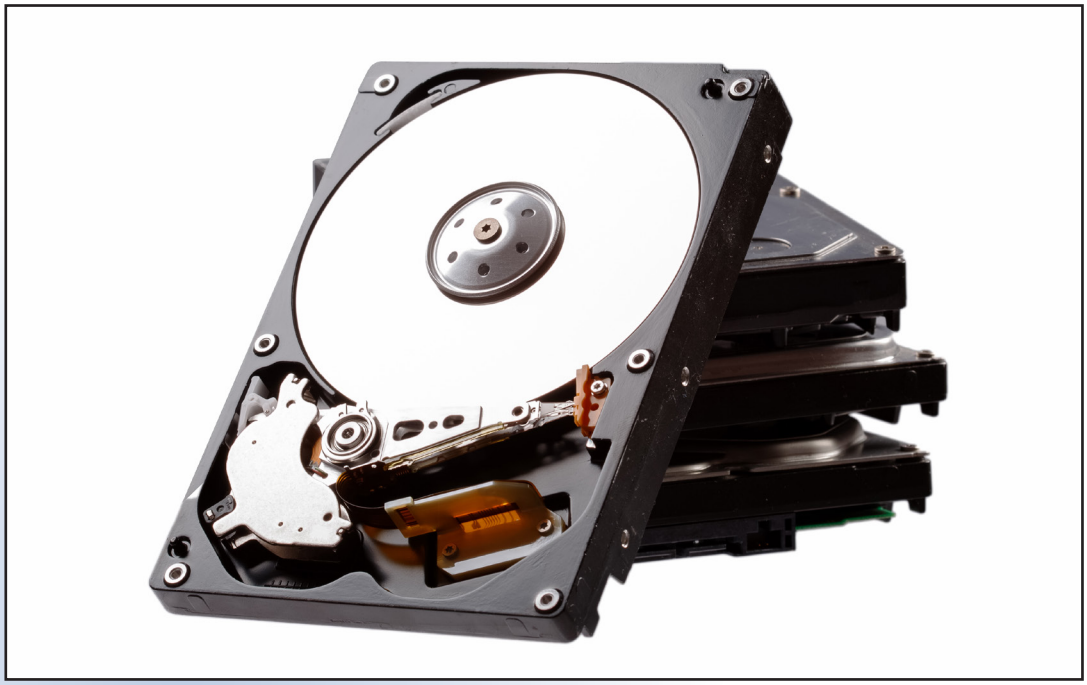

Hard Disk Drive (HDD) Destroyer: Positive destruction of data and drives

Technology marketing summary:

Personal electronics, from computers to laptops to smartphones, contain a vast amount of critical data. The challenge of disposing of the device's hard drive when no longer needed, while ensuring data never falls into the wrong hands, becomes problematic. A variety of methods exists for hard drive/data destruction, including degaussing (exposing platen to a strong magnetic field), physical destruction (smashing, grinding, machining, drilling, melting, etc.), and software data removal/overwrite, but these methods have limitations and may not conclusively render all data irretrievable. Also, these methods all require an external power source and will not work during power outages.

Idaho National Laboratory researchers have designed the Hard Disk Drive (HDD) Destroyer — a method and device that would permanently and completely destroy hard drives and data using a combination of mechanical and thermal means.

HDD Destroyer would be portable, simple to use, work rapidly and able to accommodate different hard drive form factors. Unlike purely mechanical means such as punches or drills, HDD Destroyer would substantially eradicate data information on areas of the drive adjacent to any holes or mechanical damage. HDD Destroyer uses cartridges containing pyrotechnic material to melt and deposit metal directly onto the hard drive platen. The molten metal would pierce the hard drive case and disperse onto the platen, destroying magnetic particles on the surface as well as heating the platen to a temperature that destroys all data stored on the hard drive. Finally, heat from the burning pyrotechnic material would melt holes into the platen in one or more locations, further destroying the platen.

HDD Destroyer cartridges may be triggered by nonelectric methods in the event of a power outage. A power source is not required to effectively destroy hard drives and data, although the fan would be inoperable during use without external power.

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The Energy of Innovation

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Technology description:

As planned, HDD Destroyer's chamber would be about the size of a large toaster oven. Once a personal electronic device is placed inside, an interlocked door would close to contain the reaction. A thermal lock would also engage to prevent opening until the interior is safely cooled. A cartridge containing pyrotechnic material and metal would be dropped until it contacts the top of the personal electronic device, and be electrically ignited via an external button. Once ignited, the heat of the pyrotechnic material would melt the metal, which would be propelled onto and into the hard drive.

Effluent from the reaction would be collected via a small ventilator fan with a HEPA filter, provided external power is available. After a short cooling period, the door would be unlocked and the hard drive would drop into a locked and sealed steel chamber, along with the spent cartridge. A new cartridge would be loaded automatically so the process could be repeated.

The steel storage chamber would be locked and could only be opened with a key once the thermal lock was released. New cartridges would be stored on the machine and dispensed as needed.

Technology benefits:

- Thorough destruction process, using multiple methods to ensure data is destroyed
- Immediate visual confirmation of destruction
- Fast process that can be rapidly repeated
- Much smaller footprint than those of existing physical destruction devices

Applications:

Personal electronics, computers onboard unmanned aerial vehicles