

# Markus Göllles

## Contact details:



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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)  
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
- Since 2012    *Measurement and Control Engineering for Process Engineers*  
(L, 3 ECTS + P, in 2012&2013, 1 ECTS)  
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:

- 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, Muschick D, Horn M, **Gölles M**. Operation of coupled multi-owner district heating networks via distributed optimization. *Energy Reports*. 2021 Okt;7(Suppl. 4):273-281. <https://doi.org/10.1016/j.egy.2021.08.145>
- 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.
- Unterberger V, Lichtenegger K, Kaisermayer V, **Gölles M**, Horn M. An adaptive short-term forecasting method for the energy yield of flat-plate solar collector systems. *Appl Energy* 2021;293. <https://doi.org/10.1016/j.apenergy.2021.116891>
- 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>
- Nigitz T, **Gölles M**, Aichernig C, Schneider S, Hofbauer H, Horn M. Increased efficiency of dual fluidized bed plants via a novel control strategy. *Biomass Bioenergy* 2020;141. <https://doi.org/10.1016/j.biombioe.2020.105688>
- Zemann C, Deutsch M, Zlabinger S, Hofmeister G, **Gölles M**, Horn M. Optimal operation of residential heating systems with logwood boiler, buffer storage and solar thermal collector. *Biomass Bioenergy* 2020;140. <https://doi.org/10.1016/j.biombioe.2020.105622>

Complete lists of all scientific publications:

[https://www.researchgate.net/profile/Markus\\_Goelles](https://www.researchgate.net/profile/Markus_Goelles)

[https://pure.tugraz.at/portal/en/persons/markus-goelles\(0e3b0fa8-08b0-4cc7-a1f1-dddd8966e687\)/publications.html](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](https://online.tugraz.at/tug_online/wbAbs.showMaskAbsBetreuer?pOrgNr=37&pPersNr=22949)