Nextreme
THERMAL SOLUTIONS™

Company Snapshot

Business Focus
- Designs and manufactures micro-scale thermal and power management products that overcome thermal and power constraints in electronics for the semiconductor, photonics, consumer, automotive and government/aerospace industries.

History
- RTI International spun-out Nextreme in December 2004 to commercialize thin-film thermoelectric technology.

Technology
- Nano-engineered thin-film thermoelectric based on the Peltier effect (cooling) and Seebeck effect (power generation).
- Uses proven, fully scalable process to deliver new, functionality at the discrete, chip and wafer levels.
- Fully scalable technology integrates seamlessly into the widely accepted copper pillar bumping process used by Intel, Amkor, Casio and other industry leaders.
- Implementation requires only a circuit design change and minimizes the need for manufacturing changes.

Intellectual Property
- 34 patents, pending and provisional

Products
- Thermal Copper Pillar Bump - integration of thermoelectric material into the widely accepted copper pillar bumping process for cooling and power generation applications in high-volume electronic packaging, particularly in flip chip applications.
- OptoCooler™ Family – microscopic size and high heat pumping capability are particularly well suited for opto-electronics applications.
- Embedded thermoelectric cooler (eTEC™) - a miniature heat pump for rapid cooling and heating. Cools hot spots to improve performance, reliability, yield, and cost of high-performance CMOS ICs, RF components, HB-LEDs and other optoelectronic chips. Performs precision thermal management of temperature sensitive devices, such as photonics ICs, DNA analysis chips, and IC test systems.
- Miniature thin-film thermoelectric generator (eTEG™) - enables recycling of heat to electricity. Ideal for waste heat conversion applications, the solid state eTEG delivers power generation densities (>3 W/cm2) in excess of those achieved using bulk materials and is optimized to provide power in a form factor that can be as much as 20x thinner than bulk material alternatives.

Advantages

- Nextreme's thermal copper pillar bump addresses the most challenging thermal and power management constraints in electronics today, and delivers the only fully-scalable technology solution by leveraging the existing, high-volume flip chip manufacturing infrastructure.

Management Team

- Jim Mundell - Chief Operating Officer
- Rick Scott - Chief Financial Officer
- Dave Koester - VP of Engineering
- Steve Brooks - Director of Operations

Employees

- 35 employees; experienced start-up team and world-renowned experts in electronics, thermal management and pillar bump technology.

Financial

- Venture-backed; $14M Series A; $21M Series B.
- Investors include Chart Venture Partners, ITOCHU Corporation, ITOCHU Technology Ventures, Inc.; RedShift Ventures; Harris & Harris Group, Inc.; In-Q-Tel; and RTI International.

Manufacturing

- Manufacturing of discrete coolers from Nextreme will be supported with production at the Company's US facility in North Carolina.
- Die level integration will largely be outsourced off shore.
- Wafer level processing will be licensed to merchant and captive providers of wafer-level flip chip processes.

Availability

- Entered customer product qualification and pilot production in December 2007 and volume production in 2008.

Headquarters Location

- Based just outside Research Triangle Park, North Carolina
  Nextreme Thermal Solutions, Inc.
  3908 Patriot Dr.
  Suite 140
  Durham, NC 27703-8031
  Phone: +1 919-597-7300
  Fax: +1 919-597-7301

Contact

- Sales: Bill Charuk, bcharuk@nextreme.com, +1 919-593-7328
- Media: Karl von Gunten: kvongunten@nextreme.com; +1 919-593-7348