

1 Curriculum Vitae

Personal information

Family / first name: Pecnik, Rene
Researcher ID: C-2129-2019
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Education

2003–2007 PhD Mech. Eng., graduated with distinction (best 5%)
Dep. of Thermal Turbomachinery and Machine Dynamics
Faculty Mech. Eng., Graz University of Technology (AT)
Thesis: “Laminar to turbulent transition modelling”

1995–2002 MSc Mechanical Engineering, graduated with distinction
Dep. of Thermal Turbomachinery and Machine Dynamics
Faculty Mech. Eng., Graz University of Technology (AT)
Thesis: “Turbulence modeling in high pressure turbines”



Current positions

2022 - Professor Thermal and Fluids Engineering
Process and Energy Department, 3mE, TU Delft (NL)
Research focus: heat transfer, turbines, energy efficiency

2015 - 2022 Associate Professor, Energy Technology
Process and Energy Department, 3mE, TU Delft (NL)



Previous positions

2010 – 2015 Assistant Professor, Energy Technology
Process and Energy Department, 3mE, TU Delft (NL)

2008 – 2010 Postdoctoral researcher
Center for Turbulence Research, Stanford University (USA)
Project: Predictive Science Academic Alliance Program
PI's: Prof. Gianluca Iaccarino, Prof. Parviz Moin

2007 – 2008 Erwin Schrödinger postdoctoral fellowship
Center for Turbulence Research, Stanford University (USA)
Project: Structure based turbulence modeling
Collaborator: Prof. Gianluca Iaccarino



Fellowships and academic visits

2019 Japan Society for the Promotion of Science (**9k\$**), 2 month, Tohoku University (JP)
2016 Center for Turbulence Summer Program (**5k\$**), 1 month, Stanford University (US)
2012 Center for Turbulence Summer Program (**5k\$**), 1 month, Stanford University (US)
2012 Visiting researcher (**3k\$**), 1 month, University of Cyprus (CY)
2007-2008 Austrian Erwin Schrödinger fellowship (**55k€**), 1 year, Stanford University (US)

Memberships of scientific societies

- 2021 – Organizing committee member, The European sCO₂ Conference for Energy Systems
- 2014 – Organizing committee member, Supercritical CO₂ Power Cycles Symposium
- 2016 – Scientific committee member, Int. Non-ideal Compress. Fluid Dyn. Symposium
- 2010 – Member, American Physical Society
- 2012 – Member, J.M. Burgerscentrum Research School for Fluid Mechanics

Teaching activities

- 2019 – curr. **Thermofluids** ¶,§
6 ECTS, 1st year BSc course, 800 students/year, TUD
- 2016 – curr. **Modeling of Thermo- and Hydrodynamic systems** ¶,§
5 ECTS, MSc course, 60 students/year, TUD
- 2012 – curr. **Burgerscentrum Turbulence Course** ¶,§
Graduate school course (for PhD's), 50 students/year, TUD
- 2016 – 2019 **Integrated Mechanical Systems**
12 ECTS, 3rd year BSc course, 400 students/year, TUD
- 2011 – 2016 **Turbomachinery** §
4 ECTS MSc course, 80 students/year, TUD
- 2011 – 2015 **Fluid Machinery**
4 ECTS MSc course, 40 students/year, TUD
- 2008 – 2010 **Computational Fluid Dynamics**
Graduate course, 30 students/year, Stanford University (US)

¶ In these lectures I frequently use Jupyter-Notebooks, which allow me to provide easily accessible Python programs to students, supported with equations and explanatory videos. The python tools are made available, such that students can use them also for other courses or for their professional career afterwards.

§ Responsible lecturer (otherwise contributing lecturer)

Supervision of graduate students and postdoctoral fellows (all at TU Delft)

- 2011 – Supervisor of **50+ MSc students**
6 students graduated cum laude
2 students won the prize for the best graduate of the mechanical engineering faculty
- 2011 – Supervisor of **12 PhD students**
4 ongoing (I am the promoter), 8 completed (2 × promoter and 6 × co-promoter)
Dr. Ashish Patel: graduated cum laude in 2016 (top 5% at TU Delft), was among the five finalists for the ERCOFTAC Da Vinci award (fluid mechanics PhD in Europe)
Dr. Jurriaan Peeters now holds a position as Assistant Professor at TU Delft (NL)
- 2016 – Supervisor of **5 Bachelor student projects**
- 2016 – Supervisor of **4 postdoctoral fellows**

Acquired research funding

Project title / Funding source / Period / Role	Amount
When Flows Turn Turbulent in the Supercritical Fluid Region / ERC-CoG / 2020–2025 / Main applicant	2.0M€
BioORC: Kostprijsverlaging Duurzame Energie / NWO-RVO / 2017–2021 / Co-applicant	2.1M€
ORC turbogenerators: a quantum step forward by a novel integral design approach / NWO-STW / 2016–2021 / Main applicant	718k€
Solar Energy Harvesting – Nanofluid – Nanomanufacturing / TUD Cohesion Project / 2016–2018 / Main applicant	80k€
Direct numerical simulation of compressible turbulent flows close to their vapor-liquid critical point / FOM-Shell Computational Science Grant / 2012–2016 / Main applicant	256€
Development of an accurate design correlation for supercritical heat transfer applications / NWO-STW / 2011–2015 / Co-written, PhD supervisor	665k€
Start-up grant / TU Delft / 2011–2015 / PhD supervisor	100k€

Professional appointments and committee memberships

2019 –	Topic editor, MDPI Fluids Journal; Editorial board member, MDPI Fluids Journal, Special edition on “Fluid Dynamics Close to the Vapour-Liquid Critical Point”
2014 –	Biannual International Symposium on Supercritical CO ₂ Power Cycles, 400 participants, 3 days, 2014 Pittsburgh, 2016 San Antonio, 2018 Pittsburgh (USA)
2017 –	Coordinator of the Burgerscentrum Turbulence Contact Group, 50 participants (NL)
2015	Local organizer of the 15 th European Turbulence Conference, 450 participants (NL)
2013, 2014	Track organizer for the American Society of Mechanical Engineers Turbo Expo, 100 participants, 3 days, 2013 in Düsseldorf (Germany), 2014 in Austin (USA)

Institutional responsibilities

2020	Member of Full Professor hiring committee, Girona University, Spain (ES)
2019 –	Member of the TU Delft High Performance Computing Centre
2017 –	Member of the appeals committee for mech. eng. BSc students (BSA commissie)
2014	Member of Assistant Professor hiring committee, Aerospace faculty, TU Delft (NL)
2013 – 2016	Organizer Process Energy Department seminar series (NL)
2012 – 2016	Coordinator of the Solid and Fluid Mechanics Master’s degree program (NL)