Hard Disk Writing Process

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Hard Disk Operation

- The hard disk has “platters” which are flat disks coated on both sides with special material designed to store information in the form of magnetic material.
- The platters have a hole cut into the center and are stacked onto a spindle which is rotated at high speed.
- Heads, which are electromagnetic read/write devices, are mounted onto an arm and record information onto the disk.
Inductive Write Element
Hard Disk Platters

- The platter is where the data is recorded.
- The coating on these platters and the quality of them must be perfect.
- Platters are precision machined and then treated so that there are no imperfections.
- The hard disk is then assembled with the platters in a clean room to avoid contamination of dust or dirt getting on the platters.
- The read/write head does not touch the platters, it hovers less than 7 millionths of an inch from the disk.
The Basics of Writing Process

- By sending a current through a loop of wire, the ferrite material in the head channels a magnetic field to the hard disk.
- The dipoles in the hard disk align themselves to this field.
Evolution of Magnetic Hard Drive Heads

Evolution of Magnetic Read/Write Sensors

Ferrite Inductive MnFe Read/Write Head
Wire wound coil
Machined Pole Pieces
Gap Width Controlled by Films and Assembly Tolerances

Thin Film Inductive Write
Advanced GMR Read Head

Thin Film Inductive Write GMR Read Head
Write Wide-Read Narrow
Four Contact Structure
SAL NiFe MR Film

Thin Film Inductive Write MR Read Head
Write Wide-Read Narrow
Four Contact Structure
SAL NiFe Poles
Two Contact Structure

IBM
Works Cited

- www.pcguide.com
- www.research.ibm.com