

## **Air/Fluid Velocity Measurement System**

Specifications for two velocity measurement systems are mentioned here. Please provide quotation for one or both systems (separately). The first system is for air velocity measurement in one direction and second is for all three components.

**Application:** Air velocity measurement in the wake of a rotor (scaled model of a helicopter).

### **Description:**

The system will be used to gather time history of air velocity at a point in rotor wake. The fluctuations in the velocity need to be captured and hence a good frequency response (velocity fluctuations  $\sim 50$  Hz) is required. The velocity of air in rotor wake for the experimental setup (in ambient conditions) is in the range 1-10 m/s. Labview software is available with the user and the required velocity measurement system can be either stand alone or should be able to interface with Labview (preferred). There will not be any calibration (initial) done at the user end and system should be 'ready to use'. Please go through the specifications and mention compliance or the best that can be provided. The specifications of the system suggest that a pressure transducer based system is suitable rather than a manometer-based system. Although, a hot wire anemometer can also provide good time resolution, the difficulties associated with its maintenance and operation precludes it as the best option. Nevertheless, you may quote for a hot wire based velocity measurement if a transducer-based system is not going to meet the requirements in the specifications. The vendor shall mention the cost of components of the system and give also give the total. The components included in the total cost should be sufficient to use the system to meet the specifications mentioned below.

## 1. Specifications of Air Velocity Measurement System (one axis)

Characteristics	Specification/Description	Compliance Yes/No (If No what is the best that can be provided)/ Remarks
Fluid	Air (ambient)	
Flow velocity and angle range	Velocity in the range of 3-10m/s	
Static pressure at some point of interest	Rotor operates in ambient condition	
Temperature range	Room temperature	
Need for calibration	Yes	
Product required by	December 20 , 2016 (may specify earliest date possible)	
Frequency	Velocity fluctuations of up to 50 Hz may need to be measured.	
Size of probe	~< 2 mm diameter	
Accuracy	<0.1 m/s	

## 2. Specifications of Air Velocity Measurement System

### (All components)

<b>Characteristics</b>	<b>Specification/Description</b>	<b>Compliance Yes/No (If No what is the best that can be provided)/ Remarks</b>
Fluid	Air (ambient)	
Flow velocity and angle range	Velocity in the range of 3-10m/s Angle : >30 degrees	
Static pressure at some point of interest	Rotor operates in ambient condition	
Temperature range	Room temperature	
Need for calibration	Yes	
Product required by	December 20,2016 (may specify earliest date possible)	
Frequency	Velocity fluctuations of up to 50 Hz need to be measured	
Size of probe	~< 2 mm diameter	
Accuracy	<0.1 m/s	