

## **Study the Boundary Layers Properties in the Rotating Wheel of a Centrifugal Compressor<sup>1</sup>**

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### **Abstract**

A detailed experimental and mathematical approach was conducted to examine the boundary layers properties in the rotating wheel of a centrifugal compressor, in order to investigate the formulation of shape and development of these boundary layers on the blades surfaces of the rotating wheel and its upper and lower discs.

The study was strengthened by flow visualizing and by obtaining the flow lines distribution on the back face of wheel blades.

Some additional properties were obtained, one of which is that the secondary current speed on the disc is not always directed from forward to backward, and the secondary current on the disc doesn't always act negatively.

**Keywords:** Boundary layers, rotating wheel. Flow visualization, secondary current

<sup>1</sup> For the paper in Arabic see pages (149-156).

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