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10/2/17

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MTSU Clean Energy Initiative Project Funding Request

There are five (5) sections of the request to complete before submitting.

1. General Information	
Name of Person Submitting Request Jeff McConnell	
Department/Office Facilities Services	Phone # (Office)898.5883
MTSU Box # 0032	Phone # (Cell)
E-mail	Submittal Date 10/2/2017

2. Project Categories (Select One)			
Select the category that best describes the project.			
<input checked="" type="checkbox"/>	Energy Conservation/Efficiency	<input type="checkbox"/>	Sustainable Design
<input type="checkbox"/>	Alternative Fuels	<input type="checkbox"/>	Other
<input type="checkbox"/>	Renewable Energy		

3. Project Information
<p>a. Please provide a brief descriptive title for the project.</p> <p>b. The project cost estimate is the expected cost of the project to be considered by the committee for approval, which may differ from the total project cost in the case of matching funding opportunities. Any funding request is a 'not-to-exceed' amount. Any proposed expenditure above the requested amount will require a resubmission.</p> <p>c. List the source of project cost estimates.</p>
3a. Project Title: Air Flow meter for facilities staff to measure air flow in HVAC systems and provide recommendations.
3b. Project Cost Estimate \$3500
3c. Source of Estimate
Supplier, in house labor for installation and collection of data

4. Project Description

(Completed in as much detail as possible.)

- a. The scope of the work to be accomplished is a detailed description of project activities.
- b. The benefit statement describes the advantages of the project as relates to the selected project category.
- c. The location of the project includes the name of the building, department, and/or specific location of where the project will be conducted on campus.
- d. List any departments you anticipate to be involved. Were any departments consulted in preparation of this request? Who? A listing may be attached to this form when submitted.
- e. Provide information for anticipated future operating and/or maintenance requirements occurring as a result of the proposed project.
- f. Provide any additional comments or information that may be pertinent to approval of the project funding request.

4a. Scope: Work to be accomplished

Campus heating and ventilation systems

This measuring device will allow facilities to trend and document air flow at specific locations. For example to calibrate and maintain a fume hood in the Science buildings this device could be used to measure, and adjust flow rates, as required. This could be done with current staff and the savings could be determined by not having to hire contractors to bring their own device to measure and trend then provide the information for us.

4b. Scope: Benefit Statement

Allowing facilities to respond to events and issues with air flow problems in a timelier manner. Savings will be seen from reduced costs in outsourcing the work to be provided.

4. Project Description (continued)
<p>4c. Location of Project (Building, etc.)</p> <p>Campus</p>
<p>4d. Participants and Roles</p> <p>Facilities Engineer: data analysis and recommendations</p>
<p>4e. Future Operating and/or Maintenance Requirements</p> <p>Facilities Technician: Mechanical adjustments to systems to optimize performance.</p>
<p>4f. Additional Comments or Information Pertinent to the Proposed Project</p> <p>n/a</p>

5. Project Performance Information

Provide information if applicable.

- a. Provide information on estimated annual energy savings stated in units such as kW, kWh, Btu, gallons, etc.
- b. Provide information on estimated annual energy cost savings in monetary terms.
- c. Provide information on any annual operating or other cost savings in monetary terms. Be specific.
- d. Provide information about any matching or supplementary funding opportunities that are available. Identify all sources and explain.

5a. Estimated Annual Energy Savings (Estimated in kW, kWh, Btu, etc.)

5b. Annual Energy COST Savings (\$)

5c. Annual Operating or Other Cost Savings. Specify. (\$)

5d. Matching or Supplementary Funding (Identify and Explain)

n/a

VELOCICALC® AIR VELOCITY METERS MODELS 9515, 9535, 9535-A, 9545 AND 9545-A

The dependable TSI VelociCalc® Air Velocity Meters measure air velocity and temperature. Models are available to calculate flow rate, perform statistical calculations, and measure humidity with dew point and wet bulb temperature conversions.

The Model 9515 is an economical choice for a digital air velocity meter, without compromising accuracy or precision. Professionals find them to be the ideal tool for face velocity measurements in fume hoods, spray booths, or ventilation system checks.

The Models 9535 and 9545 Air Velocity Meters simultaneously measure and data log several ventilation parameters using a single probe with multiple sensors. Both models measure velocity, temperature and calculate flow.

The Model 9545 also measures relative humidity, and calculates dew point and wet bulb temperature.

Applications

- + HVAC system performance
- + Commissioning
- + Plant maintenance
- + Critical environment certification
- + Duct traverses

Features and Benefits

- + Accurate air velocity measurement
- + Easy to read display
- + Simple to operate
- + Calibration certificate included

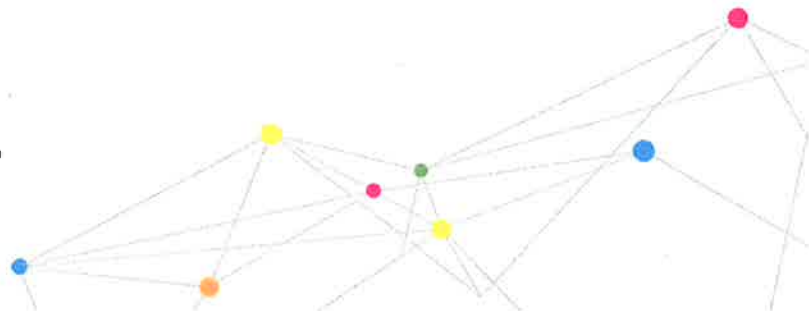
Models 9535, 9535-A, 9545 and 9545-A

- + Simultaneously measure temperature and velocity
- + Displays up to three measurements simultaneously
- + Calculates volumetric flow and actual/standard velocity
- + Data log 12,700+ samples and 100 test IDs
- + LogDat2™ downloading software included
- + Articulated probe versions available (9535-A and 9545-A)
- + Measures humidity (Model 9545 and 9545-A)

Model 9545



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SPECIFICATIONS

VELOCICALC® AIR VELOCITY METERS MODELS 9515, 9535, 9535-A, 9545 AND 9545-A

Velocity

Range (9515)	0 to 4,000 ft/min (0 to 20 m/s)
Range (9535 and 9545)	0 to 6,000 ft/min (0 to 30 m/s)
Accuracy (9515) ¹ ²	±5% of reading or ±5 ft/min (±0.025 m/s), whichever is greater
Accuracy (9535 and 9545) ¹ ²	±3% of reading or ±3 ft/min (±0.015 m/s), whichever is greater
Resolution	1 ft/min (0.01 m/s)

Duct Size (9535 and 9545)

Dimensions	1 to 250 inches in increments of 0.1 in. (1 to 635 cm in increments of 0.1 cm)
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Volumetric Flow Rate (9535 and 9545)

Range	Actual range is a function of velocity and duct size
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Temperature

Range (9515, 9535 and 9535-A)	0 to 200 °F (-18 to 93°C)
Range (9545 and 9545-A)	14 to 140°F (-10 to 60°C)
Accuracy ³	±0.5°F (±0.3°C)
Resolution	0.1°F (0.1°C)

Relative Humidity (9545 only)

Range	5 to 95% RH
Accuracy ⁴	±3% RH
Range	0.1% RH

Instrument Temperature Range

Operating (Electronics)	40 to 113°F (5 to 45°C)
Models 9515 and 9535	
Operating (Probe)	0 to 200°F (-18 to 93°C)
Model 9545 Operating (Probe)	14 to 140°F (-10 to 60°C)
Storage	-4 to 140°F (-20 to 60°C)

Data Storage Capabilities (9535 and 9545)

Range	12,700+ samples and 100 test IDs
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Logging Interval (9535 and 9545)

1 second to 1 hour

Time Constant (9535 and 9545)

User selectable

External Meter Dimensions

3.3 in. x 7.0 in. x 1.8 in. (8.4 cm x 17.8 cm x 4.4 cm)

Meter Weight with Batteries

0.6 lbs. (0.27 kg)

Meter Probe Dimensions

Probe Length	40 in. (101.6 cm)
Probe Diameter of Tip	0.28 in. (7.0 mm)
Probe Diameter of Base	0.51 in. (13.0 mm)

Articulating Probe Dimensions

Articulating Section Length	7.8 in. (19.7 cm)
Diameter of Articulating Knuckle	0.38 in. (9.5 mm)

Power Requirements

Four AA-size batteries or AC adapter

	9515	9535, 9535-A	9545, 9545-A
Velocity range 0 to 4000 ft/min (0 to 20.00 m/s)	+		
Velocity range 0 to 6000 ft/min (0 to 30.00 m/s)		+	+
Temperature	+	+	+
Flow		+	+
Humidity, wet bulb, dew point			+
Probe	Straight	Straight or -A articulated	Straight or -A articulated
Variable time constant		+	+
Manual data logging		+	+
Auto save data logging			+
Statistics		+	+
Review data		+	+
LogDat2™ downloading software		+	+
Certificate of Calibration	+	+	+

¹ Temperature compensated over an air temperature range of 40 to 150°F (5 to 65°C).

² The accuracy statement begins at 30 ft/min through 4000 ft/min. (0.15 m/s through 20 m/s) for the Model 9515, and 30 ft/min through 6,000 ft/min (0.15 m/s through 30 m/s) for Models 9535 and 9545.

³ Accuracy with instrument case at 77°F (25°C), add uncertainty of 0.05°F/°F (0.03°C/°C) for change in instrument temperature.

⁴ Accuracy with probe at 77°F (25°C). Add uncertainty of 0.1% RH/°F (0.2% RH/°C) for change in probe temperature. Includes 1% hysteresis.

Specifications are subject to change without notice.

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TSI Incorporated - Visit our website www.tsi.com for more information.

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