Electronics Cooling Systems

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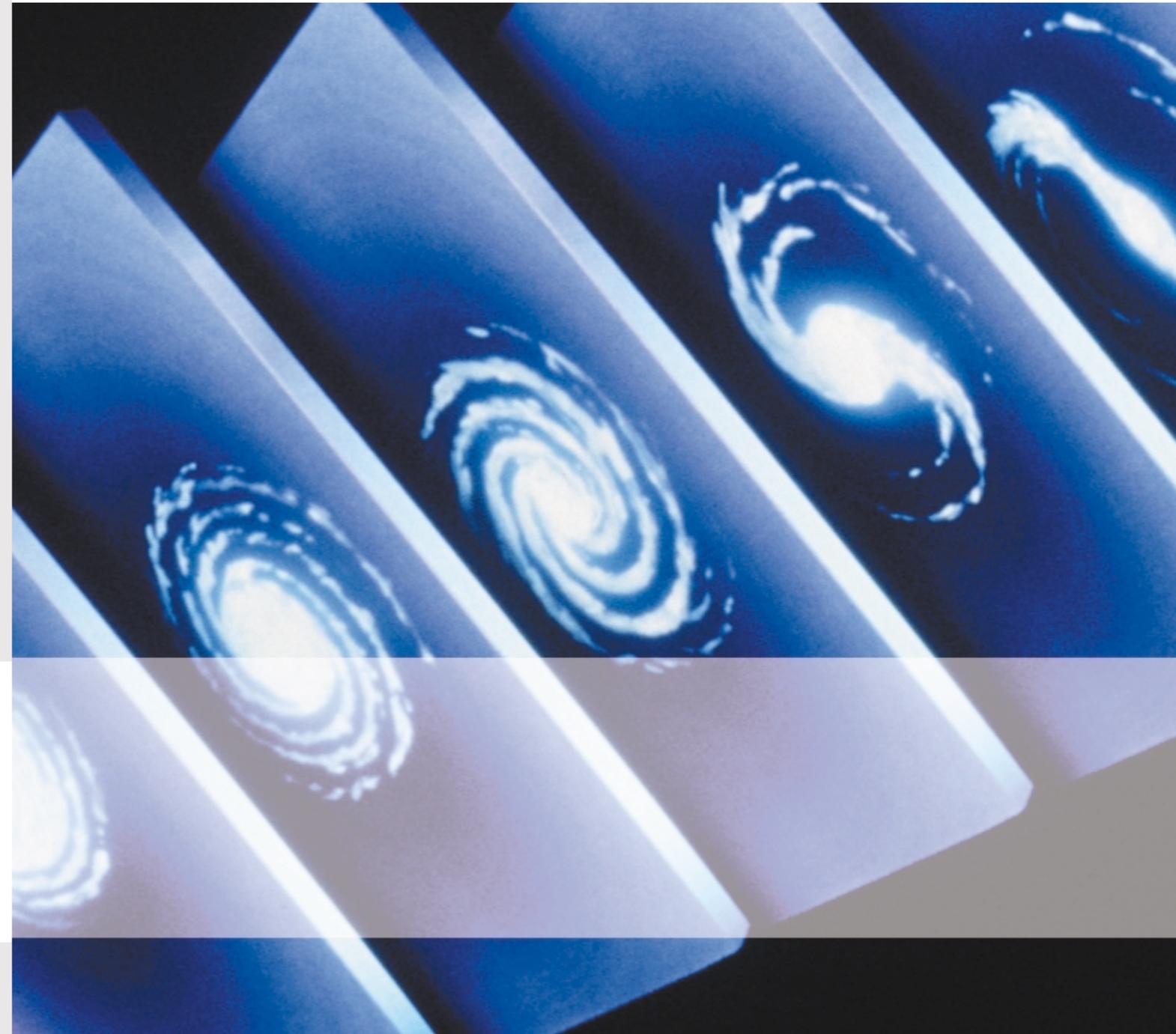São Caetano do Sul
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# DELPHI

Driving Tomorrow's Technology

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# DELPHI

# We keep you running with enclosure cooling systems by Delphi.

For nearly 100 years, Delphi has been developing compact, innovative cooling solutions for one of the world's most demanding environments — your vehicle.

Now we're applying those decades of cooling expertise to another critical application — electronic data and telecommunications enclosures. Delphi's new Electronic Cooling Systems(ECS) are designed and built using the same math-based engineering design tools, including computational fluid dynamics, stereolithography prototyping and finite element analysis.

The result is the world's most advanced electronic equipment enclosure air cooling system. It's simple. Reliable. And more efficient than any other air cooling technology available.

It's just what you'd expect from the world's largest and most diversified manufacturer of automotive electronic and mechanical components, where we develop everything from smart sensors to software algorithms to integrated components, modules and systems solutions.

And it's just what you need to keep your systems running cooler, longer. So you get the performance you expect and the reliability you need from today's powerful datacom processors.
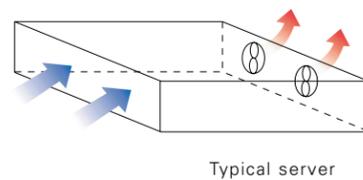
### How to beat the heat

*Typical server*

- Server system fans draw cool air in through the front of the server.
- The cool air cools the electronic equipment contained in the server box.
- The hot air is exhausted out the back of the server box.

### Run longer

**Cool = Long Life**
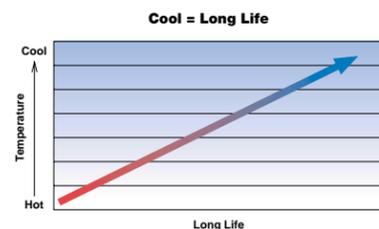
- The leading cause of electronic equipment failure is operating temperature too high.
- The cooler electronic equipment is maintained, the longer it lasts.
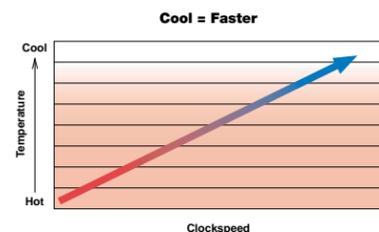
### Run faster

**Cool = Faster**

- Every 10°C microprocessor temperature reduction, means about a 2% increase in microprocessor clockspeed.

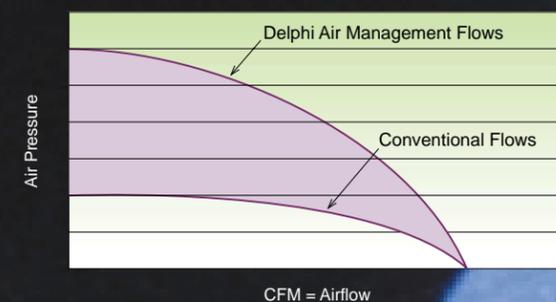## Industry OEM's predict thermal management problem to get worse

Watts/ft$^2$ vs. year (2000–2010), showing Servers & DASD and Workstations.
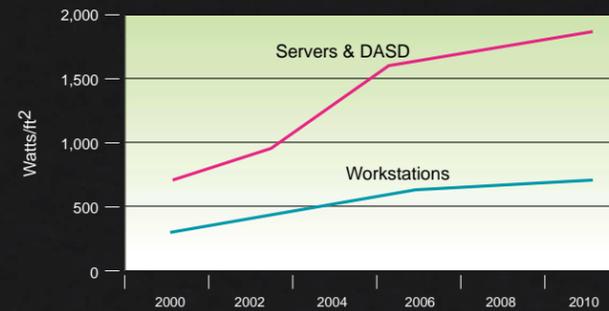
Reprinted with permission of The Uptime Institute from a White Paper titled Heat Density Trends in Data Processing, Computer Systems, and Telecommunications Equipment Version 1.0

- Facility and enclosure heat loads are increasing across every market segment.
- Historic heat density data and current trends all point toward an increasing thermal management problem.
- Microprocessors getting smaller and faster.
- It is expected that many data centers and technology spaces will have difficulties in upcoming years maintaining cooling capacities.

## Delphi understands Air Management

Air Pressure vs. CFM = Airflow, showing Delphi Air Management Flows and Conventional Flows.

Source: Delphi Corporation

- Delphi air management systems provides the punch to drive cooling air through small openings.
- As in your vehicle, Delphi can direct cooling air to where it is needed.

## ECS Enclosure Blower Reduces Cabinet Hotspots up to 10°F.

*ECS Enclosure Blower Improves Air Distribution.*

Front — Rear — Servers — Enclosure Blower
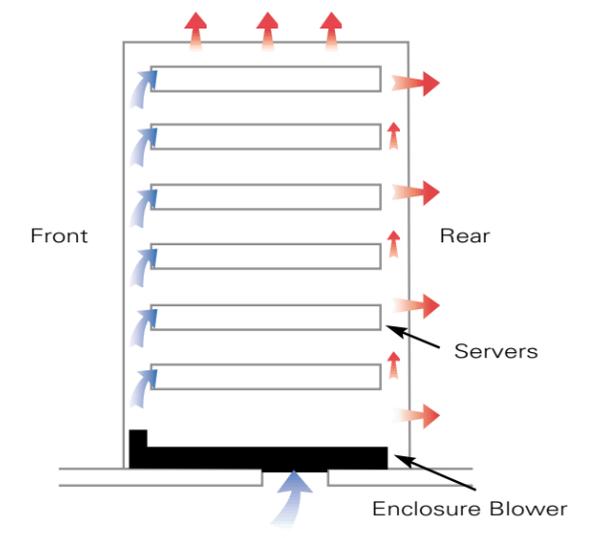
Designed for use in raised-floor cooling environments, the Delphi ECS Enclosure Blower draws cool air from beneath the floor and optimally delivers the coldest available air directly to server fronts in datacom cabinets, where cooling air intakes are located.

- Rack mounted blowers draw in cool, filtered air.
- Delivers the air to the fronts of the servers to maximize cooling effects.
- Generates significantly greater discharge pressure than conventional fans.
- Designed to easily integrate into your 19" rack.
- Designed for quiet, long-life operation.