

## Basic Test Facilities

- VHDI testing occurs in a clean room at KSU
- Cascade Microtech Alessi 6300 Probe Station using a Window's NT workstation.
- Custom LabVIEW application runs testing using a parsed net list file.



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## VHDI Testing Performance

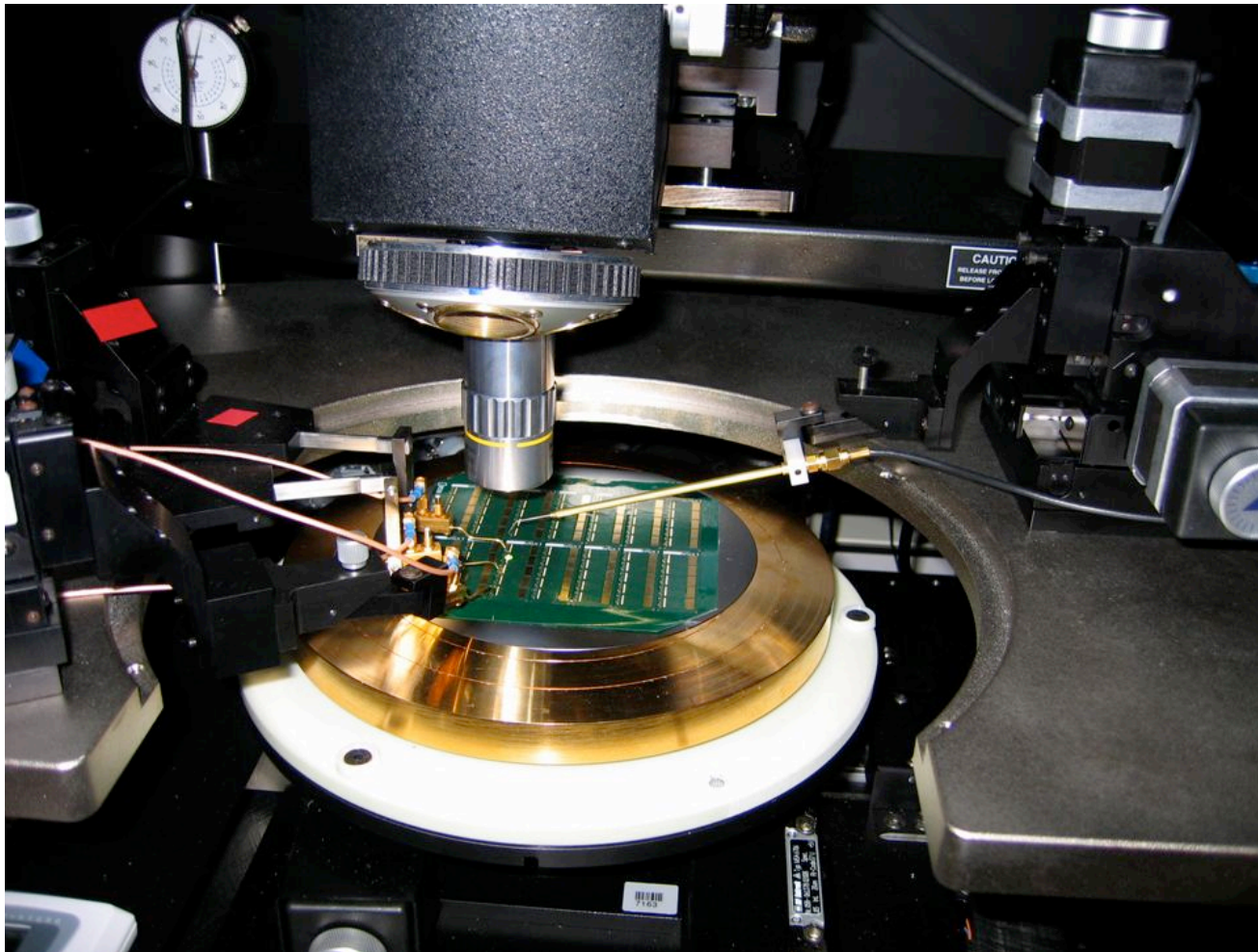
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- A typical Node test averages around 9 seconds.
- The chuck lowers, 1mm, then moves the stationary probes over the new node.
- Programmable Probe raises 1 mm and moves to second node.
- The 1mm travel was set due to the skirts on the original wafers tested not being glued down.
- Programmable probe must also raise 1mm
- Extra movement takes approximately 1 second per node, translating into about an hour of test time per wafer.
- Must have guaranteed feature height of less than .25mm to reduce raising and lowering distances for improved performance.



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## VHDI Probing



Probing  
1x5 right  
wafer.



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## Program output for Good VHDI

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- 3/23/05
- 3:05 PM
- VHDI Number: 6
- Chuck Theta -0.034983
- Probe Theta 0.000000
- Scope Theta -0.003000
- Operator: Nathan McNeil
- Finished: 3:52 PM
- Number of Nodes 345



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# Typical Error Output

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- 4/5/05
- 10:28 AM
- VHDI Number: 7
- Chuck Theta 0.000020
- Probe Theta -0.005998
- Scope Theta -0.003000
- Operator: Matt Spexarth
- Analog\_Out+ 1931 1073 Analog\_Out+ 197 778 1 1 Open
- Analog\_Out+ 8309 1073 Analog\_Out+ 197 778 1 0 Open
- Analog\_Out+ 14687 1073 Analog\_Out+ 197 778 1 0 Open
- Analog\_Out+ 5120 1073 Analog\_Out+ 197 778 1 1 Open
- Analog\_Out+ 11498 1073 Analog\_Out+ 197 778 1 0 Open
- Cal\_Trig\_Rst- 5603 1073 Cal\_Trig\_Rst- 197 2018 1 1 Open
- Cal\_Trig\_Rst- 11981 1073 Cal\_Trig\_Rst- 197 2018 1 0 Open
- GND 1506 492 GND 197 689 1 1 Open
- GND 1506 492 GND 197 2106 1 0 Open
- Finished: 11:18 AM
- Number of Nodes 329



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## Preliminary Testing Results

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- 1x5R wafers – two wafers with 14 circuits on each wafer.
- Fifteen of twenty eight circuits were good.
- Wafer with high failure had been previously reworked.
  
- 2x5 wafers – two wafers with 8 circuits on each wafer.
- Fourteen of sixteen circuits were good.
  
- Need to glue down skirts of VHDI laminate to improve testing speed.



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## Future Testing at KSU

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- EDL is willing to staff probestation operation up to 80 hours per week for testing.
- Need to have a firm production schedule to implement a testing schedule.
- Need VHDI net lists in advance of the wafers to create node lists.
- KSU is ready to continue testing!