

## Univ. Prof. Dipl.-Ing. Dr.-techn. René Hofmann



### Personal Data

<b>Name</b>	René Hofmann
<b>Date/Place of Birth</b>	July 8 <sup>th</sup> , 1976, AUSTRIA
<b>Position</b>	(TU WIEN, Institute for Energy Systems and Thermodynamics), Univ.Prof., Head of the research group for <i>Industrial Energy Systems</i> (AIT, Center for Energy) Thematic Coordinator, Research Field <i>Efficiency in Industrial Processes and Systems</i> , Center for Energy.
<b>Address</b>	(TU WIEN ), Getreidemarkt 9/E302, 1060 Vienna, AUSTRIA (AIT), Giefinggasse 2, 1210 Vienna, AUSTRIA
<b>WWW</b>	(TU Wien) <a href="https://www.iet.tuwien.ac.at/forschungsbereich_industrielle_energiesysteme">https://www.iet.tuwien.ac.at/forschungsbereich_industrielle_energiesysteme</a> (AIT) <a href="https://www.ait.ac.at/themen/sustainable-thermal-energy-systems/decarbonisation-and-digitalisation-in-industry/industrial-energy-systems/">https://www.ait.ac.at/themen/sustainable-thermal-energy-systems/decarbonisation-and-digitalisation-in-industry/industrial-energy-systems/</a> (SIC!) <a href="https://sic.tuwien.ac.at">https://sic.tuwien.ac.at</a>
<b>Email</b>	<a href="mailto:rene.hofmann@tuwien.ac.at">rene.hofmann@tuwien.ac.at</a>   <a href="mailto:rene.hofmann@ait.ac.at">rene.hofmann@ait.ac.at</a>
<b>Phone</b>	+43 664 889 649 58

### Professional Experience & Education

Since 1/2018	<u>University Professor for Industrial Energy Systems, TU Wien / Thematic Coordinator, Research Field <i>Efficiency in Industrial Processes and Systems</i>, Competence Unit Thermal Energy Systems, Center for Energy, AIT, Austria.</u>
Since 5/2015	University Professor for Industrial Energy Systems, TU Wien / Senior Scientist, AIT, Austria.
2013 - 2015	Senior Process Engineer/R&D, Josef Bertsch GmbH & Co KG, BERTSCHenergy, Vienna, Austria.
2009 - 2013	Process Engineer/R&D Josef Bertsch GmbH & Co KG, BERTSCHenergy, Bludenz, Austria.
2005 - 2009	Project Assistant, TU Wien, Institute for Energy Systems and Thermodynamics, Vienna.
2006 - 2009	PhD in thermal engineering, TU-Wien, Vienna, Austria, Doctoral thesis: <i>Experimental and Numerical Gas-Side Performance Evaluation of Finned-Tube Heat Exchangers</i> , with distinction.
1999	<u>University of Nebraska at Omaha/USA</u> , International studies and programs, studies abroad, summer term.
1996 - 2002	System Administrator, Global Knowledge Network GmbH, Vienna, Austria (part time).
1998 - 2000	Project Assistant, Ingersoll-Dresser-Pumps/Flowserve GmbH, Brunn/Gebirge, Austria (part time).
2015 - 2018	Several Management Courses (i.e. Project Management, Leadership and Communication, Contract Know-How, Media Training, Law Competences).
22-23/09/14	Principles of Legal Aspects for Technicians, TÜV Akademie, Austria.
18-20/03/14	Component Behavior & End-of-Life Determination, Stand-Zeit, Germany.
19-20/09/13	Introduction & Advanced Modelling of Power Plants, Steag Energy Services GmbH.
14-14/06/12	Grate and Natural Circulation Boiler Technology in Large-Scale Firing Plants, VDI, Germany.
08-10/03/11	Damage Analysis (Materials) in Power Plant Engineering, VGB, GER.
08-12/10/07	Boiling Heat Transfer and Boiling Equipment, <u>University Pisa, Italy</u> .
20-31/08/07	Introduction in Power Plant Technology, VGB Powertech, Germany.
12-16/06/06	Fundamentals of Microscale Heat Transfer, <u>EPFL Lausanne, Switzerland</u> .

## Research Activities

**Main Research Focus:** Simulation of complex industrial and energy production systems, optimization of the operation and control issues of industrial energy systems & processes, optimization strategies (multi components), integration of renewable energy systems, advanced methods and industrial applications, increasing energy efficiency, unit commitment problem, mathematical programming, MILP, MINLP, Pinch-Point methods for dynamic process integration of heat pumps and thermal energy storages, industrial application of thermal energy storages (Ruths, PCM).

**Teaching:** (VO, VU, SE, PR) Modeling and simulation of heat engineering processes, numerical process simulation of thermal power plants, power generation, power transmission and load flexibility, renewable energy systems, thermal components.

**PhD Student Advising:** supervision of currently 12 PhD and 10 Ms academic works.

## Most Important Keynotes and Invited Talks

- Beck, **R. Hofmann**: "Extensions for Multi-Period MINLP Superstructure Formulation for Integration of Thermal Energy Storages in Industrial Processes"; Keynote: 28<sup>th</sup> European Symposium on Computer Aided Process Engineering, Graz; 10.06.2018 - 13.06.2018; in: "Proceedings of the 28<sup>th</sup> European Symposium on Computer Aided Process Engineering", A. Friedl, J. Klemes, S. Radl, P. Varbanov, T. Wallek (Hrg.); Elsevier B.V., Part A (2018), ISBN: 978-0-444-64237-0; S. 1335 – 1340.

## Most Important Scientific Awards and Honors

- Best paper award; 5<sup>th</sup> WSEAS Int. Conference on Heat and Mass Transfer, Mexico. (2008)
- Merit scholarship, TU Wien, Mechanical Engineering Department. (2007)
- Merit scholarship, Windhag Scholarship Foundation, Lower Austria. (2006)

## Most Important Memberships in Professional Organizations and Review Activities

- Review for
  - Energy, Elsevier;
  - Heat Transfer Engineering, Taylor & Francis;
  - ASME Turbo Expo;
  - IEEE; Transactions on Industrial Informatics
  - Chemie Ingenieur Technik, Wiley-VCH;
  - Journal of Heat Transfer, AMSE;
  - Case Studies in Thermal Engineering, Elsevier.
- Substitute International Officer of the Faculty of Mechanical and Industrial Engineering, TU Wien. (Since 06/2017)
- Substitute Member of the Study commission of the Faculty of Mechanical and Industrial Engineering, TU Wien. (Since 2017)
- Member of the Faculty council of the Faculty of Mechanical and Industrial Engineering, TU Wien. (Since 2016)
- ExCo – Alternate - Austria, IEA IETS, Industrial Energy-Related Technologies and Systems an IEA Technology Collaboration Programm.
- SPIRE [Sustainable Process Industry through Resource and Energy Efficiency]
- EERA [Energy Efficiency in Industrial Processes]
- Member of VDI. (Verein Deutscher Ingenieure) (Since 2015)
- Member of the ASME. (American Society of Mechanical Engineers) (Since 2014)
- FDBR (Fachverband für Dampfkessel-, Behälter- und Rohrleitungsbau e.V.), Member of the steering committee for thermal and fluid flow engineering and co-author FDBR-Handbook. (Since 2009)

- Session Chair, SEEP 2017, 10<sup>th</sup> International Conference on Sustainable Energy and Environmental Protection; Renewable Energy Sources, Bled, Slovenia.
- Session Chair, SDEWES 2017, 12<sup>th</sup> Conference on Sustainable Development of Energy, Water and Environment Systems – SDEWES Conference, Dubrovnik.
- Scientific advisory board, SDEWES 1<sup>st</sup> Latin American Conference on Sustainable Development of Energy, Water and Environment Systems, Rio de Janeiro, 2018.
- Scientific advisory board, SDEWES 3<sup>rd</sup> South East European Conference on Sustainable Development of Energy, Water and Environment Systems, Novi Sad, 2018.
- Scientific advisory board, SDEWES 13<sup>th</sup> Conference on Sustainable Development of Energy, Water and Environment Systems – SDEWES Conference, Palermo, 2018.
- Scientific Committee, 28<sup>th</sup> European Symposium on Computer Aided Process Engineering (ESCAPE 28).
- Scientific advisory board at SDEWES 14<sup>th</sup> Conference on Sustainable Development of Energy, Water and Environment Systems – SDEWES Conference, Dubrovnik, 2019.
- Scientific Committee at 29<sup>th</sup> European Symposium on Computer Aided Process Engineering (ESCAPE 29), 2019.
- Member of the International Program Committee (IPC) 11<sup>th</sup> IFAC Symposium on Nonlinear Control Systems (NOLCOS 2019), 2019.

## Most Important Related Research Projects

### Nationally funded projects

- Cooperative Doctoral School: SIC! [Smart Industrial Concept - Holistic Approach with Digitalization of Industrial Processes and Applications for 2050 and beyond]; 2018-2021, ongoing – Scientific coordinator.
- HyStEPs: Hybrid storage concept for efficient processes, ongoing, 2018-2020 – Project partner.
- EDCSproof: Energy Demand Control System-PROcess Optimization For industrial low temperature systems, starting, 2018-2021 – Project partner.
- Renewables4Industry; project partner AIT, Technologie-Fahrplan: Ausrichtung von energieintensiven Industrieprozessen auf fluktuierende Energieversorgung, 2017; finished.
- Annex15/2; International Energy Agency IEA-IETS Industrielle Abwärmenutzung, (Industrial Excess heat Recovery), project lead AIT, 2016-2018; ongoing – National project coordinator.
- bioCH4.0; project partner TU Wien/IET, Efficient upgrade of biogas to biomethane by means of continuous temperature swing adsorption; 2016-2019; ongoing – Project partner.
- BIOCORRSIM; 3D Simulation of the corrosion potential in biomass red boilers, 2011 – 2013, (BERTSCHenergy).

### Internationally funded projects

- SUCCESS (FP7); Industrial steam generation with 100% carbon capture and insignificant efficiency penalty Scale-Up of oxygen Carrier for Chemical-looping combustion using Environmentally SuStainable materials, 2013 – 2016, (BERTSCHenergy).
- INNOCUOUS (FP7); Innovative Oxygen Carriers Uplifting Chemical-looping Combustion, 2010 – 2013, (BERTSCHenergy).
- HighEFF [Center for an Energy Efficient and Competitive Industry for the Future]

### Most Important International Industrial Projects in the Last Five Years

- Thermal management of fuel cells, AVL, 2018; ongoing.
- Energetic optimisation of the roll drying system, Agrana, 2018; ongoing.
- Flue-Gas Condensation of an Industrial CCPP, Bertsch Energy GmbH & Co KG, 2017; finished.
- Data Analysis of a Biomass power plant, EVN, 2017; finished.
- Analysis of the steam network of a starch factory, Agrana, 2017; finished.
- eins-Energie Sachsen, GER; “Strategic Heat-Supply-Concept Chemnitz; AIT GF Energy”; 03/2016-08/2017; finished.
- Development of CHP plants up to 100 MW el. (e.g. Daimler Sindelfingen, Exxon Mobil, Müller Sachsen Leppersdorf, SCA Aschaffenburg, UPM Schongau, E.On Marl), (BERTSCHenergy).

- Development of solid fuel boiler systems (gate firing and fluidized bed firing systems) for electricity and heat generation up to 25 MW el. (e.g. Energiebetriebe Bern, Energiebetriebe Zürich Aubrugg, Vattenfall Berlin Märkisches Viertel), (BERTSCHenergy).
- Development of waste heat technology downstream of thermal processes and waste heat boilers in CO and H<sub>2</sub> processes. (in the USA), (BERTSCHenergy).

## Academic Theses

### Doctor's Theses

#### Ongoing:

1. Anton Beck (AIT): "Development of evaluation methods for cost-efficient heat integration in stationary and dynamic industrial processes".
2. Sabrina Dusek (AIT): "Increasing flexibility through component design and optimized operation of thermal energy storage".
3. Sophie Panuschka (AIT): "Development of methods to optimize usage of components for load flexibility and excess heat integration in energy-intensive industry processes".
4. Benedikt Pesendorfer (AIT): "Industry in multi-energy distribution networks".
5. Andreas Sporr (AIT): "Optimization of the energy management in modern office buildings by developing building models and adaptive controllers".
6. Christoph Zauner (AIT): "Development of phase change materials to increase energy efficiency in industry and heating networks".
7. Verena Halmschlager (TU Wien – SIC!): "Unit commitment concepts with integration of storage facilities for load flexibilisation in the energy-intensive industry".
8. Andreas Kiedl (TU Wien – voestalpine): "Design optimization of a hybrid steam accumulator - from laboratory concept to industrial application".
9. Martin Koller (TU Wien): "Method development for predictive and dynamic optimization of multicomponent systems".
10. Leopold Prendl (TU Wien – SIC!): "Design optimization and dynamic component modeling for last flexible industrial power plants".
11. Jan Stampfli (TU Wien – cooperation HS-Luzern): "Automatic heat exchanger network design for large-scale processes using artificial neuronal networks".
12. Hannes Vogtenhuber (TU Wien): "Optimized heat exchanger concept for efficient biogas upgrading into bio-methane".

### Diploma Theses

#### Ongoing:

1. Klaus Etzl (TU Wien), „Integrationskonzepte innovativer Technologien in industriellen Energiesystemen“, Betreuer/in(nen): R. Hofmann, S. Panuschka.
2. Stefan Gruber (AIT), „Charakterisierung eines Hybridspeichers zur Dampfbereitstellung in industriellen Prozessen“, Betreuer/in(nen): R. Hofmann, S. Dusek.
3. Nathalie Aimee Sandoval Garcia (TU Wien), „Aufbau eines Prüfstandes zur Untersuchung des Wärmeüberganges von verschiedenen WT-Rohren in einer Wirbelschicht“, Betreuer/in(nen): R. Hofmann, H. Vogtenhuber.
4. Lukas Daniel Arneth (TU Wien), „Formulierung und Auswertung des MILP-UC mit variabler Zeitschrittgröße“, Betreuer/in(nen): R. Hofmann, M. Koller.
5. Martin Fischer, (TU Wien): Vergleich eines physikalischen und datengetriebenen Modells zur Beschreibung des Speicherverhaltens eines Festbettregenerators, Betreuer/in(nen): R. Hofmann, V. Halmschlager.
6. Lukas Kasper, (TU Wien): Modellierung des Phasenwechselanteils eines Hybridspeichers mittels Finite Elemente Methode, Betreuer/in(nen): R. Hofmann, S. Jakubek.
7. Franz Koberg, (TU Wien): Wärmemanagement im rOSC System, Betreuer/in(nen): R. Hofmann, M. Koller
8. Marius Neuwirth, (KIT/TU Wien): Prozesssimulation einer TSA-Anlage zur Biogasaufbereitung mittels IPSEpro Process Simulator, Betreuer/in(nen): R. Hofmann, H. Vogtenhuber.
9. Michael Böswarth, (TU Wien): Energetische Optimierung Walzentrocknung, Betreuer/in(nen): R. Hofmann, K. Ponweiser.

**Publications** (<http://pub-mb.tuwien.ac.at/publist.php?lang=1&pers=131872&sort=3&inv=1&num=1&authinfo=1&nojava=1>)

## Workshop/Lectures

1. **R. Hofmann** "Integration Methods of Thermal Energy Storages for Load Flexibilization of Industrial Energy Supply Systems", Workshop on Thermal Energy Storage at the Laboratory of Renewable Energy Sciences and Engineering (LRESE), EPFL Lausanne, 11.12.2017. (Workshop invited)
2. **R. Hofmann** VO610701005 Regelung von Kraftwerken und Netzen, „Flexibilisierungspotential von thermischen Energieanlagen für transientes Verhalten“, Guest Lecture Exchange, 13.12.2017, UNI Stuttgart.
3. **R. Hofmann** MJ2426, Applied Heat & Power Technology (AHPT), 04/2018, Guest Lecture Exchange, KTH Stockholm.

## Keynote

1. A. Beck, **R. Hofmann**: "Extensions for Multi-Period MINLP Superstructure Formulation for Integration of Thermal Energy Storages in Industrial Processes"; Keynote: 28<sup>th</sup> European Symposium on Computer Aided Process Engineering, Graz; 10.06.2018 - 13.06.2018; in: "Proceedings of the 28<sup>th</sup> European Symposium on Computer Aided Process Engineering", A. Friedl, J. Klemes, S. Radl, P. Varbanov, T. Wallek (Hrg.); Elsevier B.V., Part A (2018), ISBN: 978-0-444-64237-0; S. 1335 - 1340.
2. **R. Hofmann**, H. Walter, R. Schmidt, T. Fleckl: "Erhöhte Flexibilisierung von KWK-Energieversorgungsanlagen in Industrieprozessen sowie Fernwärmenetzen"; Keynote Lecture: Systemstütze KWK - Schlüsseltechnologie der Energietransformation, Amberg, Deutschland (invited); 2016-03-10; in: "Systemstütze KWK - Schlüsseltechnologie der Energietransformation", (2016), 1 - 40.

## Books and Book Editorships

1. F. Fraß; **R. Hofmann**, K. Ponweiser: "Principles of Finned-Tube Heat Exchanger Design for Enhanced Heat Transfer"; 2<sup>nd</sup> Edition, WSEAS Press, 2015, ISBN: 978-960-474-389-6; 132 pages.
2. **R. Hofmann**: "Experimental and Numerical Gas-Side Performance Evaluation of Finned-Tube Heat Exchangers"; VDI Verlag GmbH, VDI Verlag, 2009, ISBN: 978-3-18-316119-5; 178 pages.
3. F. Fraß; **R. Hofmann**, K. Ponweiser: "Principles of Finned-Tube Heat Exchangers Design for Enhanced Heat Transfer"; WSEAS Press, 2008, ISBN: 978-960-6766-55-8; 132 pages.

## Contributions to Books

1. H. Walter, **R. Hofmann**, A. Kolbitsch: "Heat Recovery with Combined Cycle Power Plants - Present and Future Technology"; in: "Advances in Engineering Research", V. Petrova (ed.); Nova Science Publishers, Inc, New York, 2012, (invited), ISBN: 978-1-61209-798-5, 323 - 408.

## Panel-Discussion

1. J. Fröhlich, K. Riahi, C. Florit, **R. Hofmann**, P. Mascher: "THEMATIC PANEL DISCUSSION "Energy Efficiency + Green Technologies"; Konferenz: Austrian-Canadian Science and Innovations Days, Wien (invited); 21.09.2017 - 22.09.2017.

## Publications in Scientific Journals

1. Beck, **R. Hofmann**: "A Novel Approach for Linearization of a MINLP Stage-Wise Superstructure Formulation"; Computers & Chemical Engineering, 112 (2018), 112; 17 - 26.
2. Beck, **R. Hofmann**: "How to tighten a commonly used MINLP superstructure formulation for simultaneous heat exchanger network synthesis"; Computers & Chemical Engineering, 112 (2018), 112; 48 - 56.
3. S. Dusek, **R. Hofmann**: "A Hybrid Energy Storage Concept for Future Application in Industrial Processes"; Thermal Science (invited), 22 (2018), 5; 1 - 9.
4. **R. Hofmann**, F. Binder, A. Werner: "Development of a Sampling System for Solid Materials from a Fluidized Bed Reactor under Varying Operating Conditions"; bulk solids handling, Volume 25 (2005), No. 6; 378 - 385.
5. **R. Hofmann**, F. Binder, A. Werner: "Development of a Sampling System for Solid Materials from a Fluidized Bed Reactor under Varying Operating Conditions (in chinese)"; Powder and Bulk International (Chinese Edition), 1 (2006), 43 - 48.
6. **R. Hofmann**, F. Binder, A. Werner: "Entwicklung eines Probenahmesystems für Schüttgüter in einer Wirbelschichtanlage mit unterschiedlichen Betriebsbedingungen"; Schüttgut, 12 (2006), 1; 24 - 31.
7. **R. Hofmann**, S. Dusek, M. Koller, H. Walter: "Flexibilisierungspotenzial für Energieanlagen in der Industrie. Intelligentes Demand-Side-Management durch Integration von thermischen Speichern - Teil 1"; BWK, 68 (2016), 9; 6 - 11.

8. **R. Hofmann**, F. Fraß, K. Ponweiser: "Heat Transfer and Pressure Drop Performance Comparison of Finned-Tube Bundles in Forced Convection"; WSEAS TRANSACTIONS on HEAT and MASS TRANSFER (invited), 2 (2007), 4; 72 - 88.
9. **R. Hofmann**, M. Haider, S. Dusek, M. Koller, H. Walter: "Integration von thermischen Speichertechnologien als Flexibilisierungsmaßnahme für industrielle Energieanlagen"; VGB PowerTech, 96 (2016), 8; 27 - 35.
10. **R. Hofmann**, M. Koller, S. Dusek, H. Walter: "Flexibilisierungspotenzial für Energieanlagen in der Industrie. Intelligentes Demand-Side-Management durch Integration von thermischen Speichern - Teil 2"; BWK, 68 (2016), 10; 32 - 37.
11. **R. Hofmann**, P. Linzner, H. Walter, T. Will: "New approximation algorithms for the state functions of water and steam for the application of transient processes and fast on-line applications"; Energy, 164 (2018), 164; 1079 - 1096.
12. **R. Hofmann**, T. Walch, A. Kolbitsch, H. Walter, C. Daublebsky von Eichhain: "Betriebsverhalten und Anströmoptimierung der Zuströmkanäle eines Abhitzedampferzeugers"; VGB PowerTech, 92 (2012), 11; 71 - 78.
13. **R. Hofmann**, H. Walter: "Experimental and Numerical Investigation of the Gas Side Heat Transfer and Pressure Drop of Finned Tubes - Part 1: Experimental Analysis"; Journal of Thermal Science and Engineering Applications, 4 (2012), 4; 041007-1 - 041007-11.
14. **R. Hofmann**, H. Walter: "Experimental and Numerical Investigation of the Gas Side Heat Transfer and Pressure Drop of Finned Tubes - Part 2: Numerical Analysis"; Journal of Thermal Science and Engineering Applications, 4 (2012), 4; 041008-1 - 041008-11.
15. M. Koller, **R. Hofmann**: "Mixed-Integer Linear Programming Formulation of Combined Heat and Power Units for the Unit Commitment Problem"; Journal of Sustainable Development of Energy, Water and Environment Systems (invited), 6 (2018), 4; 755 - 769.
16. L. Patzig, T. Göschel, S. Ochse, S. Hespeler, R. Ziegler, S. Robbi, R. Schmidt, **R. Hofmann**: "Entwicklung eines zukunftsfähigen Versorgungskonzepts"; Euroheat & Power, 47 (2018), 4-5; 32 - 37.
17. H. Vogtenhuber, **R. Hofmann**, F. Helminger, G. Schöny: "Process simulation of an efficient temperature swing adsorption concept for biogas upgrading"; Energy, 162 (2018), 200 - 209.
18. H. Walter, C. Dobias, F. Holzleithner, **R. Hofmann**: "Fluid flow in channels between two gas turbines and heat recovery steam generator - a theoretical investigation"; WSEAS TRANSACTIONS on FLUID MECHANICS, 6 (2011), 4; 257 - 269.
19. H. Walter, **R. Hofmann**: "How can the heat transfer correlations for finned-tubes influence the numerical simulation of the dynamic behavior of a heat recovery steam generator?"; Applied Thermal Engineering, 31 (2011), 4; 405 - 417.
20. Zauner, F. Hengstberger, M. Etzel, D. Lager, **R. Hofmann**, H. Walter: "Experimental characterization and simulation of a fin-tube latent heat storage using high density polyethylene as PMC"; Applied Energy, 179 (2016), 237 - 246.
21. Zauner, F. Hengstberger, B. Mörzinger, **R. Hofmann**, H. Walter: "Experimental characterization and simulation of a hybrid sensible-latent heat storage"; Applied Energy, 189 (2017), 506 - 519.
22. G. Zucker, A. Sporr, A. Garrido-Marijuan, T. Ferhatbegovic, **R. Hofmann**: "A ventilation system controller based on pressure-drop and CO<sub>2</sub> models"; Energy and Buildings, 155 (2017), 378 - 389.

#### Contributions to Books

1. H. Walter, **R. Hofmann**, A. Kolbitsch: "Heat Recovery with Combined Cycle Power Plants - Present and Future Technology"; in: "Advances in Engineering Research", V. Petrova (ed.); Nova Science Publishers, Inc, New York, 2012, (invited), ISBN: 978-1-61209-798-5, 323 - 408.

#### Contributions to Proceedings

1. Beck, W. Glatzl, J. Fluch, **R. Hofmann**: "Process integration in a dairy factory considering thermal energy storages - a comparison of two different approaches"; Talk: International Sustainable Energy Conference 2018, Graz; 2018-10-03 - 2018-10-05; in: "ISEC Proceedings Renewable Heating and Cooling in Integrated Urban and Industrial Energy Systems", (2018), 153 - 161.
2. A. Beck, **R. Hofmann**: "Extensions for Multi-Period MINLP Superstructure Formulation for Integration of Thermal Energy Storages in Industrial Processes"; Keynote Lecture: 28th European Symposium on Computer Aided Process Engineering, Graz; 2018-06-10 - 2018-06-13; in: "Proceedings of the 28th European Symposium on Computer Aided Process

- Engineering", A. Friedl, J. Klemes, S. Radl, P. Varbanov, T. Wallek (ed.); Elsevier B.V., Part A (2018), ISBN: 978-0-444-64237-0; 1335 - 1340.
3. A. Beck, **R. Hofmann**: "Tightening of MINLP Superstructure Relaxation for Faster Solution of Heat Exchanger Network Synthesis Problems"; Talk: 12th Conference on Sustainable Development of Energy, Water and Environment Systems, Dubrovnik; 2017-10-04 - 2017-10-08; in: "Proceedings of the 12th Conference on Sustainable Development of Energy, Water and Environment Systems", (2017), ISSN: 1847-7178; Paper ID FP-950, 11 pages.
  4. C. Daublebsky von Eichhain, A. Kolbitsch, **R. Hofmann**: "New Design of Heat Recovery Steam Generator (HRSG) for Solar Thermal Hybrid Power Plants ISCCS (Integrated Solar Combined Cycle System)"; Talk: Power Gen Middle East, Doha; 2012-02-06 - 2012-02-08; in: "Power Gen", (2012).
  5. C. Daublebsky von Eichhain, A. Kolbitsch, **R. Hofmann**: "New Design of Heat Recovery Steam Generator for Solar Thermal Hybrid Power Plants - Integrated Solar Combined Cycle System"; Talk: Boiler Designer 2014, Moskau; 2014-05-26 - 2014-05-29; in: "Boiler Designer 2014", Moskau (2014), ISBN: 978-5-94588-150-1; 20 pages.
  6. S. Dusek, **R. Hofmann**: "A Hybrid Storage Concept for Improving Classical Ruth's Type Steam Accumulators"; Talk: 12th Conference on Sustainable Development of Energy, Water and Environment Systems, Dubrovnik; 2017-10-04 - 2017-10-08; in: "Proceedings of the 12th Conference on Sustainable Development of Energy, Water and Environment Systems", (2017), ISSN: 1847-7178; Paper ID FP-560, 12 pages.
  7. **R. Hofmann**: "Thermische Speicher für Effizienzsteigerung und Flexibilitätserhöhung in ausgewählten Industriekraftwerkskonfigurationen - Teil 2/2"; Talk: Standardkessel Baumgarte Fachseminar, Duisburg (invited); 2017-11-27 - 2017-11-28; in: "Standardkessel Baumgarte Fachseminar Industriekessel", (2017), Paper ID 2, 27 pages.
  8. **R. Hofmann**, F. Fraß, K. Ponweiser: "Experimental Analysis of Enhanced Heat Transfer and Pressure-Drop of Serrated Finned-Tube Bundles with different Fin Geometries"; Talk: 5th WSEAS Int. Conf. on Heat and Mass transfer (HMT'08), Acapulco; 2008-01-25 - 2008-01-27; in: "Theoretical and Experimental Aspects of Heat and Mass Transfer", WSEAS Press, (2008), ISBN: 978-960-6766-31-2; 54 - 62.
  9. **R. Hofmann**, F. Fraß, K. Ponweiser: "Experimental Heat Transfer Investigation of Tube Row Effects at Air Side Heat Exchanger with Serrated Finned-Tubes"; Talk: 6th IASME/WSEAS International Conference on Heat Transfer, Thermal Engineering and Environment (HTE'08), Rhodos; 2008-08-20 - 2008-08-22; in: "New Aspects of Heat Transfer, Thermal Engineering and Environment", WSEAS Press, 1 (2008), ISBN: 978-960-6766-97-8; 193 - 201.
  10. **R. Hofmann**, F. Fraß, K. Ponweiser: "Performance Evaluation of Solid and Serrated Finned-Tube Bundles with Different Fin Geometries in Forced Convection"; Talk: Eurotherm 2008, Eindhoven; 2008-05-18 - 2008-05-22; in: "5th European Thermal-Sciences Conference", (2008), ISBN: 978-90-386-1274-4; 1 - 8.
  11. **R. Hofmann**, A. Kolbitsch: "Optimization of Start-Up Processes at HRSG with Natural Circulation System"; Talk: Power-Gen Europe 2014, Köln; 2014-06-03 - 2014-06-05; in: "Power-Gen Europe 2014", (2014), 11 pages.
  12. **R. Hofmann**, M. Koller, H. Walter, S. Dusek: "Power-to-Heat und erhöhte Laständerungsfahrweisen als Flexibilitätsoption durch Integration von Speicherkonzepten für industrielle Energieanlagen"; Talk: VGB-Fachtagung Dampferzeuger, Industrie- und Heizkraftwerke 2016, Potsdam; 2016-04-06 - 2016-04-07; in: "VGB-Fachtagung Dampferzeuger, Industrie- und Heizkraftwerke 2016", (2016), 31 pages.
  13. **R. Hofmann**, P. Linzer, H. Walter, T. Will: "New Approximation Algorithms for a Fast Direct Determination of State Functions of Water and Steam"; Talk: SEEP2017 - 10th International Conference on Sustainable Energy and Environmental Protection, Bled, Slowenien; 2017-06-27 - 2017-06-30; in: "Proceedings of the 10th International Conference on Sustainable Energy and Environmental Protection", University of Maribor Press, (2017), ISBN: 978-961-286-058-5; 10 - 24.
  14. **R. Hofmann**, T. Walch, A. Kolbitsch: "Anfahrvorgänge und Lastwechselgradienten bei Abhitzedampferzeuger mit Naturumlaufrinzip"; Talk: Kraftwerkstechnisches Kolloquium, Dresden; 2013-10-15 - 2013-10-16; in: "45. Kraftwerkstechnisches Kolloquium", TK Verlag, (2013), ISBN: 978-3-944310-04-6; 35 - 46.
  15. **R. Hofmann**, T. Walch, H. Walter, C. Daublebsky von Eichhain: "Erfahrungen, Betriebsverhalten und Optimierung von Abhitzedampferzeuger"; Talk: VGB-Fachtagung

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  18. M. Koller, **R. Hofmann**: "Dynamic and Predictive Optimization Concept for Energy Supply Systems in the Energy-Intensive Industry"; Talk: ASME 2016 International Mechanical Engineering Congress and Exposition IMECE2016, 2016, Phoenix, Arizona, USA; 2016-11-11 - 2016-11-17; in: "Proceedings of the ASME 2016 International Mechanical Engineering Congress and Exposition IMECE2016", ASME, Paper-Nr.: IMECE2016-66536 (2016), 1 - 10.
  19. M. Koller, **R. Hofmann**: "Mixed Integer Linear Programming Formulation for Sensible Thermal Energy Storages"; Talk: 28th European Symposium on Computer Aided Process Engineering, Graz; 2018-06-10 - 2018-06-13; in: "Proceedings of the 28th European Symposium on Computer Aided Process Engineering", A. Friedl, J. Klemes, S. Radl, P. Varbanov, T. Wallek (ed.); Elsevier B.V., Part A (2018), ISBN: 978-0-444-64237-0; 925 - 930.
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  21. M. Koller, **R. Hofmann**, S. Robbi: "Modelling of Combined Heat and Power Supply Systems with Mixed-Integer Linear Programming for Unit Commitment Problems"; Talk: 12th Conference on Sustainable Development of Energy, Water and Environment Systems, Dubrovnik; 2017-10-04 - 2017-10-08; in: "Proceedings of the 12th Conference on Sustainable Development of Energy, Water and Environment Systems", (2017), ISSN: 1847-7178; Paper ID FP-545, 13 pages.
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  28. C. Zauner, F. Hengstberger, M. Etzel, D. Lager, **R. Hofmann**, H. Walter: "*Durability of a fin-tube latent heat storage using high density polyethylene as PCM*"; Talk: 3rd International Conference on Innovative Materials, Structures and Technologies (IMST2017), Riga; 2017-09-27 - 2017-09-29; in: "*IOP Conference Series: Materials Science and Engineering*", IOP Conference Series: Materials Science and Engineering, 251/012123 (2017), ISSN: 1757-8981; 1 - 8.
  29. C. Zauner, **R. Hofmann**, B. Windholz: "*Increasing Energy Efficiency in Pulp and Paper Production by Employing a New Type of Latent Heat Storage*"; Poster: 28th European Symposium on Computer Aided Process Engineering, Graz; 2018-06-10 - 2018-06-13; in: "*Proceedings of the 28th European Symposium on Computer Aided Process Engineering*", A. Friedl, J. Klimes, S. Radl, P. Varbanov, T. Wallek (ed.); Elsevier B.V., Part A (2018), ISBN: 978-0-444-64237-0; 1359 - 1364.

#### Talks and Poster Presentations

1. A. Beck, W. Glatzl, J. Fluch, **R. Hofmann**: "*Process integration in a dairy factory considering thermal energy storages - a comparison of two different approaches*"; Talk: International Sustainable Energy Conference 2018, Graz; 2018-10-03 - 2018-10-05; in: "*ISEC Proceedings Renewable Heating and Cooling in Integrated Urban and Industrial Energy Systems*", (2018), 153 - 161.
2. A. Beck, **R. Hofmann**: "*Extensions for Multi-Period MINLP Superstructure Formulation for Integration of Thermal Energy Storages in Industrial Processes*"; Keynote Lecture: 28th European Symposium on Computer Aided Process Engineering, Graz; 2018-06-10 - 2018-06-13; in: "*Proceedings of the 28th European Symposium on Computer Aided Process Engineering*", A. Friedl, J. Klimes, S. Radl, P. Varbanov, T. Wallek (ed.); Elsevier B.V., Part A (2018), ISBN: 978-0-444-64237-0; 1335 - 1340.
3. A. Beck, **R. Hofmann**: "*Tightening of MINLP Superstructure Relaxation for Faster Solution of Heat Exchanger Network Synthesis Problems*"; Talk: 12th Conference on Sustainable Development of Energy, Water and Environment Systems, Dubrovnik; 2017-10-04 - 2017-10-08; in: "*Proceedings of the 12th Conference on Sustainable Development of Energy, Water and Environment Systems*", (2017), ISSN: 1847-7178; Paper ID FP-950, 11 pages.
4. O. Bertsch, **R. Hofmann**: "*CLC overall Process Integration*"; Talk: European Conference on Carbon Dioxide Capture and Storage, Antwerpen; 2013-05-28 - 2013-05-29.
5. C. Daublebsky von Eichhain, A. Kolbitsch, **R. Hofmann**: "*New Design of Heat Recovery Steam Generator (HRSG) for Solar Thermal Hybrid Power Plants ISCCS (Integrated Solar Combined Cycle System)*"; Talk: Power Gen Middle East, Doha; 2012-02-06 - 2012-02-08; in: "*Power Gen*", (2012).
6. C. Daublebsky von Eichhain, A. Kolbitsch, **R. Hofmann**: "*New Design of Heat Recovery Steam Generator for Solar Thermal Hybrid Power Plants - Integrated Solar Combined Cycle System*"; Talk: Boiler Designer 2014, Moskau; 2014-05-26 - 2014-05-29; in: "*Boiler Designer 2014*", Moskau (2014), ISBN: 978-5-94588-150-1; 20 pages.
7. S. Dusek, **R. Hofmann**: "*A Hybrid Storage Concept for Improving Classical Ruth's Type Steam Accumulators*"; Talk: 12th Conference on Sustainable Development of Energy, Water and Environment Systems, Dubrovnik; 2017-10-04 - 2017-10-08; in: "*Proceedings of the 12th Conference on Sustainable Development of Energy, Water and Environment Systems*", (2017), ISSN: 1847-7178; Paper ID FP-560, 12 pages.

8. S. Dusek, M. Koller, **R. Hofmann**: "*Demand-Side-Management und Integration von thermischen Speichern für flexiblere Energieanlagen*"; Poster: 48. Kraftwerkstechnisches Kolloquium 2016, Dresden, Deutschland; 2016-10-18 - 2016-10-19.
9. **R. Hofmann**: "*Betriebsmöglichkeiten und Lastwechsellvorgänge bei Abhitzedampferzeugern nach Gasturbinen*"; Talk: 11. Sächsischer Kesseltag, Köthen; 2014-03-11 - 2014-03-12.
10. **R. Hofmann**: "*Design Optimization and Operational Optimization of Industrial Energy Supply Systems - using the Example of Thermal Energy Storage*"; Talk: AIT Symposium Empowering Innovation Tomorrow by Basic Research Today, AIT Wien (invited); 2018-06-29.
11. **R. Hofmann**: "*Flexibilisierungspotential von thermischen Energieanlagen für transientes Verhalten*"; Talk: VO610701005 Regelung von Kraftwerken und Netzen, Universität Stuttgart; 2017-12-13.
12. **R. Hofmann**: "*Integration Methods of Thermal Energy Storages for Load Flexibilization of Industrial Energy Supply Systems*"; Talk: Workshop on Thermal Energy Storage at the Laboratory of Renewable Energy Sciences and Engineering (LRESE), EPFL, Lausanne (invited); 2017-12-11.
13. **R. Hofmann**: "*Smart Industrial Concept! - Design- and Operational Optimization*"; Talk: OSIssoft PI World, Barcelona; 2018-09-16 - 2018-09-19.
14. **R. Hofmann**: "*Smart Industrial Concept! - Holistic Approach with Digitalization of Industrial Processes and Applications for 2050 and beyond*"; Talk: Workshop Annex 15 "Industrielle Abwärmenutzung - Chancen & Hindernisse", Industriellenvereinigung, Wien; 2018-10-19.
15. **R. Hofmann**: "*Smart Industrial Concept! Holistic Approach with Digitalization of Industrial Processes and Applications for 2050 and beyond*"; Talk: evon up2date, Schielleiten (invited); 2018-06-20.
16. **R. Hofmann**: "*Thermische Speicher für Effizienzsteigerung und Flexibilitätserhöhung in ausgewählten Industriekraftwerkskonfigurationen - Teil 2/2*"; Talk: Standardkessel Baumgarte Fachseminar, Duisburg (invited); 2017-11-27 - 2017-11-28; in: "*Standardkessel Baumgarte Fachseminar Industriekessel*", (2017), Paper ID 2, 27 pages.
17. **R. Hofmann**, A. Beck: "*IEA IETS ANNEX 15 Industrial Excess Heat Recovery*"; Talk: Highlights der Energieforschung 2018 - Systemintegration & Sektorkopplung, TU Wien; 2018-03-20.
18. **R. Hofmann**, A. Beck: "*IEA IETS ANNEX 15 Industrielle Abwärmenutzung - Integration von thermischen Komponenten in zeitabhängige Prozesse mittels mathematischer Optimierung*"; Talk: IEA Vernetzungstreffen 2017: Die Transformation des Energiesystems als sozial-ökologische Aufgabe, Salzburg; 2017-10-12 - 2017-10-13.
19. **R. Hofmann**, A. Beck: "*IETS Annex 15 Industrielle Abwärmenutzung - Optimierte Prozessintegration*"; Talk: Symposium "Solarthermie und Wärmepumpen in der Industrie", Industriellenvereinigung, Wien; 2017-06-12.
20. **R. Hofmann**, F. Fraß, K. Ponweiser: "*Experimental Analysis of Enhanced Heat Transfer and Pressure-Drop of Serrated Finned-Tube Bundles with different Fin Geometries*"; Talk: 5th WSEAS Int. Conf. on Heat and Mass transfer (HMT'08), Acapulco; 2008-01-25 - 2008-01-27; in: "*Theoretical and Experimental Aspects of Heat and Mass Transfer*", WSEAS Press, (2008), ISBN: 978-960-6766-31-2; 54 - 62.
21. **R. Hofmann**, F. Fraß, K. Ponweiser: "*Experimental Heat Transfer Investigation of Tube Row Effects at Air Side Heat Exchanger with Serrated Finned-Tubes*"; Talk: 6th IASME/WSEAS International Conference on Heat Transfer, Thermal Engineering and Environment (HTE'08), Rhodes; 2008-08-20 - 2008-08-22; in: "*New Aspects of Heat Transfer, Thermal Engineering and Environment*", WSEAS Press, 1 (2008), ISBN: 978-960-6766-97-8; 193 - 201.
22. **R. Hofmann**, F. Fraß, K. Ponweiser: "*Performance Evaluation of Solid and Serrated Finned-Tube Bundles with Different Fin Geometries in Forced Convection*"; Talk: Eurotherm 2008, Eindhoven; 2008-05-18 - 2008-05-22; in: "*5th European Thermal-Sciences Conference*", (2008), ISBN: 978-90-386-1274-4; 1 - 8.
23. **R. Hofmann**, A. Kolbitsch: "*Optimization of Start-Up Processes at HRSG with Natural Circulation System*"; Talk: Power-Gen Europe 2014, Köln; 2014-06-03 - 2014-06-05; in: "*Power-Gen Europe 2014*", (2014), 11 pages.
24. **R. Hofmann**, M. Koller, M. Haider: "*Flexibilisierung von energie-intensiven Industrieanlagen durch Intergration zusätzlicher Technologien und Einsatzoptimierung*"; Talk: Evon Up2Date Smart Production, Stubenberg am See (invited); 2016-06-22.
25. **R. Hofmann**, M. Koller, H. Walter, S. Dusek: "*Power-to-Heat und erhöhte Laständerungsfahrweisen als Flexibilitätsoption durch Integration von Speicherkonzepten für*

- industrielle Energieanlagen*"; Talk: VGB-Fachtagung Dampferzeuger, Industrie- und Heizkraftwerke 2016, Potsdam; 2016-04-06 - 2016-04-07; in: "VGB-Fachtagung Dampferzeuger, Industrie- und Heizkraftwerke 2016", (2016), 31 pages.
26. **R. Hofmann**, P. Linzer, H. Walter, T. Will: "New Approximation Algorithms for a Fast Direct Determination of State Functions of Water and Steam"; Talk: SEEP2017 - 10th International Conference on Sustainable Energy and Environmental Protection, Bled, Slowenien; 2017-06-27 - 2017-06-30; in: "Proceedings of the 10th International Conference on Sustainable Energy and Environmental Protection", University of Maribor Press, (2017), ISBN: 978-961-286-058-5; 10 - 24.
  27. **R. Hofmann**, K. Ponweiser: "Betrieb eines Rippenrohrprüfstandes mit quer angeströmten Rohren zum Vergleich von Wärmeübergang und Druckverlust zwischen spiralförmigen segmentierten I- und U-Rippenrohrgeometrien"; Poster: VDI-GVC FA-Sitzung "Wärme- und Stoffübertragung", Stuttgart; 2007-03-07 - 2007-03-09.
  28. **R. Hofmann**, K. Ponweiser: "Performance comparison of different solid/serrated finned-tubes in cross-flow"; Poster: VDI-GVC Fachausschuss "Wärme- und Stoffübertragung", Bad Dürkheim; 2009-03-03 - 2009-03-05.
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#### Patent-Applications

1. **R. Hofmann**, C. Zauner, S. Dusek, F. Hengstberger: "Dampfspeicher"; Patent: EU, No. Ep 3 260 803 A1; submitted: 2017-06-22.
2. **R. Hofmann**, C. Zauner, S. Dusek, F. Hengstberger: "Dampfspeicher"; Patent: Österreich, No. At 518828 A1 2018-01-15; submitted: 2016-06-23.
3. **R. Hofmann**, C. Zauner, S. Dusek, F. Hengstberger: "Dampfspeicher"; Patent: Österreich, No. At 518793 A1 2018-01-15; submitted: 2016-06-23.

#### Academic Theses

##### Doctor's Theses

1. C. Dullinger: "Holistic energy optimization of rail vehicles"; Supervisor, Reviewer: M. Kozek, S. Jakubek, R. Hofmann; Institut für Mechanik und Mechatronik, 2018; oral examination: 2018-07-11.

2. S. Gahem Sigarchian: "*Small-Scale Decentralized Energy Systems optimization and performance analysis*"; Supervisor, Reviewer: V. Martin, A. Malmquist, E. Dahlquist, E. Thorin, C. Bales, R. Hofmann; KTH School of Industrial Engineering and Management, Division of Heat and Power Technology, 2018; oral examination: 2018-06-07.
3. W. Liemberger: "*Utilisation of the Natural Gas Grid for the Hydrogen Infrastructure*"; Supervisor, Reviewer: A. Friedl, M. Harasek, M. Lehner, R. Hofmann; Institut für Verfahrenstechnik, Umwelttechnik und Technische Biowissenschaften, 2018; oral examination: 2018-09-18.
4. E. Luchini: "*Model predictive control for an insulated cool box with redundant refrigeration circuits*"; Supervisor, Reviewer: S. Jakubek, M. Kozek, R. Hofmann; Institut für Mechanik und Mechatronik, 2018; oral examination: 2018-10-24.

#### Diploma and Master Theses

1. D. Angerer: "*Modellgestützte Entwicklung thermischer Speicherkonzepte zur Optimierung der Energieeffizienz in der industriellen Prozesstechnik*"; Supervisor: R. Hofmann, C. Zauner; Institut für Energietechnik und Thermodynamik/E302-3, 2016; final examination: 2016-09-29.
2. L Brändle: "*Integration von Wärmepumpen in Industrieprozesse*"; Supervisor: R. Hofmann, V. Wilk; E302-3 - Institut für Energietechnik und Thermodynamik, 2018; final examination: 2018-06-21.
3. S. Gruber: "*Charakterisierung eines Hybridspeichers zur Dampfbereitstellung in industriellen Prozessen*"; Supervisor: R. Hofmann, S. Dusek; E302-3 - Institut für Energieitechnik und Thermodynamik, 2018; final examination: 2018-09-18.
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