Dr. Zinon Vlahostergios graduated from the Department of Mechanical Engineering of Aristotle University of Thessaloniki, Greece in 2002. He continued his studies by graduating the MSc course program on "Processes & Advanced Materials Technology" of the Department of Chemical Engineering of Aristotle University of Thessaloniki, from 2003 to 2005. In 2003 he started also his PhD focusing on the development of a 3D CFD code for incompressible and compressible flows (subsonic, transonic and hypersonic regime) with the implementation and derivation of advanced turbulence models, mainly focusing on the boundary layer laminar to turbulent transition. From 2009 to 2015 he has been working as a senior researcher in the Laboratory of Fluid Mechanics and Turbomachinery (LFMT) in Aristotle University of Thessaloniki.

Field of expertise:

Fluid Mechanics, Turbulence Modelling, Transitional flows and boundary Layer Transition, Advanced turbulence modelling development, Transonic and Hypersonic flows, Large Eddy and Detached Eddy Simulation, Fluid mechanics algorithm development and vectorization, High performance computing, Aerodynamics, Modelling of advanced flow control methods, Aero engines thermodynamic analysis, Heat transfer (Heat exchangers)

Adjunct Professor in the following Institutions:

- Democritus University of Thrace (Production Management Engineering Department):
  1. Fluid Mechanics (2010-2011)
  2. Turbomachinery (2010-2011)
- TEI of Central Macedonia (Mechanical Engineering Department):
  1. Heat Transfer (2010-2011)
- TEI of Thessaloniki (Department of Automotive Engineering):
  1. Fluid Mechanics (2013-2014), (2014-2015)
  2. Computational Fluid Mechanics (2011-2012), (2012-2013), (2013-2014), (2014-2015)
- TEI of Central Macedonia, MSc. "Renewable Energy Systems: Design, Development and Optimization":
  1. Computational Fluid Mechanics (2013-2014)
  2. Energy Conversion Systems (2014-2015)

Journal publications:

1. Vlahostergios, Z., Yakinthos, K. and Goulas, A. *Experience Gained Using Second-Moment Closure Modeling for Transitional Flows Due to Boundary Layer Separation*. Flow Turbulence and Combustion, Vol.79, 361-387, (2007).

2. Yakinthos, K., Vlahostergios, Z. and Goulas, A. *Modeling the flow in a 90° rectangular duct using one Reynolds-stress and two eddy-viscosity models*. International Journal of Heat and Fluid Flow, Vol.29, 35-47, (2008).

3. Vlahostergios, Z., Yakinthos, K. and Goulas, A. *Separation-induced boundary layer transition: modeling with a non-linear eddy-viscosity model coupled with the laminar kinetic energy equation.* International Journal of Heat and Fluid Flow, Vol.30, 617-636, (2009).

4. Vlahostergios, Z., Yakinthos, K. and Goulas, A. *Efforts to model boundary layer separation induced transition using a non-linear eddy-viscosity model and a Reynolds strees model.* Ercoftac Bulletin, Vol.80, 29-34, (2009).

5. Kritikos, K., Albanakis, C., Missirlis, D., Vlahostergios, Z., Goulas, A. and Storm, P. *Investigation of the thermal efficiency of a staggered elliptic-tube heat exchanger for aeroengine applications.* Applied Thermal Engineering, Vol.30, 134-142, (2010).

6. K.-D. Bouzakis,F. Klocke, A. Tsouknidas, S. Kombogiannis, D. Missirlis, Z. Vlahostergios, A. Sideridis, K. Yakinthos, A. Tzevelekis, G. Stabiliev, S. Bolz. *Development of a Ball Valve with PVD Coated Metal-to-Metal Sealing Mechanism.* Journal of the Balkan Tribological Association, Vol.18 (3), 390-404, (2012).

7. Yakinthos, K. Missirlis, D., Sideridis, A., Vlahostergios, Z., Seite, O. and Goulas, A. *Modeling the operation of a system of recuperative heat exchangers for an aero engine with the combined use of a porosity and a thermo mechanical model.* Engineering Applications of Computational Fluid Mechanics, Vol.6 (4), 608-621, (2012).

8. Vlahostergios, Z., Sideridis A., Yakinthos, K. and Goulas, A. *Performance assessment of a non-linear eddy-viscosity turbulence model applied to the anisotropic wake flow of a low-pressure turbine blade.* International Journal of Heat and Fluid Flow, Vol.38, 24-29, (2012).

9. Vlahostergios, Z., Missirlis, D., Yakinthos, K. and Goulas, A. *Computational modeling of vortex breakdown control on a delta wing.* International Journal of Heat and Fluid Flow, Vol.39, 64-77, (2013).

10. Michailidis, N., Stergioudi, F., Omar, H., Missirlis, D., Vlahostergios, Z., Tsipas, S, Albanakis, C., Granier B. *Flow, thermal and structural application of Ni-foam as volumetric solar receiver.* Solar Energy Materials & Solar Cells , Vol.109, 185-191, (2013).

11. Vlahostergios, Z., Missirlis, D., Flouros, M., Albanakis, C. and Yakinthos K. *Effect of turbulence intensity on the pressure drop and heat transfer in a staggered tube bundle heat exchanger.* Experimental Thermal and Fluid Science, Vol. 60, 75-82, (2015).

12. Goulas, A., Donnerhack, S., Flouros, M., Missirlis, D., Vlahostergios, Z. and Yakinthos, K. *Thermodynamics cycle analysis, Pressure Loss and Heat Transfer Assessment of a Recuperative System for Aero Engines.* Journal of Engeeniring for Gas Turbine and Power, Vol. 137(4):041205-041205-6, GTP-14-1470, doi: 10.1115/1.4028584, (2015).

13. Vlahostergios, Z., Yakinthos, K. *Modelling the flow in a transonic diffuser with one Reynolds-stress and two eddy-viscosity models.* Flow Turbulence and Combustion, Vol.94(3), 619-642, (2015).

<u>International and National Conferences:</u>

1. Vlahostergios Z., Sotiropoulos A., Yakinthos, K. and Goulas, A. *Experience in Parallelizing a CFD Solver for Execution in a Parallel Enviroment.* 10th Panhellenic Conference on Informatics (PCI), Local Proceedings., (2005).

2. Βλαχοστέργιος Ζ., Υάκινθος Κ. και Γούλας Α. *Μοντελοποίηση της ροής σε αγωγό ορθογωνικής διατομής καμπυλότητας 90^{o} με τη χρήση εξελιγμένων μοντέλων τύρβης.* 5^{o} Πανελλήνιο συνέδριο ΡΟΗ 2006, Πάτρα.

3. Βλαχοστέργιος Ζ., Υάκινθος Κ. και Γούλας Α. *Μοντελοποίηση της μετάβασης της ροής λόγω αποκόλλησης του οριακού στρώματος με τη χρήση μη-γραμμικού μοντέλου τύρβης*

συνδυασμένο με τη θεωρία της στρωτής κινητικής ενέργειας. 6ο Πανελλήνιο συνέδριο ΡΟΗ 2008, Κοζάνη.

4. Vlahostergios, Z., Yakinthos, K. and Goulas, A. *Modeling boundary layer separation-iduced transition using a non-linear eddy-viscosity model combined with the laminar kinetic energy.* 8th European Conference on Turbomachinery Fluid Dynamics and Thermodynamics, 23-27 March 2009, Graz, Austria.

5. Vlahostergios, Z., Missirlis, D. and Yakinthos, K. *Application of turbulence modeling on delta wing vortex breakdown control.* 3rd GACM Colloquium on Computational Mechanics, 21-23 September 2009, Hannover, Germany.

6. Yakinthos, K. Missirlis, D. Seite, O. Vlahostergios, Z. and Goulas, A. *Modeling the operation of a heat exchanger for aero engine applications for real engine operating conditions.* 8th International ERCOFTAC Symposium on Engineering Turbulence Modelling and Measurements, 9-11 June 2010, Marseille, France.

7. Vlahostergios, Z. and Yakinthos, K. *Modeling separation – induced transition using a non - linear three equation turbulence model and a Reynolds stress turbulence model.* Proceedings of ASME Turbo Expo 2010: Power for Land, Sea and Air GT2010, 14-18 June 2010, Glasgow, UK.

8. Michailidis, N., Stergioudi, F., Omar, H., Missirlis, D., Albanakis, C., Psyllaki P., Tsipas, S., Vlahostergios, Z., Granier B. *Application of Ni-Foam as volumetric solar receiver : flow, thermal and microstructural evaluation,* 21-24 September 2010, Perpignan, France.

9. Missirlis, D. Yakinthos, K. Flouros, M. Vlahostergios, Z. and Goulas, A. *Flow field and heat transfer investigations in the exhaust nozzle of a recuperative aero engine.* The future of Gas Turbine Technology, 5th International Conference, 27-28 October 2010, Brussels, Belgium.

10. Σιδερίδης Α., Βλαχοστέργιος Ζ., Υάκινθος Κ. και Γούλας Α. *Υπολογιστική μοντελοποίηση απόρρου συστοιχίας πτερυγίων στροβίλου χαμηλής πίεσης.* 7ο Πανελλήνιο συνέδριο ΡΟΗ 2010, 12-13 Νοεμβρίου Θεσσαλονίκη.

11. Βλαχοστέργιος Ζ., Υάκινθος Κ. και Γούλας Α. *Μοντελοποίηση της ροής και έλεγχος της αποδόμησης του ζεύγους δινών σε πτέρυγα δέλτα.* 7ο Πανελλήνιο συνέδριο ΡΟΗ 2010, 12-13 Νοεμβρίου Θεσσαλονίκη.

12. Vlahostergios, Z., Sideridis, A. Yakinthos, K. and Goulas, A. *Numerical modeling of the wake of a low-pressure turbine blade.* 9th European Conference on Turbomachinery Fluid Dynamics and Thermodynamics, 21-25 March 2011, Instanbul, Turkey.

13. K.-D. Bouzakis,F. Klocke, A. Tsouknidas, S. Kombogiannis, D. Missirlis, Z. Vlahostergios, A. Sideridis, K. Yakinthos, A. Tzevelekis, G. Stabiliev, S. Bolz. *Development of a Ball Valve with PVD Coated Metal-to-Metal Sealing Mechanism.* ICMEN, 4th International Conference on Manufacturing Engineering, 3-5 October 2011, Thessaloniki, Greece.

14. Vlahostergios, Z., Sideridis, A. Yakinthos, K. and Goulas, A. *URANS Modeling of the wake-flow produced by a low pressure turbine blade.* ETMM9: 9th International ERCOFTAC

Symposium on Engineering Turbulence Modeling and Measurements, 6-8 June 2012, Thessaloniki, Greece.

15. Βλαχοστέργιος Ζ., Μισηρλής Δ., Υάκινθος Κ. και Γούλας Α. *Υπολογιστική διερεύνηση της αποδόμησης του ζεύγους δινών σε πτέρυγα δέλτα με τη χρήση ενός γραμμικού και ενός μη-γραμμικού μοντέλου τύρβης.* 8ο Πανελλήνιο συνέδριο ΡΟΗ 2012, 16-17 Νοεμβρίου, Βόλος.

16. Μιχαηλίδης Α., Μισηρλής Δ., Βλαχοστέργιος Ζ., Στεργιούδη Φ., Μιχαηλίδης Ν., και Γούλας Α. *Υπολογιστική και πειραματική διερεύνηση απωλειών πίεσης σε μεταλλικό αφρό.* 8ο Πανελλήνιο συνέδριο ΡΟΗ 2012, 16-17 Νοεμβρίου, Βόλος.

17. Γούλας Α., Donnerhack S., Flouros M., Μισηρλής Δ., Βλαχοστέργιος Ζ., Υάκινθος Κ. Ανάλυση θερμοδυναμικού κύκλου, απωλειών πίεσης και μετάδοσης θερμότητας σε σύστημα εναλλακτών θερμότητας για αεροπορικούς κινητήρες. 9ο Πανελλήνιο συνέδριο ΡΟΗ 2014, 12-13 Δεκεμβρίου, Αθήνα.

18. Yakinthos, K., Missirlis, D., Vlahostergios, Z., Flouros, M., Donnerhack, S., and Goulas, A. *Best strategies for the development of a holistic porosity model of a heat exchanger for aero engine applications*, GT2015-42408, Proceedings of ASME Turbo Expo 2015: Power for Land, Sea and Air GT2015 June 15-19, 2015, Montreal, Canada, (2015).

19. Komnos D., Vlahostergios Z. and Yakinthos K., *Flow field investigation and vortex break-down identification on a Delta wing using URANS with second moment closure turbulence modelling*, 8th GRACM International Congress on Computational Mechanics Volos, 12 July – 15 July 2015

Selected Research Projects - Scholarships:

- 07.2003 - 04.2004 - Advanced exhaust gas recuperator technology for aero-engine applications (AEROHEX)
- 4.2005 - 11.2005 - Geothermal Heat Pump For Cooling And Heating Along European Coastal Areas (GEOCOOL)
- 04.2007 - 05.2007 - Assessment of options for CO2 capture and Geological sequestration
- 11.2008 - 04.2011 - New aero engine core concepts (NEWAC) - Επιτροπή Ερευνών Α.Π.Θ.
- 10.2011 - 09.2015 -Low Emissions Core-Engine Technologies (LEMCOTEC)
- 9.2013 - 09.2015 Hellenic Civil Unmanned Air Vehicle – HCUAV, Competitiveness & Entrepreneurship – SYNERGASIA 2011
- **European Access Grants**

2012: FP7 Access grant "Sfera" (European Commission grant agreement nº 228296-3) Project HYBRISOL. A hybrid solar heat storage/exchange unit employing PCM's and aluminum foams.

2013: FP7 Access grant "Sfera" (European Commission grant agreement nº 228296-3) Project HESECM. High-efficiency heat storage/exchange by concentrated solar radiation and advanced materials.

- **Scholarship of excellence for post-doc research titled:**
  "Computational modelling of the wake flow of a low pressure turbine blade, designed for aeroengine applications"