

Costin Ioan COȘOIU

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Nationality Romanian

Core competences

Computational Fluid Dynamics (CFD)
Aerodynamics
Turbulence
Fluid Dynamics
Numerical Analysis
Engineering

Experience

PhD thesis in the domain of wind engineering with specialization in wind turbines equipped with flow control devices

Computational Fluid Dynamics (CFD) simulations, tests, analysis, and correlation
Visualization, animation, and post processing of scientific data
Comprehensive understanding of complex physical phenomena
Project management
Knowledge in interpreting flow structures and analyzing flow fields
Wind tunnel testing and measurements (analyzing wind effects on wind turbines, structures, pedestrian comfort and pollution)
Experimental aerodynamic development of technology and tools
Aerodynamic innovation and invention of new solutions for fluid flow
Wind turbine aerodynamic design and testing

Specialties

CFD

- Meshing: Gambit, Fluent with meshing (Legacy TGrid), ICEM/CFD
- Simulation: Fluent
- Postprocessing: Tecplot 360, Fluent, ParaView

PIV measurements (2D2C)

- ILA 2D PIV system

Programming and Scientific Computing

- C/C++
- MatLAB

LDV measurements (3D/2D)

- Dantec FiberFlow
- Dantec Flowlite

CTA measurements (1C)

- Dantec StreamLine Pro
- Dantec MiniCTA

Teaching and student supervision

Research Projects

SWAN34 – Small Ducted Wind Turbine Equipped with Passive Flow Control Devices
January 2017 – June 2018
<http://swan34.utcb.ro/>

Project Director

The main objective of the project is to reach a Technology Readiness Level (TRL) equal to TRL4, starting from a TRL level equal to TRL3, for a new energy production technology using small ducted wind turbines equipped with passive flow control devices. The scope of the technology is to harvest energy from wind in sites where aeolian potential is low or in urban environment using ducted wind turbines.

PD-193 – Device for passive flow control in ducted wind turbines
2010-2012

Project Director

Investigate, up to a Technology Readiness Level (TRL) equal to TRL3, using experimental and numerical simulation, the air flow in ducted horizontal axis wind turbines, with small or medium rotor diameter, equipped with passive flow control devices, placed in sites where wind potential is low or in urban environment.

TD-242 – Contributions to the optimization of wind turbines design and operation.
2007-2008

Project Director

Numerical and experimental research on small ducted wind turbines aerodynamics and performances and PhD Thesis completion

Other research projects

I was a member as a CFD specialist/researcher in more than 10 research projects with private contractors and more than 12 research projects financed from public funds by grant-based competition

Employment History

October 2015 – present

**Technical University of Civil Engineering of Bucharest
Hydraulics and Environmental Protection Department
Associate Professor**

Bucharest, RO

Responsibilities: Lectured, prepared exams and assignments, held office hours for *Introduction in CFD* and *Hydraulics II* courses. Conducted labs and workshops, prepared exams and assignments, held office hours for *Hydraulics*, *Fluid Mechanics*, *Wind Engineering* and *Hydraulic Machinery* courses. Mentor for license and master thesis for students that were developing their studies in the department.

August 2012 – October 2015

**Technical University of Civil Engineering of Bucharest
Hydraulics and Environmental Protection Department**

Bucharest, RO

Lecturer

Responsibilities: Lectured, prepared exams and assignments, held office hours for *Introduction in CFD* and *Fluid Mechanics and Hydraulic Machinery* courses. Conducted labs and workshops, prepared exams, and assignments, held office hours for *Hydraulics*, *Fluid Mechanics*, *Wind Engineering* and *Hydraulic Machinery* courses. Mentor for license and master thesis for students that were developing their studies in the department.

August 2010 – August 2012

**Technical University of Civil Engineering of Bucharest
Hydraulics and Environmental Protection Department**

Bucharest, RO

Researcher

Manager and promoter of the PD-193 research project entitled *Device for passive flow control in ducted wind turbines*. Scope of the project: optimization of the shape of the nozzle and flow around the ducted wind turbines, using passive flow control devices. Conducting numerical simulations (using ANSYS FLUENT) and experimental studies in aerodynamic wind tunnel on the air flow around ducted horizontal axis wind turbines, with

small or medium rotor diameter, equipped with passive flow control systems, which can be placed in sites where wind potential is low or in urban spaces.

Promoting the project results through publications/presentations quality papers in academic journals and conferences and also, media materials on the web, radio and print channels in order to transfer the research know-how towards academia and industrial contractors.

June 2005 –
August 2010

**Technical University of Civil Engineering of Bucharest
Hydraulics and Environmental Protection Department**

Bucharest, RO

Assistant Professor

Lectured, prepared exams and assignments, held office hours for *Fluid Mechanics and Hydraulic Machinery* course.

Conducted labs and workshops, prepared exams and assignments, held office hours for *Hydraulics, Fluid Mechanics, Wind Engineering and Hydraulic Machinery* courses.

Mentor for license and master thesis for students that were developing their studies in the department.

Manager of the TD-242 (2007 - 2008) research project entitled *Contributions to the optimization of wind turbines design and operation*.

October 2003 –
June 2005

**Technical University of Civil Engineering of Bucharest
Hydraulics and Environmental Protection Department**

Bucharest, RO

Teaching Assistant

Conducted labs and workshops, prepared exams and assignments, held office hours for *Hydraulics, Fluid Mechanics, Wind Engineering and Hydraulic Machinery* courses.

Education and Training

October 2003 –
September 2008

**Technical University of Civil Engineering of Bucharest
Hydrotechnic Faculty**

Bucharest, RO

PhD

PhD thesis in the domain of wind engineering with specialization in wind turbines equipped with flow control devices

18 -23 September 2006

**“Politehnica” University of Timisoara
Mechanical Engineering Faculty
National Center for Engineering Systems with Complex
Fluids**

Timișoara, RO

Course of Numerical Methods in Fluid Dynamics and FLUENT applications

CFD / Fluid Mechanics / FLUENT

October 1998 –
July 2003

**Technical University of Civil Engineering of Bucharest
Construction Equipment Faculty**

Bucharest, RO

Mechanical Engineer

Mechanical Engineering / Cranes / Construction equipment / Hydraulics equipment

March 2001 –
June 2001

**Université Claude Bernard Lyon 1
UFR de Mécanique**

Lyon, FR

Socrates Erasmus Students Exchange Program

Mechanical Engineering / Thermodynamics / Data acquisition

Languages

Romanian	Native or bilingual proficiency
English	Full professional proficiency
French	Limited working proficiency

Member of professional organizations

Romanian Association for Wind Engineering	Since 2017. Founding Member.
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Publications

1. Cosoiu C.I., Georgescu A.M., Degeratu M., Vlăduț A.C., Chiulan E.A., Numerical predictions of the flow around a small ducted wind turbine equipped with passive flow control devices, Proceedings of the Romanian Academy. Series A. Mathematics, Physics, Technical Sciences, Information Science, volume 21, issue 2, 2020 (in press).
2. LO Marabout, AC Vladut, CI Cosoiu, A Anton, Pedestrian Wind Comfort Evaluation for Sun Valley Campus, IOP Conference Series: Materials Science and Engineering 471 (9), 092003, 2019
3. VD Urdareanu, IR Racanel, M Degeratu, CI Cosoiu, CL Ghindea, RI Cruciat, Experimental Study of The Dynamic Response of a Cable Under Wind Flow, Materials Today: Proceedings 12, 446-454, 2019.
4. EA Chiulan, CI Coșoiu, AM Georgescu, A Anton, M Degeratu, Predictions on the dynamic behaviour of an aeroelastic model of a television tower in the boundary layer wind tunnel, E3S Web of Conferences 85, 03004, 2019.
5. G Muscă, GM Chitaru, CI Coșoiu, C Nae, Numerical simulation of the flow into a circular pipe section, E3S Web of Conferences 85, 02005, 2019.
6. EA Chiulan, AM Georgescu, CI Coșoiu, A Anton, Spreadsheet solution for the computation of the mean wind speed and turbulence intensity profiles according to the Romanian standard, E3S Web of Conferences 85, 03002, 2019.
7. Coșoiu C.I., Chiulan E.A., Degeratu M., Vlăduț A.C., Numerical simulation of the flow around a wind turbine experimental model, CWE 2018 – The 7th International Symposium on Computational Wind Engineering, June 18-22, 2018, Seoul, Republic of Korea.
8. Georgescu A.M., Chiulan E.A., Coșoiu C.I., Degeratu M., Inlet Velocity Boundary Conditions for Computational Wind Engineering, CWE 2018 – The 7th International Symposium on Computational Wind Engineering, June 18-22, 2018, Seoul, Republic of Korea.
9. Chitaru G.M., Georgescu M.R., Coșoiu C.I., Nae C., Numerical study of a particle-laden flow in a harsh environment testing facility, CWE 2018 – The 7th International Symposium on Computational Wind Engineering, June 18-22, 2018, Seoul, Republic of Korea.
10. EA Chiulan, I Popa, AC Vlăduț, CI Coșoiu, AM Georgescu, A Anton, Experimental investigation on the behavior of a tall and slender building placed in a turbulent boundary layer, ENERGY and ENVIRONMENT (CIEM), 2017 International Conference on, 399-403, 2017.
11. MR Georgescu, GM Chitaru, CI Cosoiu, I Brînză, C Nae, Numerical study of the secondary phase dispersion in a particle-laden flow, ENERGY and ENVIRONMENT (CIEM), 2017 International Conference on, 394-398, 2017.
12. MR Georgescu, AC Vladut, CI Cosoiu, AM Georgescu, Numerical study of the flow inside a wind trapping system, 2017 International Conference on ENERGY and ENVIRONMENT (CIEM), 330-334, 2017.
13. DM Bucur, CI Cosoiu, RG Iovanel, AA Nicolae, SC Georgescu, Assessing the Operation of the Cooling Water System of a Hydro-Power Plant Using EPANET, Energy Procedia 112, 51-57, 2017.
14. AM Georgescu, E Iatan, CI Cosoiu, I Anton, M Sandu, EPANET Assessment of the Inflating Time of Water Cushions for an Aqua Park in Romania, Energy Procedia 112, 606-612, 2017.
15. Vlăduț A.C., Coșoiu C.I., Georgescu A.M., Degeratu M., Damian R.M., Wind Tunnel and Numerical Modeling of Atmospheric Boundary Layer Flow Over Bolund Island, EENVIRO-YRC 2015 – Bucharest, Energy Procedia, vol. 85, pp. 603-6011, 2016.
16. Vlăduț A.C., Damian R.M., Degeratu M., Coșoiu C.I., Georgescu A.M., Flow simulation over a two-dimensional model hill, Proceedings of 14th World Renewable Energy Congress - WREC 2015, 8-12 June 2015, Bucharest, Romania, 6pp, 2015.
17. Vlăduț A.C., Coșoiu C.I., Georgescu A.M., Degeratu M., Hașegan L., Anton A., A new Boundary Layer Wind Tunnel, Proceedings of 14th World Renewable Energy Congress - WREC 2015, 8-12 June 2015, Bucharest, Romania, 6pp, 2015.

18. Anton A., Georgescu A.M., Perju S., Georgescu S.C., Coşoiu C.I., Haşegan L., Simulation of the Partial Load Operation of an Urban Groundwater Well Field, Computing and Control for the Water Industry (CCWI2015) Sharing the best practice in water management, *Procedia Engineering*, vol. 119, pp. 1147-1152, 2015.
19. Georgescu A.M., Georgescu S.C., Coşoiu C.I., Haşegan L., Anton A., Bucur D.M., EPANET Simulation of Control Methods for Centrifugal Pumps Operating under Variable System Demand, Computing and Control for the Water Industry (CCWI2015) Sharing the best practice in water management, *Procedia Engineering*, vol. 119, pp. 1012-1019, 2015.
20. Alboiu N. I., Coşoiu C. I., Anton A., Analysis of the Flow structure and its influence on the operation of a wastewater pumping station, *Revista Română de Inginerie Civilă*, Vol. 6 (2015), No. 1, pp. 21-25, 2015.
21. Anton A., Coşoiu C. I., Georgescu A.-M., A new type of risk map for municipal sewerage systems, 12th International Conference on Computing and Control for the Water Industry, CCWI2013, Perugia, Italy, September 2-4, 2013, *Procedia Engineering* (DOI: 10.1016/j.proeng.2014.02.008), Vol. 70 pp. 61-66, 2014.
22. [Georgescu A.M., Coşoiu C.I., Perju S., Georgescu S.C., Haşegan L., Anton A., Estimation of the Efficiency for Variable Speed Pumps in EPANET Compared with Experimental Data, 16th Water Distribution System Analysis Conference, WDSA2014 — Urban Water Hydroinformatics and Strategic Planning, *Procedia Engineering* (DOI: 10.1016/j.proeng.2014.11.466), Vol. 89, pp. 1404-1411, 2014.
23. Alboiu N. I., Anton A., Cosoiu C. I., Correlation between the flow conditions and the operation regime of a certain wastewater system, *Bulletin of the Polytechnic Institute of Iasi-Construction & Architecture Section*, vol 64, No. 1, pp. 73-80, 2014.
24. Coşoiu C. I., Georgescu A.-M., Degeratu M., Hlevca D., Numerical predictions of the flow around a profiled casing equipped with passive flow control devices, *Journal of Wind Engineering and Industrial Aerodynamics*, DOI:10.1016/j.jweia.2012.12.006, vol. 114, pp. 48-61, 2013.
25. Anton A., Coşoiu C.I., Georgescu A.M., A new type of risk map for municipal sewerage systems, 12th International Conference on Computing and Control for the Water Industry, CCWI2013, Perugia, Italy, 2013.
26. Degeratu, M., Georgescu, A.M., Alboiu, N.I., Bandoc, G., Coşoiu, C.I., Turbulent structure of the wind flow and tunnel tests achieved for atmospheric contamination modelling, *Journal of Environmental Protection and Ecology*, vol. 14 (2), pp. 405-413, 2013.
27. Degeratu, M., Georgescu A.M., Bandoc G., Alboiu N.I., Coşoiu C.I., Golumbeanu M., Atmospheric boundary layer modeling as mean velocity profile used for wind tunnel tests on containment dispersion in the atmosphere, *Journal of Environmental Protection and Ecology*, vol. 14 (1), pp. 22-28, 2013.
28. Coşoiu C. I., Georgescu A.-M., Degeratu M., Hlevca D., Device for passive flow control around vertical axis marine turbine, *Institute Of Physics Conference Series: Earth and Environmental Science (BDI Inspec, Compendex; DOI: 10.1088/1755-1315/15/6/062031, ISSN 1755-1315)*, vol. 15, part 6, article number 062031 (8pp), Online: <http://iopscience.iop.org/1755-1315/15/5/052005>, 2012.
29. Georgescu A.-M., Coşoiu C. I., Alboiu N., Hlevca D., Tătăroiu R., Popescu O., Penstock failure detection system at the "Vălsan" hydro power plant, *Institute Of Physics Conference Series: Earth and Environmental Science (BDI Inspec, Compendex; DOI: 10.1088/1755-1315/15/5/052005, ISSN 1755-1315)*, vol. 15, part 5, article number 052005 (8pp), Online: <http://iopscience.iop.org/1755-1315/15/5/052005>, 2012.
30. Georgescu A.-M., Georgescu S. C., Coşoiu C. I., Alboiu N., Efficiency of Marine Hydropower Farms Consisting of Multiple Vertical Axis Cross-Flow Turbines, In: *International Journal of Fluid Machinery and Systems (BDI: J-STAGE/ Japan Science and Technology Information Aggregator, DOI: 10.5293/IJFMS.2011.4.1.149, ISSN online 1882-9554)*, vol. 4, no. 1, pp 149-159, Online http://www.jstage.jst.go.jp/browse/ijfms/_vols, Jan.-March 2011.
31. Coşoiu C.I., Damian R.M., Degeratu M., Georgescu A.-M, Hlevca D., Numerical study on the efficiency between the ducted and the free stream rotor of a horizontal axis wind turbine. In: *Proceedings of EWEA Europe's Premier Wind Energy Event, Brussels 2011, 14-17 March 2011, Brussels, Belgium, 10 pg.&poster, 2011.*
32. Coşoiu C.I., Hlevca D., Numerical simulation of the flow around a bluff body placed in a turbulent boundary layer, In: *Scientific Bulletin Series, Mathematical Modeling in Civil Engineering*, No. 1-2-March-2001, pp. 66-76, 2011.
33. Georgescu A.-M., Georgescu S. C., Coşoiu C. I., Alboiu N., Hamzu Al., Velocity field in the wake of a hydropower farm equipped with Achard turbines, *Institute Of Physics Conference Series: Earth and Environmental Science (BDI Inspec, Compendex; DOI:10.1088/1755-1315/12/1/012108, ISSN 1755-1315)*, vol. 12, article number 012108 (10pp), Online: <http://iopscience.iop.org/1755-1315/12/1/012108>, 2010.
34. Georgescu A.-M., Georgescu S.-C., Coşoiu C. I., Alboiu N., Petre A.-M., Experimental versus numerical results on the velocity field in the wake of a hydropower farm equipped with three Achard turbines, In: *University "Politehnica" of Bucharest Scientific Bulletin, Series D: Mechanical Engineering*, ISSN 1454-2358, vol.72, no.1, pp. 133-140, 2010.
35. Damian R.M., Coşoiu C.I., Numerical Simulation on an airfoil placed in a uniform velocity field. In: *Annals of the University of Petroşani, Mechanical Engineering; ISSN 1454-9166*, 11 (2009), pp.53-62, 2009.
36. Coşoiu C.I., Ştefan R.S., Căpraru A.I., Sandu L., Wind Effects on the St. Joseph Cathedral Urban Area. In: *Scientific Bulletin of the Politehnica University of Timişoara, Transactions on Mechanics*, ISSN 1224-6077, vol.53(67), Fascicola 3, Special Issue Proceedings of the 4th Workshop on Vortex Dominated Flows, September 12-13, Bucharest, eds A-M Georgescu, Sanda-C. Georgescu, S.I. Bernad, pp 131-136, 2008.

37. Coşoiu C.I., Ştefan R.S., Culcea M., Sârbu C., Sandu L., Wind effects on several Typical Configurations. In: Scientific Bulletin of the Politehnica University of Timișoara, Transactions on Mechanics, ISSN 1224-6077, vol.53(67), Fascicola 3, Special Issue Proceedings of the 4th Workshop on Vortex Dominated Flows, September 12-13, Bucharest, eds A-M Georgescu, Sanda-C. Georgescu, S.I. Bernad, pp 137-142, 2008.
38. Georgescu A.-M., Georgescu S.-C., Bernad S. I., Coşoiu C. I., Some Aspects on the Horizontal Arrangement of Vertical Axes, Cross-Flow, Marine Current Turbines in Farms, In: Proceedings of the 2nd International Conference on Ocean Energy ICOE 2008, October 15-17, Brest, France, CD-ROM, 8 pg. & poster, 2008.
39. Coşoiu C.I., Damian A., Damian R.M., Degeratu M., Numerical and experimental investigation of wind induced pressures on a photovoltaic solar panel. In: Proc. Of the 4th IASME/WSEAS International Conference on Energy, Environment, Ecosystems and Sustainable Development (EEESD `08), Algarve, Portugal, June 11-13, 2008, New Aspects of Energy, Environment, Ecosystems and Sustainable Development, Part I, pp.74-80, ISBN 978-960-6766-71-8, ISSN 1790-5095, 2008.
40. Georgescu A.-M., Georgescu S.-C., Degeratu M., Bernad S., Coşoiu C. I., Numerical modelling comparison between airflow and water flow within the Achard-type turbine. In: Scientific Bulletin of the Politehnica University of Timișoara, Transactions on Mechanics, ISSN 1224-6077, vol.52(66), Fascicola 6, Special Issue Proceedings of the 2nd IAHR International Meeting of the Workgroup on Cavitation and Dynamic Problems in Hydraulic Machinery and Systems, October 24-26, Timișoara, eds R. Susan-Resiga, S. Bernad & S. Muntean, pp 289-298, 2007.
41. Georgescu A.-M., Georgescu S.-C., Bernad S., Coşoiu C. I., COMSOL Multiphysics versus Fluent: 2D numerical simulation of the stationary flow around a blade of the Achard turbine. In: Scientific Bulletin of the Politehnica University of Timișoara, Transactions on Mechanics ISSN 1224-6077, vol.52(66), Fascicola 3, Special Issue Proceedings of the 3rd Workshop on Vortex Dominated Flows, June 1-2, Timișoara, eds S. Bernad, S. Muntean & R. Susan-Resiga, pp 13-22, 2007.
42. Degeratu M., Georgescu A.-M., Haşegan L., Coşoiu C.I., Ştefan R.S., Some aspects about a vortex generating building model placed upwind an aeroelastic model in the boundary layer wind tunnel. In: Scientific Bulletin of the Politehnica University of Timișoara, Transactions on Mechanics, ISSN 1224-6077, vol.52(66), Fascicola 3, Special Issue Proceedings of the 3rd Workshop on Vortex Dominated Flows, June 1-2, Timișoara, eds S. Bernad, S. Muntean & R. Susan-Resiga, pp 55-60, 2007.
43. Sandu L., Degeratu M., Haşegan L., Georgescu A., Coşoiu C. I., Ştefan R. S., Atmospheric Vortex Flows and Interaction with Buildings and Structures, Chapter 6, pp. 239-312, In: Vortex Flows and Applications, eds. R. Susan-Resiga, S. Bernad & S. Muntean, EUROSTAMPA Publishing House, Timișoara, ISBN 978-973-687-659-2, 492 pages, 2007.
44. Degeratu M., Georgescu A., Haşegan L., Coşoiu C.I., Pascu R., Sandu L., Dynamic wind tunnel tests for the Bucharest Tower Center, In: Scientific Bulletin "Politehnica" University of Timișoara, Transactions on Mechanics (ISSN 1224-6077), vol. 51(65), Fascicola 3, Special Issue Proc. of the 2nd Workshop on Vortex Dominated Flows: Achievements and Open Problems, June 30 – July 1, eds. S. Bernad, S. Muntean & R. Susan-Resiga, pp. 83-88, 2006.
45. Georgescu A., Coşoiu C.I., Surrogate, along wind turbulent velocity time series, In: Scientific Bulletin "Politehnica" University of Timișoara, Transactions on Mechanics (ISSN 1224-6077), vol. 51(65), Fascicola 3, Special Issue Proc. of the 2nd Workshop on Vortex Dominated Flows: Achievements and Open Problems, June 30 – July 1, eds. S. Bernad, S. Muntean & R. Susan-Resiga, pp. 89-94, 2006.
46. Georgescu A., Haşegan L., Coşoiu C.I., Degeratu M., Sandu L., Numerical and Experimental Investigation of Wind Induced Pressures on a Tall Building in Bucharest, In: Proceedings of the International Conference on Modelling Fluid Flow CMFF'06, ISSN 0142-727X, ISBN 963-06-0361-6, September 6-9, Budapest, Hungary, eds T. Lajos & J. Vad, vol. I, pp. 148-155, 2006.
47. Sandu L., Degeratu M., Haşegan M., Georgescu A., Coşoiu C.I., Actual and perspective research in wind engineering, In: Scientific Bulletin "Politehnica" University of Timișoara, Transactions on Mechanics (ISSN 1224-6077), vol. 50(64), Special Issue Proc. of the Workshop on Vortex Dominated Flows: Achievements and Open Problems, June 10-11, eds. S. Bernad, S. Muntean, R. Susan-Resiga, pp. 23-32, 2005.

The full list of the relevant scientific publications of Dr. Costin Ioan Coşoiu may be consulted at the following links:

Web of Science

https://apps.webofknowledge.com/summary.do?product=WOS&parentProduct=WOS&search_mode=GeneralSearch&qid=3&SID=C5finAUJ82Ugc9idchp&page=1&action=changePageSize&pageSize=10

ResearchGate

https://www.researchgate.net/profile/Costin_Coioiu

GoogleScholar

<https://scholar.google.ro/citations?user=HiHUEuoAAAAJ&hl=en>