows high load up to 50 kg
- accuracy: < 0.0015 nm resolution, < 0.015 % absolute reflectance

*And even more ...*

## **CEA LETI (France)**

- development of BEL (small-field exposure tool, 10x)
- involved in European funding projects: MEDEA+ Extumask / Excite
- mid-2002 installation, qualification ongoing

## **ASML (The Netherlands)**

- commitment to develop EUV exposure tool
- alpha-demo tool to arrive in December 2005
- production tool planned for January 2009

## **AMTC (Germany)**

- Advanced Mask Technology Center established by AMD, DPI and Infineon
- development of EUV mask technology

# ADVANCED MASK TECHNOLOGY CENTER



EUV Mask Workshop, Antwerp, October 3, 2003

## *The Power of Three*

IFX

AMD

DPI



**Advanced Mask Technology Center  
Dresden, Germany**

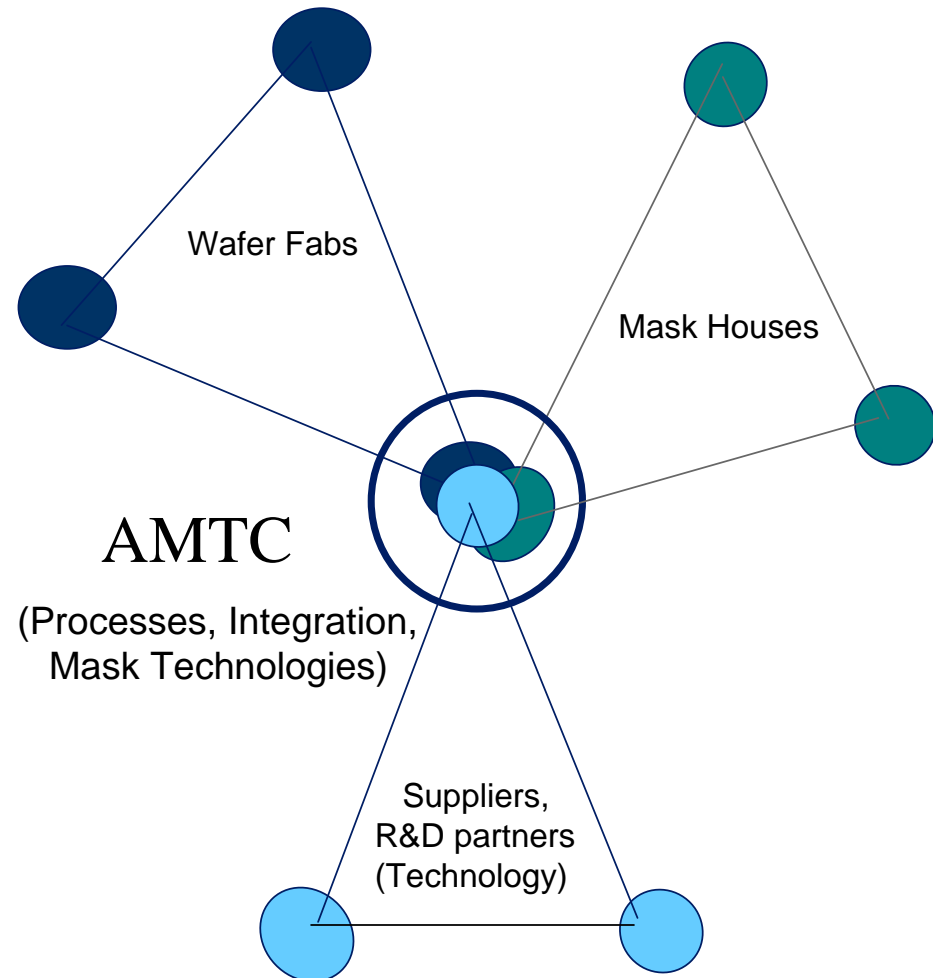
- Leading-edge mask house for all advanced mask types
- Strong focus on R&D
- Close cooperation to IFX and AMD wafer fabs

## *Establishment of AMTC*

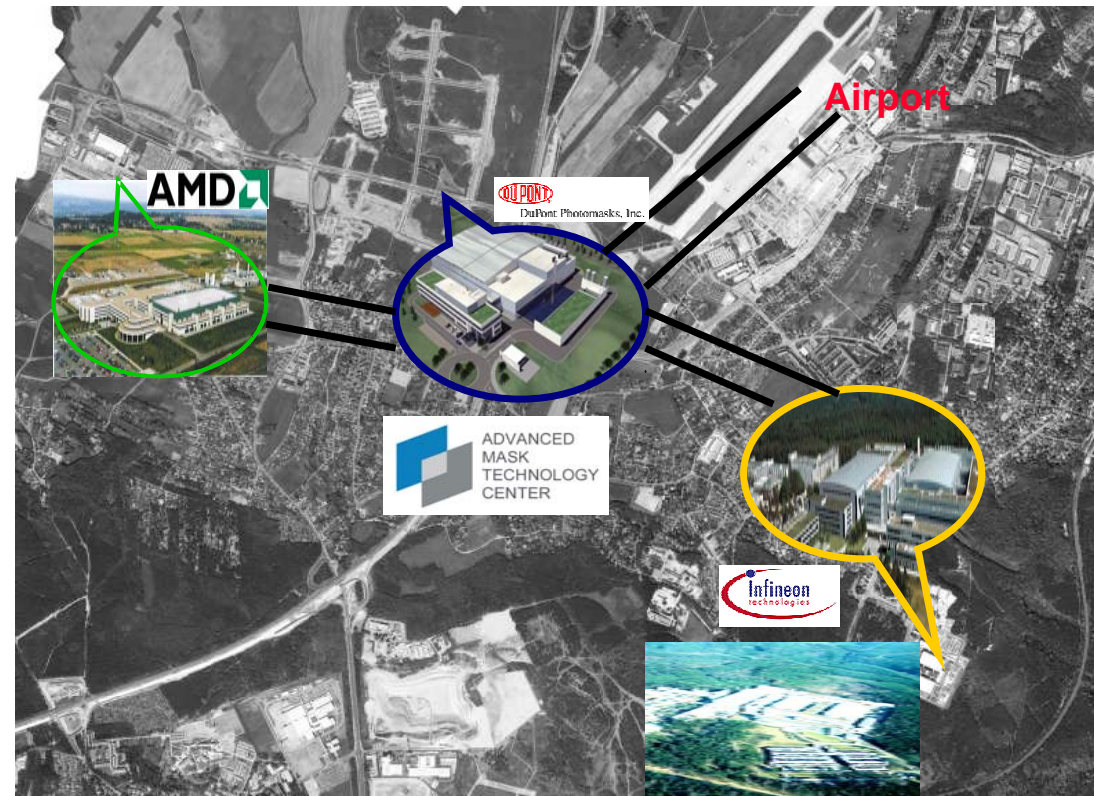
- Cornerstone laid in June 2002
- Tool move-in started April 2003
- Almost all tools on site
- First deliveries to customers by end of this year
  
- Best-of-the class equipment
  - e.g. Toshiba EBM-4000, DUV inspection KLA 525
- Cleanroom leaves enough space for extension

## Integration of Wafer and Mask Technology

Vision



Reality



## *Summary*

- Strong European participation in EUV development
- Several key tools developed in Europe
- AMTC: ramp-up of a leading-edge R&D mask center