Ward De Paepe

[redacted]
[redacted]
ward.depaepe@umons.ac.be
http://staff.umons.ac.be/Ward.DEPAEPE/
ORCID: orcid.org/0000-0001-5008-2946

Objective

To be involved in a dynamic research team and to manage experimental and numerical research projects in gas turbines towards sustainable energy production.

Education

2010–2014 **Ph.D. in Engineering**, Vrije Universiteit Brussel (VUB)
Thesis Title: *Flexible Heat Production from a micro Gas Turbine: Design and Experimental Analysis of Humidified Cycles*
Highest honours with unanimous congratulations of the jury

2005–2010 **Master in Engineering**, Electro-Mechanical Engineering, VUB
Highest honours

Scientific Carrier

2019–present **Université de Mons (UMONS), Associate Professor**

2017–2019 **Université de Mons (UMONS), Assistant Professor**

2016–2017 **Université Libre de Bruxelles (ULB), FNRS Postdoctoral researcher**
With or without CO_2: development of future micro Gas Turbine (mGT) in the energy transition context.

2014–2016 **Vrije Universiteit Brussel (VUB), Postdoctoral researcher**
Development of a flexible micro Gas Turbine (mGT) cycle for future energy applications in the current energy transition towards fully renewable production.

2010–2014 **FWO Ph.D. Research Fellow, VUB**
Development and experimental characterisation of a humidified mGT cycle for flexible heat production.

10–12/2013 **Lund University, Sweden, Visiting Researcher**
Experimentally characterisation of humidified combustion in mGT applications.

Scientific Summary

Publications 38 ISI-journal publications (16 first author)
60+ articles in conference proceedings
Citations 565 (scopus), 697 (google scholar)
h-index 15 (scopus), 17 (google scholar)

Conferences	23 conference presentations (i.a. ICAE, ECOS, microgen, ASME Turbo Expo) 2 invited conference presentation (mini symposium on microturbines 2017, Korean-Austrian Energy & Environmental Forum 2017) 16 times session chair (ICAE 2014, 2016, 2017 & 2018 and ASME Turbo Expo 2016–2021) 10 times session organizer (ASME Turbo Expo 2016–2021)
Reviews	frequently consulted for Applied Energy, Energy, Applied Thermal Engineering and ASME Turbo Expo
Thesis	1 defended and 7 ongoing Ph.D. Thesis students 17 Master thesis students

Institutional responsibilities

2017–present	Active member of the faculty council, Faculty of Engineering, UMONS
2017–present	Active member of the mechanical engineering department board, Faculty of Engineering, UMONS
2020–present	Secretary of the mechanical engineering department board, polytechnic faculty, UMONS
2015–2017	OAP representative in the Faculty Council and Faculty PR–commission at VUB
2012–2017	Evacuation and First Aid responsible of the MECH department at VUB
2007–2010	Class representative in Educational Council

Awards

2021	ASME Turbo Expo 2020 - Best Paper Award for the Cycle Innovations Committee (first author)
2017	Applied Energy 2016 ICAE Outstanding Paper (last author)
2017	Young Engineer ASME Turbo Expo Participation Award (YETEP award)
2016	The Industrial Advisory Board award at the 24th "Journée d'Etude" of the Belgian Section of the Combustion Institute
2015	Solvay Award 2014 for best Ph.D. thesis
2014	Best student poster award at ASME Turbo Expo 2014 (co-author)
2010	Engineering Price of the Koninklijke Vlaamse Ingenieursvereniging – Category: Energy

Scientific activities

2021–present	Co-chair of the Cycle Innovations Committee of the International Gas Turbine Institute (IGTI)
2020–present	Member WG Hydrogen Belgium Energy Research Alliance (BERA)
2019–2021	Point-of-Contact of the Cycle Innovations Committee of the International Gas Turbine Institute (IGTI)
2018	Chair of 25^{th} "Journées d'Etude", the biennial workshop of the Belgian Section of the Combustion Institute, May 15-16, 2018, Brussels Belgium
2015–present	Member of the European Turbine Network (ETN)
2014–present	Member of the Cycle Innovations Committee of the International Gas Turbine Institute (IGTI)

Funding ID

Since my arrival at UMONS in September 2019, considering the significant time invested in all teaching activities, I have already been successful in acquiring funding from various sources, including the European Union and national funding sources.

National Projects (promotor)

2021–2025 **BE-HyFE — Belgian Hydrogen Fundamental Expertise**
Appel SFP Economie Fonds de Transition Energétique
Leader: Prof. Michel De Paepe, UGent
Budget: 4 545 529 € (UMONS budget: 194 217 €)

2019–2023 **BEST — Belgian Energy SysTem**
Appel SFP Economie Fonds de Transition Energétique
Leader: Prof. Hervé Jeanmart, UCLouvain
Budget: 4 013 720 € (UMONS budget: 327 393 €)

2019–2023 **H2GO — Hydrogen fuelled mGT optimisation: CFD design and optimisation of compressor-combustor-turbine system**
FRIA scholarship — Cedric Devriese

2019–2023 **STORAGE — robuST design Optimization of hydrogen-based hybrid ReNewAble enerGy systEms**
FRIA scholarship — Diederik Coppitters

European Projects (co-author)

2020–2023 **NEXTMGT–Next Generation of Micro Gas Turbines for High Efficiency, Low emissions and Fuel Flexibility**
Marie Skłodowska-Curie actions, Innovative Training Networks (ITN)
Call: H2020-MSCA-ITN-2019
Leader: Prof. Abdulnaser Sayma, City University, UK
Budget: 3 500 000 € (UCLouvain budget: 500 000 €)
(Participation in the writing process + act as co-promoter with prof. Contino, UCLouvain)

During my career at both ULB and VUB as doctoral and post-doctoral researcher, I have been involved in several project writing processes for both funding from various sources as co-author, including the European Union, international and national funding sources.

European Projects (co-author)

2014–2017 **Ad-Pow-Gen** (granted)
ERAFRICA project
Leader: Prof. Peter Breuhaus, International Research Institute Stavanger, Norway
Budget: 696 320 € (VUB budget: 199 500 €)

European Collaboration Projects (co-author)

2017–2019 **AcaDEMIC–simulAtion AnD Experiments of MIld Combustion systems** (granted)
FNRS bilateral agreements with PAN (Poland)
Leader: Prof. Alessandro Parente, Université Libre de Bruxelles, Belgium
Budget: 680 476 € (VUB budget: 472 000 €)

National Projects (co-author)

2016–2018 **FREE–Flexible eneRgy vEctors of the futurE** (granted)
Engie–Electrabel research project Q4 2015–2016
Leader: Prof. Francesco Contino, Vrije Universiteit Brussel, Belgium
Budget: 690 000 € (VUB budget: 240 000 €)

2014–2017 **FlexiHAT–Flexibility of heat production in combine heat and power** (granted)
Electrabel research project 2013–2014
Leader: Prof. Francesco Contino, Vrije Universiteit Brussel, Belgium
Budget: 130 000 € (VUB only)

Personal Funding

2016–2019 **FNRS PostDoctoral Fellowship** (granted)
With or without CO_2: development of the future micro Gas Turbine in an energy transition context.
Promoter: Prof. Alessandro Parente, Université Libre de Bruxelles, Belgium

2010–2014 **FWO Ph.D. Fellowship** (granted)
Co-utilisation of biomass and natural gas in gasturbines through primary steam reforming of methane
Promoter: Prof. Jacques De Ruyck, Vrije Universiteit Brussel, Belgium

2013–2016 **5 FWO Grants for participation at a congress abroad**

2013 **1 FWO Travel Grant for a long stay abroad**

Teaching and Supervising activities

University courses

Combustion and Burners: First year Master students, Mechanical Engineering
Équipments Thermiques: First year Master students, Mechanical Engineering
Thermique Appliquée: First year Master students, Chemical Engineering
Thermique Numérique: First year Master students, Mechanical Engineering, Option Energy
Thermique Appliquée: First year Master students, Mechanical Engineering, Option Energy
Échangeurs Speciaux: First year Master students, Mechanical Engineering, Option Energy
Modeling and Optimization of Energy Systems: First year Master students, Mechanical Engineering, Option Energy

PhD-Theses (Defended)

2015–2019 **Marco Ferrarotti** (co-promoter): FoCUS — Fuel flexibility for smart energy Carriers in novel combUstion System (FRIA-scholarship, cotutelle ULB-UMONS)

PhD-Theses (Ongoing)

2018–2022 **Alessio Pappa** (promoter): Fuel and load flexibility of micro gas turbine: combustion chamber development (Research Assistant)
2018–2022 **Diederik Coppitters** (promoter): STORAGE — robuST design Optimization of hydrogen-based hybrid RenewAble enerGy systEms (FRIA-scholarship, cotutelle UMONS-VUB)
2019–2023 **Cedric Devriese** (promoter): H2GO — Hydrogen fuelled mGT optimisation: CFD design and optimisation of compressor-combustor-turbine system (FRIA-scholarship, cotutelle UMONS-TUe)
2019–2023 **Jérémy Bompas** (promoter): Characterisation of use of Biofuels in micro-cogeneration Applications (within framework of ENERBIO project)
2020–2024 **Antoine Verheaghe** (promoter): Carbon Capture in Combined Cycle Gas Turbines (within framework of BEST project)
2020–2024 **Aggelos Gaitanis** (co-promoter): Operational flexibility of micro gas turbine towards integration in smart systems (within framework of NEXTmGT project)
2020–2024 **Matteo Savarese** (co-promoter): Characterization of the combustion of e-fuels in advanced technologies (within framework of BEST project)