THEORETICAL QUESTIONS IN FLUID MACHINERY
SECTION „Axial flow turbomachinery; Fans, Blowers; Compressors"
By Dr. János VAD

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1. Specify the basic differences between fans, blowers, and compressors, with regard to pressure ratio, changes of density and temperature, and cooling.

2. What is the general limitation of blade tip speed for a fan? What is the physical background of this limitation?

3. Specify the equation for calculation of shaft power input for a fan as function of useful air technical performance.

4. Explain the basic construction of axial fans with use of a sketch.

5. Specify the simplified work equation of the elemental axial flow blade cascade, explain the meaning of the quantities included.

6. Specify the sources of losses developing in axial flow fans.

7. Specify the equation for calculation of shaft power input for a blower as function of total temperature rise.

8. Specify the polytrophic efficiency for a blower as function of pressure and temperature ratios.

9. Define the isothermal power factor λ, explain the meaning of the quantities included.

10. Define the temperature rise factor χ, explain the meaning of the quantities included.

11. Describe the principle of Laser Doppler Anemometry applied to turbomachinery.

12. Describe the principle of Hot Wire Anemometry applied to turbomachinery.