

## CURRICULUM VITAE

### János VAD (36)

Ph. D., Associate Professor

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### Education

Ph. D., 1997 BUTE, Department of Fluid Mechanics  
Laser Doppler Anemometer (LDA) Investigation on the Flow Field Downstream of Axial Flow Fans  
M. Sc., 1993 BUTE, Department of Fine Mechanics and Optics  
Optical Design and Preparation of an LDA System for Turbomachinery Measurements

### Work Experience

2002 - Associate Professor, BUTE, Department of Fluid Mechanics  
Departmental educational responsible, lecturer, supervisor of research projects and industrial consultancy  
1998 - 2002 Assistant Professor, BUTE, Department of Fluid Mechanics  
Departmental educational responsible, lecturer, supervisor of research projects and industrial consultancy  
1996 – 1998 Research Associate, BUTE, Department of Fluid Mechanics  
R&D activity in the fields of turbomachinery aerodynamics and environmental sciences

### Main Research Interests

- Axial flow turbomachinery blade design and optimization methods involving non-radial stacking (sweep, skew)
- 3D flow structures developing in axial flow turbomachinery
- Modelling, simulation, measurement, and optimisation of pneumatic systems
- Industrial flow diagnostics, modelling of technological processes
- Laser optical flow diagnostics (LDA, laser sheet concentration measurement, Panoramic Annular Lens applications)
- Formation of fluid droplets, jets and filaments
- Wind tunnel simulation of air pollutant transport, environmental meteorology

### Topics of Departmental Key R&D Projects Coordinated

1996 - National and international R&D projects on fluid dynamic improvement of axial flow turbomachinery with concerted application of numerical and experimental methods including LDA; design optimization of axial flow turbomachinery blade rows with consideration of non-radial stacking (sweep, skew). International partners: Technische Universität Graz, Institut für Hydraulische Strömungsmaschinen; Università degli Studi di Roma "La Sapienza", Dipartimento di Meccanica e Aeronautica

1998 - Applied R&D projects on modelling, simulation, measurement, and optimisation of dynamic behaviour of pneumatic brake components and systems for motor vehicles and other fluid power applications

1996 - 2002 Wind tunnel investigation of pollutant transport in the atmosphere, development optical flow diagnostics

## Coordination of Industrial Research Projects and Industrial Consultancy

- 1998 - Optimisation of electro-pneumatic brake systems and railway pneumatics, involving AMESim and FLUENT modelling (Knorr-Bremse)
- 2003 - Design and survey of a special wind tunnel fan (Hungarian Ministry of Agriculture)
- 2003 - Development of software for aerodynamic optimization of aspirating fire alarm systems (Fittich)
- 2005 Reconstruction of a food industrial cooling system (Aqua-Air)
- 2004 Design of an axial fan of long throwing distance (Ventilation Works)
- 2004 Survey and improvement of the air supply system of a gas motor power plant (Evapco)
- 2004 Survey of a cement industrial fume gas transport system (R&M TS International)
- 2003 Reconstruction of the hydraulic system of a chemical industrial reservoir plant (Gedeon Richter)
- 2003 Market survey on the reception and applicability of radial pumps made of titanium alloy (TU Graz)
- 2003 Fluid mechanical modelling and optimization of a pharmaceutical fermentation process (Gedeon Richter)
- 2002 - 2003 Fluid dynamic modelling of formation of basalt wool fibres, aerodynamic optimization of the mineral wool production system (Toplan)
- 2001 - 2003 Modelling of stability of water jets applied in steel sheet cooling equipment; hydraulic research and development of the cooling equipments applied in sheet metal production (DUNAFERR Steel Industries Ltd.)
- 2001 - 2002 Design and calibration of pneumatic nozzles and test jets (Delphi, Weslin)
- 2002 Noise reduction of the air supply system of an aerob waste water treatment plant (Hungrana)
- 2002 AMESim optimization of suction systems for car engines of internal combustion (IFT)
- 2001 Measurement and optimization of fume gas extraction and utilization system of an industrial gas turbine power plant (Hungrana)

## Field Trips

- 1996 - Università degli Studi di Roma "La Sapienza", Dipartimento di Meccanica e Aeronautica: CFD and LDA applied in axial flow turbomachinery flow studies, axial flow turbomachinery blade optimization involving non-radial stacking (host: Prof. F. Rispoli)
- 1996 - Technische Universität Graz, Institut für Hydraulische Strömungsmaschinen: LDA and its application to axial flow hydraulic machines; effects of blade sweep (host: Prof. H. Jaberg)
- 2001 - 2003 FH Joanneum, Graz: pneumatics applied to automotive systems; guest lecturer of fluid mechanics measurements (host: Dr. H. Fogt)
- 1998 - 1999 Technische Universität Dresden, Institut für Strömungsmechanik: turbomachines; wind tunnel simulation of pollutant transport in the atmosphere (hosts: Prof. Brechling, Prof. R. Vollheim)
- 1999 Pennsylvania State University, Center for Gas Turbines and Power: design and aerodynamic investigation of axial flow turbomachinery (host: Prof. B. Lakshminarayana)
- 1998 Universität Karlsruhe, Institut für Mechanische Verfahrenstechnik: gas filtration techniques (host: Prof. G. Kasper)
- 1997 - 1998 Otto-von-Guericke Universität Magdeburg, Institut für Strömungstechnik und Thermodynamik: optical flow diagnostics (PIV, LDA) (host: Dr. E. Pap)
- 1994 Universität Karlsruhe, Institut für Strömungslehre und Strömungsmaschinen: LDA measurement technique and acoustics related to axial flow fans (host: Prof. S. Caglar)
- 1993 Friedrich-Alexander Universität Nürnberg-Erlangen, Lehrstuhl für Strömungsmechanik: optical flow diagnostics (host: Prof. F. Durst)

## Teaching Activity

Lecturer in

- Fluid mechanics
- Advanced flow measurements
- Modelling of technological processes
- Industrial air technology
- Engineering meteorology

### **Society Memberships, International Scientific Activity**

- 2005 - Member, American Society of Mechanical Engineers (ASME)
- 2005 - Reviewer, ASME Journal of Turbomachinery
- 2005 - Secretary, Hungarian Academy of Sciences, Committee of Fluid Mechanics and Thermodynamics, Subcommittee of Fluid Machinery and Equipments
- 2004 - Member, European Organising Committee, European Conference on Turbomachinery Fluid Dynamics and Thermodynamics (ETC)
- 2004 - Reviewer, ASME TURBO EXPO
- 2001 - Secretary, International Scientific and Programme Committee, Conference on Modelling Fluid Flow (CMFF'03, CMFF'06), Budapest, Hungary
- 2001 - Member, General Assembly, Hungarian Academy of Sciences
- 2001 - Member, Hungarian Scientific Society of Mechanical Engineers
- 2000 - Member, International Advisory Board, 6th International Symposium on Ventilation for Contaminant Control (VENTILATION '2000)
- 1999 - Socrates/Erasmus guest lecturer on turbomachinery, Universita degli Studi di Roma "La Sapienza", Dipartimento di Meccanica e Aeronautica

### **10 most important publications**

- Vad, J., Kwedikha, A. R. A., Kristóf, G., Lohász, M. M., Rábai, G., Watanabe, K., Rácz, N. (2005), „Effects of Blade Skew in an Axial Flow Rotor of Controlled Vortex Design”, Proc. 6th European Conference on Turbomachinery Fluid Dynamics and Thermodynamics (ETC'05), Lille, France, pp. 46-55.
- Van den Braembussche, R. A., Vad, J. (2004), „Challenges in Optimisation of Axial Flow Turbomachinery Blades for 3D Flow, Including Sweep and Dihedral Effects”, in: Vad, J., Lajos, T., Schilling, R. (Eds.), Modelling Fluid Flow - State of the Art, Springer Verlag Heidelberg, pp. 99-103.
- Vad, J., Kwedikha, A. R. A., Jaberg, H. (2004), „Influence of Blade Sweep on the Energetic Behavior of Axial Flow Turbomachinery Rotors at Design Flow Rate”, Proc. 2004 ASME TURBO EXPO, Vienna, Austria, ASME Paper GT2004-53544 (CD-ROM)
- Corsini, A., Rispoli, F., Vad, J. (2003), „Iterative Development of Axial Flow Fans of High Specific Performance with Swept Blades”, Proc. 5th European Conference Turbomachinery Fluid Dynamics and Thermodynamics (ETC'03), Prague, Czech Republic, pp. 245 – 256.
- Vad, J., Corsini, A. (2002), “Comparative Investigation on Axial Flow Industrial Fans of High Specific Performance with Unswept and Forward Swept Blades at Design and Off-Design Conditions”, Proc. 9th International Symposium on Transport Phenomena and Dynamics of Rotating Machinery (ISROMAC-9), Honolulu, Hawaii, United States of America. Log. No. FD-ABS-016. CD-ROM. Proc. Abstracts p. 301.
- Vad, J. (2001), „Incorporation of Forward Blade Sweep in the Non-Free Vortex Design Method of Axial Flow Turbomachinery Rotors”, Periodica Polytechnica, Mechanical Engineering Series, Vol. 45, Issue 2., pp. 217-237.
- Goricsán, I., Vad, J., Tóth, B., Greguss, P. (2000), “PALLAS: A Novel Method in Air Pollutant Transport Studies”, Journal of Wind Engineering and Industrial Aerodynamics, Vol. 87, pp. 259-270.
- Vad, J., Bencze, F. (1998), “Three-Dimensional Flow in Axial Flow Fans of Non-Free Vortex Design”, International Journal of Heat and Fluid Flow, Vol. 19, pp. 601-607.
- Vad, J., Bencze, F. (1998), “Laser Doppler Anemometer Measurements Upstream and Downstream of an Axial Flow Rotor Cascade of Adjustable Stagger”, Proc. 9th International Conference on Flow Measurement (FLOMEKO), Lund, Sweden, pp. 579-584.
- Vad, J., Bencze, F. (1996), “Secondary Flow in Axial Flow Fans of Non-Free Vortex Operation”, Proc. 8th International Symposium on Application of Laser Techniques to Fluid Mechanics, Lisbon, Portugal. pp. 14.6.1.-14.6.8.