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Center for Solar Energy Res. & App'ls (GÜNAM)

GÜNAM Management Board
ODAK: Conc. Solar Thermal Research Laboratory
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General Background

Degrees

Assoc. Prof.	Mechanical Engineering	Republic of Turkey's Interuniversity Council	January 2010
Ph.D.	Mechanical Engineering	The University of Texas – Austin	August 2000
M.S.	Mechanical Engineering	The University of Texas – Austin	May 1996
B.S.	Mechanical Engineering	Virginia Tech	May 1992

Academic Positions

2015-Present, Professor, Mechanical Engineering, Middle East Technical University (ODTÜ/METU)
2014-2015, Associate Professor, Mechanical Engineering, ODTÜ
2012-2014, Visiting Associate Professor, Mechanical Engineering, METU Northern Cyprus Campus
2011-2012, Associate Professor, Mechanical Engineering, ODTÜ
2003-2010, Assistant Professor, Mechanical Engineering, ODTÜ
2000-2002, Assistant Professor, Environmental Resources Engr, Humboldt State U., California
1994-2000, Teaching and Research Assistant, Mechanical Engineering, The University of Texas-Austin.

Industry Positions

Xenergy, Burlington, MA (1993-1994). Consultant to New England Electric System. Developed demonstration programs for emerging residential heating and cooling technologies. Evaluated residential and industrial Demand Side Management (DSM) programs.

Siv. Ing. Gaute Flatheim, Stavanger, Norway (2 Months, 1992). Exchange Engineering Position. Thermal modeling of solar heated house.

ABB: Gas Turbine Manufacturing, Chester, VA (3 Months, 1992). Summer Engineering Position. Gas turbine manufacturing support

Duke Power Company, Mt. Holly, NC, (1988-1990). Co-op Engineer. Support for fossil fuel power plant maintenance.

EU Non-Project Activities

3. **EU-SOLARIS ERIC:** *The European Solar Research Infrastructure for Concentrated Solar Power* **Duration:** 2019-Indefinite

ERIC: European Research Infrastructure Consortium, which is an EU legal entity for pan-European Research Infrastructures.

Status: EU-SOLARIS ERIC will be constituted in the Fall 2019 and will become a European Strategic Forum Research Infrastructure (ESFRI) Landmark.

Objective: To be an ERIC that offers the best conditions for the development of CST research activities, including advanced pilot projects, for the scientific and industrial communities.

Central Node: CIEMAT-PSA (Spain)

National Nodes: METU-GÜNAM (Turkey), CyI (Cyprus), CNRS (France), DLR (Germany), CERTH (Greece), ENEA (Italy), UEVORA (Portugal)

Role: I coordinate Turkey's scientific contributions to EU-SOLARIS.

More Information: [EU FP7 Preparatory Phase Project Website](#) (2012-2016)

2. **EERA-JP-CSP:** *European Energy Research Alliance - Joint Program - Concentrating Solar Power* **Duration:** 2017-Present

Role: I coordinate METU-GÜNAM's contributions to EERA-JP-CSP.

More Information: [EERA-JP-CSP Website](#)

1. **Independent Expert and Rapporteur for EU Proposal Evaluation** **Duration:** 2014-Continuing

I serve as both an Independent Expert (IE) for the evaluation of proposals and as a Rapporteur to synthesize inputs from IEs to write the Evaluation Summary Reports (ESRs). Typical project budgets are 4-20 M€. Full Disclosure: I am very transparent with the European Commission (EC) about all potential conflicts-of-interest, especially within my EU CSP networks, and I do not participate in any evaluations for which the EC thinks there is a potential for a conflict-of-interest.

EU Funded Projects

Project Coordinator: Coordinator for whole proposal and project.

METU-GÜNAM Coord.: Coordinator for METU-GÜNAM's contributions to proposal and project.

Researcher: Contributor to project.

Note: Most of these EU Funded Projects are tightly coupled to the EU-SOLARIS ERIC and EERA-JP-CSP EU Activities described above.

6. **SolarTwins:** *Solar Twinning to Create Solar Research Twins* **Duration:** 3 yrs, 2020-2022

Role: Project Coordinator **Budgets:** Project: 799 446 € METU-GÜNAM: 399 621 €

Coordinator: METU-GÜNAM **Institutions:** 3 **Countries:** 3

Objective: To step-up the Scientific Excellence of Concentrating Solar Thermal (CST) research at the Center for Solar Energy Research and Applications (GÜNAM) through Twinning with the internationally leading CST research institutions CIEMAT-PSA (Spain) and DLR (Germany).

Funding: EU H2020 R&I Programme Grant 838514.

More Information: [Project Website](#) [EU-CORDIS Webpage](#)

Successes:

1. Only successful Turkish led proposal out of 23 submitted to this call; i.e. top 4.3% at national level.
2. One of 37 successful proposals out of 459 submitted to this call; i.e. top 8% at European Level.
3. First successful multi-national EU Horizon 2020 proposal led by METU.

5. **GeoSmart:** *Technologies for geothermal to enhance competitiveness in smart and flexible operation.* **Duration:** 4 yrs, 2019-2023
- Role:** METU-GÜNAM Coord. **Budgets:** Project: 17.4 M€ METU-GÜNAM: 193 333 €
- Coordinator:** TWI Limited (UK) **Institutions:** 19 **Countries:** 8
- Objective:** To optimise and demonstrate innovations to improve the flexibility and efficiency of geothermal heat and power systems. METU-GÜNAM's main contributions are to develop technologies to increase the flexibility of geothermal power plants through hybridization with Concentrating Solar Thermal and Biomass technologies.
- Funding:** EU H2020 R&I Programme Grant 818576
- More Information:** [Project Website](#) [EU-CORDIS Webpage](#)
4. **HORIZON-STE:** *Implementation of the Initiative for Global Leadership in Solar Thermal Electricity* **Duration:** 3 yrs, 2019-2022
- Role:** METU-GÜNAM Coord. **Budgets:** Project: 999 656 € METU-GÜNAM: 64 581 €
- Coordinator:** ESTELA (EU) **Institutions:** 5 **Countries:** 4
- Objective:** To provide coordination and support for the research, innovation and First-of-a-Kind (FOAK) projects for the full execution of the Initiative for Global Leadership in Solar Thermal Electricity. This proposal specifically provides scientific input and support for the aligned the H2020 Project CSP-ERANET to develop joint funding actions between Germany, Spain, Italy, and Turkey.
- Funding:** EU H2020 R&I Programme Grant 838514
- More Information:** Website in preparation.
- More Information:** [Project Website](#) [EU-CORDIS Webpage](#)
3. **SFERA-III:** *Solar Facilities for the European Research Area - Third Phase* **Duration:** 4 yrs, 2019-2022
- Role:** METU-GÜNAM Coord. **Budgets:** Project: 9.1 M€ METU-GÜNAM: 84 688 €
- Coordinator:** CIEMAT (Spain) **Institutions:** 15 **Countries:** 8
- Objective:** To carry on with the work done during the past 8 years for the sustainability of the activities of the European advanced solar laboratories involved in SFERA and SFERA 2nd phase, and extend these activities to the new solar laboratories which will bring added value to this European Research Infrastructure for Concentrating Solar Power.
- Funding:** EU H2020 R&I Programme Grant 823802
- More Information:** [Project Website](#) [EU-CORDIS Webpage](#)
2. **INSHIP:** *Integrating National Research Agendas on Solar Heat for Industrial Processes* **Duration:** 4 yrs, 2017-2020
- Roles:** METU-GÜNAM Coord. (2017-18) **Budgets:** Project: 2.9 M€ METU-GÜNAM: 199 987 €
Researcher (2019-20)
- Coordinator:** F-ISE (Germany) **Institutions:** 28 **Countries:** 10
- Objective:** To 1) create a European Common Research and Innovation Agenda (ECRIA); and 2) coordinate Research and Development (R&D) at Technology Readiness Levels (TRLs) 2-5.
- Funding:** EU H2020 R&I Programme Grant 731287
- More Information:** [Project Website](#) [EU-CORDIS Webpage](#)

- 1. EU-SOLARIS:** *The European Research Infrastructure for Concentrated Solar Power (CSP)* **Duration:** 4 yrs, 2012-2016
- Role:** Researcher **Budgets:** Project: 4.5 M€ METU-GÜNAM: 153 220 €
- Coordinator:** CTAER (2012-15) **Institutions:** 15 **Countries:** 9
DLR (2016)
- Objective:** To create the legal, financial and management structure and business plan for the transnational European Concentrating Solar Thermal (CST) research infrastructure EU-SOLARIS.
- Funding:** European Union FP7 Grant 312833
- More Information:** [Project Website](#) [EU-CORDIS Webpage](#)

Nationally Funded Projects (Including Bi-Lateral)

Development of Solar Drying Technologies for the Valorization of Sludge (Researcher) (Mar. 2018-Feb. 2020): A bi-lateral project with The Research and Technology Center of Energy (CRTE) of Tunisia with Turkish funding provided by the Scientific and Technological Research Council of Turkey (TÜBİTAK) Grant 217M062. METU's main contributions are to develop a novel solar-driven dryer for olive sludge and to determine the value of the dried product as biomass. Total METU Budget: 474 550 TL; *METU PI: İlker TARI.*

GÜNAM-2 (Jul. 2015-Dec. 2017): GÜNAM 2nd Phase – Formation of Global Excellence Center and Interface with Industry. Turkish Ministry of Development Grant 2015K121200. The overall objective is to expand Solar Thermal (CST) research laboratory *ODAK* (Odaklanmış Isıl Güneş Enerjisi Araştırma Laboratuvarı). I am contributing to the establishment of *ODAK*, which has a mandate to support Research, Technology Development and Innovation (RTDI) in Solar Thermal Electricity (STE), also called Concentrating Solar Power (CSP) and Solar Heat for Industrial Processes (SHIP). Total Budget: 19,000,000 TL; *ODAK* Budget 4,000,000 TL. *ODAK Implementers: Derek BAKER, Tuba OKUTUCU ÖZYURT, İlker TARI, Almıla YAZICIOĞLU. GÜNAM Director: Raşit TURAN.* gunam.metu.edu.tr

Solar Geothermal Hybrid (SGH) Power Plants (2013-2014): TÜBİTAK (Scientific and Technological Research Council of Turkey) TEYDEP Grant 7120763. The Objective is to install and monitor the performance of parabolic trough collectors at a geothermal power plant in Turkey, and develop software for feasibility and design studies of solar-geothermal hybrid power plants. Total Budget: 650,000 TL; METU's Budget: 25,000 TL. *Consultant: Derek Baker.*

Completed Graduate Students

24. Shadi Salehian (MSc 2020, METU ME). Simulation of solar thermal application in a cement plant. *Adviser: İlker Tari; Co-Adviser: Derek Baker.*
23. Kazim Sömek (MSc 2019, METU Micro and Nano Technology). Silver nanowire/chitosan nanocomposite dry electrodes for electrocardiogram. *Adviser: Hüsnü Emrah Ünalın; Co-Adviser: Derek Baker.*
22. Yankı Çobanoğlu (MSc 2019, METU ME). Thermal management of electronics cabinet and effects of different front cover patterns. *Adviser: İlker Tari; Co-Adviser: Derek Baker.*
21. Murat Ekin İnce (MSc 2019, METU ME). Design of a Software for the Construction of Heat Distribution Networks with Concentrated Solar Thermal Integration based on Pinch and Exergy Analyses. *Adviser: Tuba Okutucu Özyurt; Co-Adviser: Derek Baker.*
20. Sasan Karimi (MSc 2019, METU ME). Integration of solar energy and industrial waste heat into an industrial zone with heat distribution network and optimization of energy sources for units. *Adviser: Almıla Yazıcıoğlu; Co-Adviser: Derek Baker.*
19. Loiy Al-Ghussain (MSc 2017, METU NCC SEES). Effects of short and long term storage systems on size determination of renewable energy systems in micro-grids. *Adviser: Onur Taylan; Co-Adviser: Derek Baker.*
18. Evan JOHNSON (MSc 2017, METU ME). Conceptual design and heat transfer investigation of a dense granular flow solar receiver. *Adviser: Derek Baker; Co-Adviser: İlker Tari.*

17. Rahul SINGH (MSc 2017, METU ME). Modelling and Performance Analysis of Linear Fresnel Collector for Process Heat Generation for Ice Cream Factory in Konya. *Adviser: Derek Baker; Co-Adviser: İlker Tari.*
16. Mine KAYA (MSc 2015, METU ME). Numerical comparison and sizing of sensible and latent thermal energy storage for compressed air energy storage. *Adviser: İlker Tari; Co-Adviser: Derek Baker.*
15. Onur ÖZKAN (MSc 2015, METU ME). Design and modeling of a novel rectifier with ceramic hollow fiber membrane contactor for miniaturized absorption cooling devices. *Adviser: Almıla Yazıcıoğlu; Co-Adviser: Derek Baker.*
14. Muhammad Arsalan TARIQ (MSc 2014, METU NCC SEES). Methodology to Size Large Scale Solar PV Installations for Institutions with Unidirectional Metering. *Adviser: Derek Baker.*
13. Tufan AKBA (MSc 2014, METU ME). Demand Based Optimized Sizing of Thermal Storage for Concentrating Solar Power Systems. *Adviser: Almıla Yazıcıoğlu; Co-Adviser: Derek Baker.*
12. Arash KARSHENASS (MSc 2014, METU ME). Modeling and Simulations of Desiccant Cooling Cycles. *Adviser: Cemil Yamalı; Co-adviser: Derek Baker.*
11. Nima BONYADİ (MSc 2014, METU ME). Experimental and Numerical Investigation of Adsorption on Zeolite. *Adviser: Cemil Yamalı; Co-adviser: Derek Baker.*
10. Koray TAŞTANKAYA (MSc 2014, METU ME). Feasibility of Advanced Adiabatic Compressed Air Energy Storage Systems for Wind Energy in Turkey. *Adviser: İlker Tari; Co-Adviser: Derek Baker.*
9. Mesru ALTINOZ (MSc 2013, METU ME). Experimental Investigation of Heat Transfer Characteristics in Micro-Channels. *Adviser: Almıla Yazıcıoğlu; Co-Adviser: Derek Baker.*
8. Can UÇKUN (MSc 2013, METU ME). Modeling and Simulations of Direct Steam Generation in Concentrating Solar Power Plants using Parabolic Trough Collectors. *Adviser: Derek Baker.*
7. Erdem Emre PINAR (MSc 2013, METU ME). Energy Optimal Path Planning of an Unmanned Solar Powered Aircraft. *Adviser: Derek Baker; Co-adviser: Eray Uzgören, METU NCC.*
6. Ahmet CAĞLAR, (PhD 2012, METU ME).. Design and Construction of the Adsorbent Bed of a Thermal Wave Adsorption Cooling Cycle. *Adviser: Cemil Yamalı; Co-adviser: Derek Baker.*
5. Kerim ÇEPNİ (MSc 2011, METU ME).. A Methodology for Designing Tonpiliz-Type Transducers. *Adviser: Derek Baker; Co-Adviser: Mehmet Çalışkan.*
4. Yasemin USTA (MSc 2010, METU ME). Simulations of a Large Scale Solar Thermal Power Plant in Turkey using Concentrating Parabolic Trough Collectors. *Adviser: Derek Baker; Co-Adviser: Bilgin Kaftanoğlu.*
3. Onur TAYLAN (MSc 2010, METU ME). Numerical Modeling and Performance Analysis of Solar-Powered Ideal Adsorption Cooling Systems. *Adviser: Derek Baker; Co-Adviser: Bilgin Kaftanoğlu.*
2. Ertan AĞAR (MSc 2010, METU ME). 2-D Modeling of a Proton Exchange Membrane Fuel Cell. *Adviser: Derek Baker; Co-Adviser: Mehmet Sankır, TOBB ETÜ.*
1. Derviş Emre DEMİROCAK (MSc 2008, METU ME).. Thermodynamic and Economic Analysis of a Solar Thermal Powered Adsorption Cooling System. *Adviser: Derek Baker; Co-Adviser: Bilgin Kaftanoğlu.*

Educational Activities

International Summer/Solar Engineering Program (ISEP): Creator and coordinator. Annually from 2009-2013. A 7-week summer program at METU for upper level undergraduate engineering students from Turkey and the The University of Texas-Austin (UT) focused on emerging clean energy technologies such as fuel cells and concentrating solar power. In total approximately 130 METU and 24 UT students have participated in the program. The program has not only brought many UT students to METU but also enabled several METU ME students to study as exchange students at UT and laid the foundation for the EAGER project with METU and UT described above.

Courses Taught at METU and METU NCC

METU ME Graduate

- ME 514: Advanced Solar Energy Utilization
- ME 537: Advanced Engineering Thermodynamics I
- ME 538: Advanced Engineering Thermodynamics II

METU NCC Sustainable Environment and Energy Systems (SEES) Graduate

- SEES 510: Renewable Energy and Climate Change
- BUS 535: Energy Management

4th Year Technical Elective at METU (ME 4xx) and METU NCC (MECH 4xx)

- ME/MECH 405: Energy Conversion Systems
- ME/MECH 415: Utilization of Geothermal Energy
- ME 476: Second Law Analysis of Engineering Systems
- ME/MECH 478: Introduction to Solar Energy Utilization
- ME 492: Fuel Cell Fundamentals
- ME 496: Design of Renewable Energy Systems

2nd and 3rd Year Core Courses at METU (ME xxx) and METU NCC (MECH xxx, CHME xxx)

- ME/MECH 203: Thermodynamics I
- ME 204: Thermodynamics II
- ME/MECH 311: Heat Transfer
- ME/MECH 312: Thermal Engineering
- CHME 325: Heat Transfer
- ME 351: Thermodynamics of Heat Power

Service Activities

GÜNAM Management Board Member (2017-Present)

Department Committees:

METU ME Erasmus Committee Coordinator, 2014-2018;
METU ME Undergraduate Committee Member, 2003-2012.

University Committees:

METU English Education Committee Member, 2012.

Research Proposal Review:

Network of the European Union, Latin America and the Caribbean Countries on Joint Innovation and Research Activities (ERANet-LAC). eranet-lac.eu

- Scientific Evaluation Committee (2015): Consolidation of evaluation results.
- Evaluator (2015): Initial evaluation of proposals.

Professional and Service Positions:

Publishing Editor, *The International Journal of Thermodynamics* (2012-2014);
Associate Editor-in-Chief, *The International Journal of Thermodynamics* (2008-2011);

Journal Refereeing (Since 2015)

Applied Energy (2016, 2018)	Journal of Energy Engineering (2016, 2017)
Energy (2015-2018)	Journal of Thermal Science and Technology (2017)
Env. Progress & Sustainable Energy (2017-2018)	Renewable Energy (2018)
Experimental Thermal Fluid Science (2015)	Renewable & Sustainable Energy Reviews (2018)
Int'l Journal of Energy Research (2015-2018)	Solar Energy (2017-2018)
Int'l Journal of Renewable Energy Tech. (2015)	Turkish J. of Elec. Engr. & Computer Sci. (2017)

Awards

Middle East Technical University Performance Award: Awarded based on overall academic performance (research, education and service).

2016: Ranked 3rd out of approximately 48 faculty members in Mechanical Engineering and in the top 10% of all faculty members in the Faculty of Engineering.

Turkish Council of Higher Education (YÖK) Research Performance Award: Awarded based on research performance.

2016: Ranked 5th out of approximately 48 faculty members in Mechanical Engineering
2015: Ranked 4th out of approximately 47 faculty members in Mechanical Engineering

Education

METU Outstanding Educator, 2011-12 (METU's highest and terminal teaching award);
METU Educator of the Year, 2003-4, 2005-6.

Publications

Online Publication Profiles:

- Google Scholar (GS) Profile: [Derek Baker \(METU\)](#) (Most Comprehensive)
ORCID: [0000-0003-4163-1821](#) (Semi selective)
ResearcherID: [H-2021-2015](#) (Most selective: Only SCI-E Journal Articles)

SCI-E Journal Publications (all METU A-Type Journals)

23. Kamfa, In'am, J. Fluch, R. Bartali, D. Baker (2020). *Solar-thermal driven drying technologies for large-scale industrial applications: State of the art, gaps, and opportunities*. International Journal of Energy Research. 1-25. doi: [10.1002/er.5622](#)
22. Johnson, E., İ. Tari, D. Baker (2020). *A Monte Carlo method to solve for radiative effective thermal conductivity for particle beds of various solid fractions and emissivities*. Journal of Quantitative Spectroscopy & Radiative Transfer, 250, 107014. doi: [10.1016/j.jqsrt.2020.107014](#)
21. Akba, T., D. Baker, A. G. Yazıcıoğlu (2020). *Modeling, transient simulations and parametric studies of parabolic trough collectors with thermal energy storage*. Solar Energy, 199, 497-509. doi: [10.1016/j.solener.2020.01.079](#)
20. Al-Ghussain, L., O. Taylan, D. K. Baker (2018). *An investigation of optimum PV and wind energy system capacities for alternate short and long-term energy storage sizing methodologies*. International Journal of Energy Research. doi: [10.1002/er.4251](#)
19. Bonyadi, N., E. Johnson, D. K. Baker (2018). *Technoeconomic and Exergy Analysis of a Solar Geothermal Hybrid Electric Power Plant Using a Novel Combined Cycle*. Energy Conversion & Management. 156. 542-554. doi: [10.1016/j.enconman.2017.11.052](#)
18. Sadati, S.M.S., E. Jahani, O. Taylan, D.K. Baker (2018). *Sizing of PV-Wind-Battery Hybrid System for a Mediterranean Island Community Based on Estimated and Measured Meteorological Data*. Journal of Solar Energy Engineering. 140(1): 011006-01 - 011006-12. doi: [10.1115/1.4038466](#)
17. Bonyadi, N., S. K. Sömek, C. C. Özalevli, D. Baker, I. Tari (2018). *Numerical analysis of phase change material characteristics used in a thermal energy storage device*. Heat Transfer Engineering. 39(3). 268-276. doi: [10.1080/01457632.2017.1295741](#)
16. Okoye, C. O., O. Taylan, D. Baker (2016). *Solar energy potentials in strategically located cities in Nigeria: Review, resource assessment and PV system design*. Renewable & Sustainable Energy Reviews. 55C. 550-566. doi: [10.1016/j.rser.2015.10.154](#)
15. Sadati, S. M. S., F. U. Qureshi, D. Baker, (2015). *Energetic and Economic Performance Analyses of Photovoltaic, Parabolic Trough Collector and Wind Energy Systems for Multan, Pakistan*. Renewable & Sustainable Energy Reviews. 47. 844-855. doi: [10.1016/j.rser.2015.03.084](#)
14. Ali, S. M. H., M. J. S. Zuberi, M. A. Tariq, D. Baker, A. Mohiuddin (2015). *A Study to Incorporate Renewable Energy Technologies into the Power Portfolio of Karachi, Pakistan*. Renewable and Sustainable Energy Reviews. 47. 14-22. doi: [10.1016/j.rser.2015.03.009](#)
13. Pehlivanurk, C., Ozkan, O., Baker, D. K. (2014). *Modeling and Simulations of a Micro Solar Power System*. International Journal of Energy Research. 38. 1129-1144. doi: [10.1002/er.3119](#)
12. Caglar, A., Yamali, C., & Baker, D. K. (2013). *Two dimensional transient coupled analysis of a finned tube adsorbent bed for a thermal wave cycle*. International Journal of Thermal Sciences. 73. 58-68. doi: [10.1016/j.ijthermalsci.2013.06.009](#)
11. Yılmazoğlu, M. Z., Durmaz, A., Baker, D. (2012). *Solar Repowering of Soma-A Thermal Power Plant*. Energy Conversion and Management. 64. 232-237. doi: [10.1016/j.enconman.2012.04.019](#)
10. Solmuş, İ, Rees, D. A. S., Yamalı, C, Baker, D. (2012). *A Two-Energy Equation Model for Dynamic Heat and Mass Transfer in an Adsorbent Bed Using Silica Gel/Water Pair*. International Journal of Heat and Mass Transfer. 55. 5275-5288. doi: [10.1016/j.ijheatmasstransfer.2012.05.036](#)
9. Solmuş, İ, Rees, D. A. S., Yamalı, C, Baker, D., Kaftanoğlu, B. (2012). *Numerical Investigation of Coupled Heat and Mass Transfer Inside the Adsorbent Bed of an Adsorption Cooling Unit*. International Journal of Refrigeration. 35. 652-662. doi: [10.1016/j.jrefrig.2011.12.006](#)
8. Taylan, O, Baker, D., Kaftanoğlu, B. (2012). *COP Trends for Ideal Thermal Wave Adsorption Cooling Cycles with Enhancements*. International Journal of Refrigeration. 35(3) 562-570. doi: [10.1016/j.jrefrig.2010.07.008](#)

7. Solmuş, İ, Kaftanoğlu, B., Yamalı, C., Baker, D. (2011). *Experimental Investigation of a Natural Zeolite-Water Adsorption Cooling Unit*. Applied Energy. 88(11) 4206-4213.
doi: [10.1016/j.apenergy.2011.04.057](https://doi.org/10.1016/j.apenergy.2011.04.057)
6. Baker, D, Açar, E. (2011). *International Summer Engineering Program on Fuel Cells for Undergraduate Engineering Students*. International Journal of Hydrogen Energy. 36(5) 3712-3725.
doi: [10.1016/j.ijhydene.2010.12.106](https://doi.org/10.1016/j.ijhydene.2010.12.106)
5. Solmuş, İ, Yamalı, C., Kaftanoğlu, B., Baker, D., Çağlar A. (2010). *Adsorption Properties of a Natural Zeolite-Water Pair for use in Adsorption Cooling Cycles*. Applied Energy. 87, 2062-2067.
doi: [10.1016/j.apenergy.2009.11.027](https://doi.org/10.1016/j.apenergy.2009.11.027)
4. Baker, D. K. (2008). *Thermodynamic Limits to Thermal Regeneration in Adsorption Cooling Cycles*. International Journal of Refrigeration. 31(1) 55-64.
doi: [10.1016/j.ijrefrig.2007.09.001](https://doi.org/10.1016/j.ijrefrig.2007.09.001)
3. Baker, D. K., Kaftanoğlu, B. (2007) *Predicted Impact of Collector and Zeolite Choice on the Thermodynamic and Economic Performance of a Solar Powered Adsorption Cooling System*. Experimental Heat Transfer journal, 20(2) 103-122.
doi: [10.1080/08916150601091407](https://doi.org/10.1080/08916150601091407)
2. Baker, D. K., Vliet, G. C. (2003) *Identifying and Reducing Scaling Problems in Solar Hot Water Systems*. Journal of Solar Energy Engineering, 125(1) 61-66.
doi: [10.1115/1.1528924](https://doi.org/10.1115/1.1528924)
1. Baker, D. K., Vliet, G. C. (2001). *Designing Solar Hot Water Systems for Scaling Environments*, Journal of Solar Energy Engineering. 123(1) 43-47.
doi: [10.1115/1.1350564](https://doi.org/10.1115/1.1350564)

Book Chapters (METU A-Type Publishers)

4. Baker, D., Özalevli, C. C., Sömek, S. K. (2015). "Technical Study of a Hybrid Solar-Geothermal Power Plant and its Application to a Thermal Design Course," *Progress in Clean Energy - Volume 2 Novel Systems and Applications*. Dincer, I., Colpan, C.O., Kizilkan, O., Ezan, M.A. (Eds.). Springer. pp. 887-910.
doi: [10.1007/978-3-319-17031-2_58](https://doi.org/10.1007/978-3-319-17031-2_58)
3. Karshenass, A., Baker, D., Yamali, C., Singh, R. (2015). "Technical Analysis of Hybrid Desiccant Cooling in a Mediterranean Climate," *Progress in Clean Energy - Volume 2 Novel Systems and Applications*. Dincer, I., Colpan, C.O., Kizilkan, O., Ezan, M.A. (Eds.). Springer. pp. 911-928.
doi: [10.1007/978-3-319-17031-2_59](https://doi.org/10.1007/978-3-319-17031-2_59)
2. Bilyaz, S., Singh, R., Karshenass, A., D. Baker (2015). "Modeling and Transient Simulations of 30 MW Solar Thermal Electric Power Plants in the Northeast Mediterranean Region," *Progress in Clean Energy - Volume 2 Novel Systems and Applications*. Dincer, I., Colpan, C.O., Kizilkan, O., Ezan, M.A. (Eds.). Springer. pp. 1099-1114.
doi: [10.1007/978-3-319-17031-2_74](https://doi.org/10.1007/978-3-319-17031-2_74)
1. Sankir, M., Semiz, L., Serin, R. B., Sankir, N. D., Baker, D. (2015) "Hydrogen Generation from Chemical Hydrides" *Advanced Materials Book Series: Advanced Catalytic Materials*. Eds: A. Tiwari and S. Titinchi. Wiley-Scrivener Publishing, USA. pp. 145-192. doi: [10.1002/9781118998939.ch5](https://doi.org/10.1002/9781118998939.ch5)

Textbook and Textbook Supplements (METU A-Type Publisher)

3. 김동섭, 김무근, 김영일, 서정세, 신지영 공역 (Schmidt, Ezekoye, Howell, Baker), 2008, 열역학 (Thermodynamics: An Integrated Learning System). Translated and Published by Sigma Publishers, Seoul, Korea; Under Agreement with Wiley, New York.
2. Schmidt, P. S., Ezekoye, O. A., Howell, J. H., and Baker, D. K. (2006). "Thermodynamics: An Integrated Learning System", 512 page textbook. John Wiley, New York.
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