Markus Gölles

Contact details:

Markus Gölles

BEST – Bioenergy and Sustainable Technologies GmbH
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Field of work:

Modelling and control of thermochemical, thermotechnical and biotechnological processes and systems

Cross-sectoral energy and resource management

Professional activities:

Since 2005 Research associate at the competence centre
BEST – Bioenergy and Sustainable Technologies GmbH
(former *BIOENERGY 2020+* and *Austrian Bioenergy Centre*)

- Since 2015 *Area Manager*
  Automation and Control
- 2013 – 2015 *Area Manager*
  Combustion – Medium- and large-scale combustion systems
  Organisational management of the area (divided into 2 groups)
  Technical and organisational management of the working group for automation and control
- 2008 – 2013 *Senior Researcher*
  Establishment and management of a working group for automation and control
- 2005 – 2008 *Junior Researcher*
  Work area: Control of biomass furnaces

Since 2016 Lecturer at University of Natural Resources and Life Sciences, Vienna

- Since 2019 *Automation of bioprocesses* (L, several lecturers, 1 ECTS)
  Programme: Biotechnology (MSc), Bioprocess Engineering (PhD)
- Since 2016 *Measurement and control systems* (L, 3 ECTS)
  Programme: Food Science and Biotechnology (BSc)

Since 2011 Lecturer at Graz University of Technology

- 2024 *Selected Topics of Control & Dynamic Systems* (L, 3 ECTS)
  Programme: Electrical Engineering (MSc) / Information and Computer Engineering (MSc)
- 2012-2023 *Measurement and Control Engineering for Process Engineers* (L, 3 ECTS + P, 1 ECTS in 2012-2013)
  Programme: Chemical and Process Engineering (BSc)
- 2011-2014 *Mechatronic systems modelling* (L, 3 ECTS + PE, from 2012, 2 ECTS), Programmes: Electrical Engineering (MSc)/ Information and Computer Engineering (MSc)

2000-2004 Tutor at Graz University of Technology
Electrical Measurement (P, over 5 semesters)
Computational Intelligence (P, over 2 semesters)

Education:

Since 2013 Various training courses in the field of leadership and management

2004-2009 Doctoral Studies Electrical Engineering (Dr. techn., equivalent to PhD)
Graz University of Technology
Doctoral Thesis: *Development of mathematical models of a biomass grate furnace as a basis for model based control strategies*
Institute of Automation and Control
Graduation with distinction

1997-2003 Diploma studies in Electrical Engineering (Dipl.-Ing., equivalent to MSc)
Graz University of Technology
Branch of study: *Process automation technology*
Diploma Thesis: *Vibration analysis*
Institute of Electrical Measurement and Measurement Signal Processing
Graduation with distinction

Other experiences:

Since 2009 Voluntary activity for the association ZIKOMO
Association for the promotion of African students in their home countries

2003-2004 Community service – Society for the Promotion of Mental Health
Computer training and administrative activities

1996-2003 Voluntary activity as ambulance men at the Austrian Red Cross

Scientific publications and mentored theses:

Selected scientific publications:

Staudt S, Unterberger V, Muschick D, **Gölles M**, Horn M, Wernhart M, Rieberer R. MIMO state feedback control for redundantly-actuated LiBr/H2O absorption heat pumping devices and experimental validation. Control Engineering Practice.2023:140.105661. https://doi.org/10.1016/j.conengprac.2023.105661

Hollenstein C, Zemann C, Martini S, **Gölles M,** Felsberger W, Horn M. Increased Flexibility of A Fixed-Bed Biomass Gasifier through Advanced Control. in European Biomass Conference and Exhibition Proceedings. 2022 https://doi.org/10.5071/30thEUBCE2022-4BV.5.6

Muschick D, Zlabinger S, Moser A, Lichtenegger K, **Gölles M**. A multi-layer model of stratified thermal storage for MILP-based energy management systems. Applied Energy. 2022 May 15;315.118890.

Kaisermayer V, Binder J, Muschick D, Beck G, Rosegger W, Horn M, **Gölles M**, Kelz J, Leusbrock I. Smart control of interconnected district heating networks on the example of "100% Renewable District Heating Leibnitz". Smart Energy. 2022 Apr 7. 100069.

Niederwieser H, Zemann C, **Gölles M**, Reichhartinger M. Model-Based Estimation of the Flue Gas Mass Flow in Biomass Boilers. IEEE Transactions on Control Systems Technology. 2021 Jul;19(4):1609 - 1622. https://doi.org/10.1109/TCST.2020.3016404

Complete lists of all scientific publications:

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

https://pure.tugraz.at/portal/en/persons/markus-goelles(0e3b0fa8-08b0-4cc7-a1f1-dddd8966e687)/publications.html

List of all theses supervised at Graz University of Technology:

https://online.tugraz.at/tug_online/wbAbs.showMaskAbsBetreuer?pOrgNr=37&pPersNr=22949