

University Academic Curriculum Vitae

Personal information

Name: Walburga Ursula Kerschbaumer
E-Mail: walburga.kerschbaumer@unibz.it

Education since leaving school

- 2020, Master in Secondary and Upper Secondary Education, Vocational Training Teaching, Specialization in Technology (Universitat Politècnica de Catalunya, Spain)
- 2010, PhD in Applied Fluid Mechanics, Optimization of Falling Film Evaporating Process for WFI Production (Clausthal University of Technology, Germany)
- 2005, M.Sc. (Dipl.-Ing.), Energy Systems Engineering (Clausthal University of Technology, Germany)

Present appointment

- Associate Professor
- Free University of Bozen-Bolzano, Faculty of Engineering

Professional experience

From / to	Job title	Name of academic Institution / Company	Responsibilities
09/2021-05/2024	Associate Professor	University of Vic, Faculty of Science and Technology Engineering, Vic, Spain	<ul style="list-style-type: none">• Teaching Project Management, Material Sciences, Manufacturing Process Engineering, and Thermal Engines in the degree programs Automotive Engineering and Mechatronics Engineering• Responsible for industry relations
12/2020-07/2021	Project Manager	Carnet Future Mobility Research HUB, Universitat Politècnica de Catalunya, Spain	<ul style="list-style-type: none">• Development of higher education continuous learning programs for the automotive industry and future mobility sector• Collaboration in the acquisition of new projects
09/2019-08/2021	Lecturer (part-time)	University of Vic, Faculty of Science and Technology Engineering, Vic, Spain	<ul style="list-style-type: none">• Lectureships for Thermal Engines and Project Management in the degree program Automotive Engineering
03/2018-08/2019	Project Manager	Elausa Electronics, Vic, Spain	<ul style="list-style-type: none">• Project planning and assurance of target achievements for the development and series production of electronic and lighting components coordinating a multidisciplinary project team

			<ul style="list-style-type: none"> • Identification of project conflicts and task prioritization • Communication on project status to ensure quality and project timings • Main projects: Third Brake Light 8 LED and 24 LED for several VW group models, Position Light for VW270 Polo GTI, Side Marker Reflector + Lamp for Porsche PO426/0EU_B
11/2012-08/2015	Development Engineer	Audi AG, CO2 and Emissions / Energy Management, Ingolstadt, Germany	<ul style="list-style-type: none"> • Measurements and analysis for the energy management of conventional and electrified vehicles (Audi A3 e-tron, Audi Q7 PHEV) and for benchmark projects (Toyota Prius Hybrid, Volvo V60 PHEV) • Energy efficiency evaluation of automatic transmission systems • Creation of application-specific, automated analysis routines of measurement data
01/2009-10/2012	CFD Simulation Engineer, Audi AG	Audi Ag, Engineering V-diesel engines, Neckarsulm, Germany	<ul style="list-style-type: none"> • 3D-CFD and 1D-3D coupled simulation for the development of engine components (in particular, charging, intake and exhaust system) • Method improvement and standardization of CFD simulation data analysis procedures
10/2005-12/2008	Postgraduate Research Assistant	Technical University of Clausthal, Germany	<ul style="list-style-type: none"> • Analysis of industrial distillation process accomplishing measurements in operating plant and performing CFD simulations • Participation in the planning and acquisition of research projects • Tutor for Fluid Mechanics' practices and students' master's thesis

Experience in academic teaching

Academic Year 2024-25

- Manufacturing Technology (8 ETCS, German), Bachelor's degree in mechanical and industrial engineering, Unibz
- Advanced Manufacturing Technology and Systems (5 ETCS, English), Master's Degree in Industrial Mechanical Engineering, Unibz

Academic Year 2022-23

- Engines (3 ECTS, Catalan), Degree in Automotive Engineering, UVic-UCC
- Manufacturing Process Engineering (6 ETCS, English), Degree in Mechatronics Engineering, UVic-UCC

- Material Sciences (6 ETCS, Catalan), Degree in Automotive Engineering, UVic-UCC
 - Project Management (3 ECTS, English), Degree in Automotive Engineering, UVic-UCC
- Academic Year 2021-22
- Engines (3 ECTS, Catalan), Degree in Automotive Engineering, UVic-UCC
 - Manufacturing Process Engineering (6 ETCS, English), Degree in Mechatronics Engineering, UVic-UCC
 - Project Management (3 ECTS, English), Degree in Automotive Engineering, UVic-UCC
- Academic Year 2020-21
- Engines (3 ECTS, Catalan), Degree in Automotive Engineering
 - Manufacturing Process Engineering (6 ETCS, English), Degree in Mechatronics Engineering, UVic-UCC
 - Material Sciences (6 ETCS, Catalan), Degree in Automotive Engineering, UVic-UCC
 - Project Management (3 ECTS, English), Degree in Automotive Engineering, UVic-UCC
- Academic Year 2019-20
- Engines (3 ECTS, Catalan), Degree in Automotive Engineering, UVic-UCC
 - Project Management (3 ECTS, English), Degree in Automotive Engineering, UVic-UCC
- Engines (3 ECTS, Catalan), Degree in Automotive Engineering, UVic-UCC
- Other academic responsibilities**
- Project Management for the development of the Learning Factory at Unibz
 - Member of faculty management team with responsibility for industry relations at UVic-UCC
 - Coordination of the development of a new master's degree programme for the Faculty of Science and Technology Engineering, UVic-UCC
 - Collaboration in the accreditation process of the UVic-UCC Automotive Engineering Degree for the Catalan Agency for University Quality (AQU)

Areas of scientific interest

Simulation and digital twin for the optimization of resource utilization and energy efficiency in manufacturing processes

Currently, the manufacturing industry is suffering a transformation towards smart, flexible, and energy- and resource-efficient manufacturing systems promoted by the advances in sensing technologies, data management techniques, and communication and connectivity tools. Regarding energy efficiency, traditional strategies focused on designing machines with less energy consumption and on minimizing processing times required by machines. In order to minimize energy consumption in a holistic way, taking into account the unit process, process chains or complete facility management/control systems should be capable to react flexibly to real-

time information of production-related data from sensors and IoT devices but also parameters of power supply situation, energy market information and price fluctuations.

Manufacturing process simulation of material and energy flows can be applied for the prediction of energy demand enabling decisions based on energy as well as other metrics such as resource utilization, throughput and costs. The creation of a digital twin to receive real-time information from the physical world and the integration into the virtual simulation model can further extend the capabilities of the virtual models.

National and international collaboration

- Collaboration with KdG University of Applied Sciences and Arts (KdG) Antwerp (Belgium) and Technische Hochschule Wildau (Germany) for the organization of Blended Intensive Program (Hydrogen in Automotive)
- Erasmus + Staff mobility at Vinci Higher Education, Paris (France) for teaching and training activities
- Erasmus + Staff mobility at HAMK University of Applied Sciences (Finland) for teaching and training activities
- Collaboration with CARNET Barcelona (Spain) in preparing proposal on the development of Web TV videos and Short Free Online Courses (SFOC) for the EIT Urban Mobility Academy
- Collaboration with CARNET Barcelona (Spain) as project manager for the development of lifelong learning courses at a higher level in the field of automotive and mobility of the future for the Government of Catalonia
- Collaboration with the Institute of Powertrains and Automotive Technology, Vienna University of Technology for the analysis of vehicle energy management
- Collaboration with Ansys CFX (Otterfing) for the development of standardized simulation procedure for turbocharger components

Publications

Zare L., Kerschbaumer W., Integrating Theory and Practice: Enhancing Competence Development Through Experiential Education and Project-Based Learning in Learning Factories, 10th International Conference on Business and Industrial Research, 2025, under review.

Asja Emer, Matteo De Marchi, Angelika Hofer, Benedikt G. Mark, Walburga Kerschbaumer, Erwin Rauch, Dominik T. Matt, Examples of Potential Applications of Bio-intelligent Manufacturing, Procedia Computer Science, Volume 253, 2025, Pages 2196-2205, ISSN 1877-0509, <https://doi.org/10.1016/j.procs.2025.01.280>.

Kerschbaumer W., Weiterentwicklung von Reinstwasserdestillationsanlagen durch Messungen und numerische Untersuchungen zur Hydrodynamik und zum Wärmeübergang in Fallfilmen, Berichte des Instituts für Technische Mechanik, 1/2011. ISBN: 978-3-86948-156-2.

Kerschbaumer W., Brenner G., Numerische Untersuchung von Fallfilmen mit Wärmeübergang. Simulationswissenschaftliches Zentrum der TU Clausthal: Bericht 2005-2006. S. 130-139, Clausthal-Zellerfeld: Simulationswissenschaftliches Zentrum der Technischen Universität Clausthal. ISBN 978-3-9811720-0-3

Kerschbaumer W., Neuberger S., Peuker U. and Brenner G., Rechnergestützte Analyse einer mehrstufigen Fallfilmverdampfungsanlage

zur Herstellung von Reinstwasser. Chemie Ingenieur Technik, 80: 919-926. <https://doi.org/10.1002/cite.200800018>

Kerschbaumer, W., Peuker, U. and Brenner, G., Optimierung von Fallfilmverdampfungsanlagen zur Herstellung von Reinstwasser. Chemie Ingenieur Technik, 79: 1352-1353. <https://doi.org/10.1002/cite.200750115>

C. Mayer, W. Kerschbaumer, M. Mancini & R. Weber, Time dependent simulations of dispersion of a cloud of solid particles, Journal of the Energy Institute, 80:3, 181-183. <https://doi.org/10.1179/174602207X223752>.

**Language
competence**

German: Native

English: CEFR C1 (Cambridge Advanced Certificate, Cambridge University Press & Assessment, Spain)

Catalan: CEFR C1 (Catalan Proficiency Level Course Approval, UOC, Spain)

Spanish: CEFR Level B2 (Cualificación de competencia en Lengua Española Nivel B2, UNIR, Spain)

Italian: CEFR B2 (Diploma of 2nd grade secondary school)

Bozen, 01.02.2025