

FLUID FACILITIES AND MACHINERY

GUIDE TO LABORATORY PRACTICALS

University of the Basque Country (UPV/EHU)

Energy Engineering Department

SELF - ASSESSMENT

THEME 8: FANS – RADIAL FAN

1. Both the pressure delivered by a centrifugal fan and its drive power are strongly influenced by:
 - a. Variations in the velocity of the gas or air being blown.
 - b. Variations in the density of the gas or air being driven.
 - c. Temperature variations of the gas or air being propelled.
 - d. Variations in composition of the gas or air being propelled.

2. The design of centrifugal fans must take into account:
 - a. In order to avoid cavitation problems, the value of the air pressure at the inlet of the impeller.
 - b. In order to avoid cavitation problems, both the value of the fan height with respect to the inlet section and the value of the air pressure in the external enclosure from which it is sucked.
 - c. In order to avoid problems due to cavitation, both the value of the fan speed in relation to the suction section and the value of the pressure and temperature of the air in the external enclosure from which it is sucked.
 - d. The value of the pressure of the air in the external enclosure from which it is drawn.

3. Along the suction duct of a centrifugal fan:
 - a. The total pressure has a negative value.
 - b. The total pressure has a positive value because the total pressure can never be negative.
 - c. The total pressure is zero because the pressure drop in this duct is negligible due to the fact that it is moving air.
 - d. The value of the total pressure is zero because the velocity of the air along this duct is very high.

4. Along the suction duct of a centrifugal fan:
 - a. The value of the static pressure is equal to that of the air in the external enclosure from which it is drawn, since the pressure drop, being air in motion, is negligible.
 - b. There is an increase in the value of the static pressure with respect to that of the air in the outdoor enclosure from which it is sucked.
 - c. There is a drop in the value of the static pressure with respect to that of the air in the enclosure outside the enclosure from which it is drawn.
 - d. The value of the static pressure remains constant with respect to that of the outside enclosure from which it is drawn in, since the velocity of the air along this duct is high.

5. Along the suction duct of a centrifugal fan:
 - a. There is a drop in the value of the dynamic pressure with respect to that of the air in the external enclosure from which it is sucked.
 - b. There is an increase in the value of the dynamic pressure with respect to that of the air in the outdoor enclosure from which it is drawn.
 - c. The value of the dynamic pressure is equal to that of the air in the enclosure outside the enclosure from which it is drawn in, since the pressure drop is negligible because the air is moving.
 - d. The value of the dynamic pressure is equal to the value of the total pressure in the duct.

6. In the course of the practical exercise it is observed that, keeping the speed of rotation of the centrifugal fan constant:
 - a. As the value of the flow rate being impelled increases, the value of the static pressure in the suction tube also increases gradually.
 - b. As the value of the flow rate being impelled increases, the value of the static pressure of the suction tube gradually decreases.
 - c. As the value of the flow rate being impelled increases, the value of the static pressure of the suction tube remains constant since it is only dependent on the rotational speed.
 - d. As the value of the flow rate being impelled increases, the value of the static pressure of the suction tube increases exponentially.

7. During the practical test it is observed that for a given rotational speed:
 - a. The value of the dynamic pressure of the suction tube increases gradually as the value of the flow rate being impelled also increases.
 - b. The value of the dynamic pressure of the suction tube gradually decreases as the value of the flow rate being impelled also decreases.
 - c. The value of the suction tube dynamic pressure remains constant because it is dependent only on the fan speed.
 - d. The value of the dynamic suction tube pressure increases exponentially as the value of the flow rate being impelled increases.

8. In the course of the practical test, it is observed that, for a given rotational speed:
 - a. The pressure that the impeller yields to the fluid decreases as the value of the flow rate being impelled increases.
 - b. The pressure that the impeller yields to the fluid increases as the value of the flow rate being impelled increases.
 - c. The pressure that the impeller gives off to the fluid remains constant as the fluid only varies with the speed of rotation of the impeller.
 - d. The pressure that the impeller gives off to the fluid increases exponentially as the value of the flow rate being impelled increases.