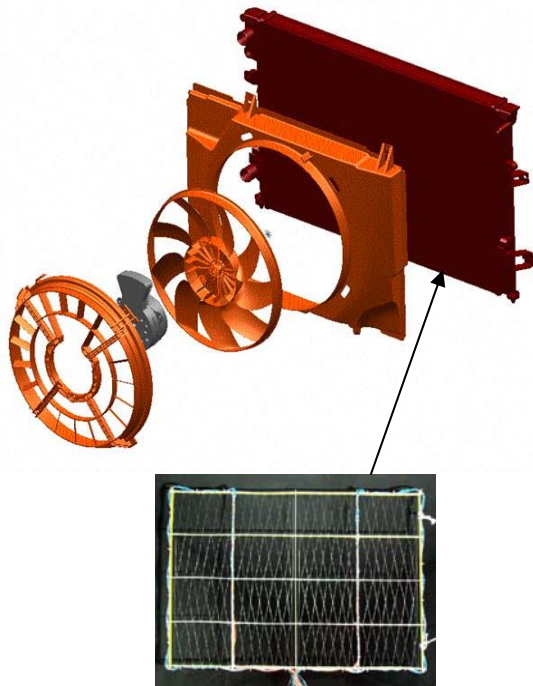
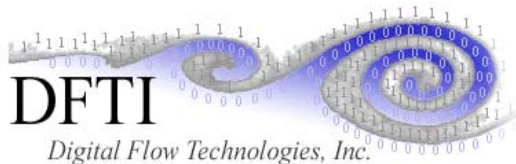


# Thermal Transient Anemometer (TTA)



**Full coverage  
temperature and  
velocity distribution  
measurements**



<http://www.dfti-us.com>

## Basic Capabilities

- Resolve the spatially averaged velocity and temperature distributions for the 16 segments (cells) on the aft face of a heat exchanger
- Obtain an accurate measure of the total flow rate and the transferred thermal energy through the radiator from the summations of the cells' data.

Figure 1 shows the TTA as Installed in a vehicle.

The TTA has been developed to provide critical information for the diagnostics of an existing cooling air circuit configuration. Specifically, the effects of the fan size and speed, the geometric shapes of the fan blades, shroud, stators, etc. and the spacing between the system components are known to influence the total air flow and its distribution. Considering the radiator to be described as an array of 4x4 cells, the critical information is the spatially averaged velocity and temperature in each cell. A representative TTA cell is shown in figure 2.

## TTA System Components

- Control Interface
  - Windows graphical user interface
  - Digital control unit
  - Compatible with any flow sensing array up to 32 channels
- Flow sensing array (TTA frame)
  - Array configured for particular application
  - Array composed of N rows x M columns
  - $N \times M \leq 32$

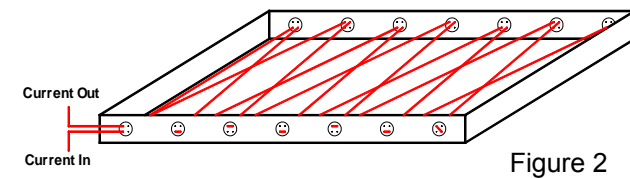


Figure 2

## Typical installation of the TTA

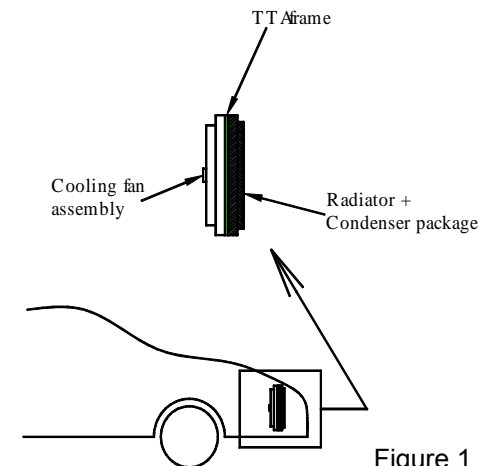
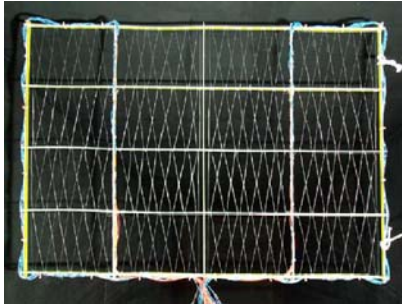


Figure 1

A 4x4 array of TTA cells is shown in figure 3. This array size was selected to fully cover a minivan radiator. DFTI will provide a 4x4 array to cover the fin area of any given application.



A 16 cell prototype TTA array.

Figure 3

An installed TTA unit on a minivan radiator with the cooling fan/shroud assembly removed.



The TTA electronics (see figure 4) receives the start command from the user's data acquisition system, the 16 cells are sequentially sampled, the cell average velocity and temperature data are communicated to the user's PC with time reference information to synchronize these

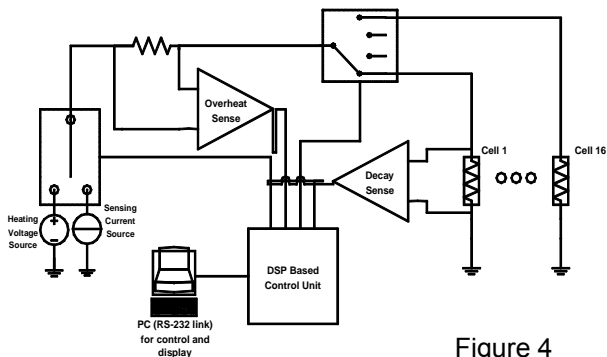


Figure 4

## Contact Information

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## Further Information

The DFTI web site provides more information on the TTA.

A DFTI Technical Memorandum is also available that provides a commentary on the TTA in addition to the alternative methods of Kiel probes and propeller anemometers

These documents are available for download from the website.

## Pricing Information \*

### Basic 16 Channel TTA

- Control electronics
- Cable connections to the user's PC serial input
- Software for PC including the TTA GUI

**Total Price** **\$12,850**

### TTA Frames

- Stainless steel frame for the 4x4 array
- Strung with nominal .006" tungsten sensor wire
- Overall dimensions to the user's specification (length-width)

**16 cells** **\$3,950**

**Additional cells** **\$250/cell**

- Custom configurations available
- Each frame provided with
  - Temperature coefficient of resistance calibration
  - Velocity calibration

Prices effective as of August 2008 (subject to change — please inquire for current pricing)