

Eduardo González-Mora | full CV

Toluca – Estado de México, México

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In a nutshell

PhD in Energy Systems at the Universidad Autónoma del Estado de México. My current research focuses on the **design of solar concentrators** for sterilization and direct steam generation, and **engineering thermodynamics modeling**. To date, I have authored 30 scientific publications (cited 90+ 📄). I am fluent in Spanish and English; and intermediate in Portuguese and Esperanto. My goal is to contribute to a 100% renewable energy for all, used in a democratic, efficient and conscientious way, through research, teaching and consulting.

Education

Universidad Autónoma del Estado de México <i>PhD Energy Systems, with honors</i> Dissertation: <i>Comparative study of a conceptual direct steam generation solar power plant using PTC and optimized LFR</i> Supervisor: PhD Ma. Dolores Durán-García	México 2020-2023
Appalachian State University <i>Academic exchange</i> Research: <i>Solar radiation exergy modeling</i> Supervisor: PhD Ram Poudel	USA 2022
Universidad Autónoma del Estado de México <i>MSc Energy Systems, with honors</i> Dissertation: <i>2E analysis of different configurations of direct steam generation solar plants using Fresnel reflectors</i> Supervisor: PhD Ma. Dolores Durán-García	México 2017-2019
Universidad Europea del Atlántico <i>MSc Renewable Energies</i> Dissertation: <i>Optogeometric design and environmental impact assessment - life cycle analysis of a CPC solar concentrator for wastewater treatment</i> Supervisor: Dr. Ann Sibelle Rodríguez Mininni	Spain 2016-2017
Universidad Internacional Iberoamericana <i>MSc Management and Environmental Auditing</i> Dissertation: <i>Optogeometric design and environmental impact assessment - life cycle analysis of a CPC solar concentrator for wastewater treatment</i> Supervisor: Dr. Ann Sibelle Rodríguez Mininni	Puerto Rico 2016-2017
Instytut Technnologii Eksploatacji - Panstwowy Instytut Badawczy <i>Academic exchange</i> Workshop: <i>10th Polish-Mexican Summer Workshop in Tribology</i>	Poland 2015
Politechnika Krakowska. im Tadeuza Kosciuszki. Mechaniczny <i>Academic exchange</i> Workshop: <i>Advanced Production Engineering Workshop</i>	Poland 2015

Universidad Autónoma del Estado de México

BSc Mechanical Engineering, with honors

Dissertation: *Design and development of a CPC solar concentrator for the sterilization of surgical material*

Supervisor: PhD Eduardo A. Rincón Mejía

México

2010-2015

Professional experience

Universidad Autónoma del Estado de México

Research Assistant, Solid Biofuels Cluster

Biofuels project

México

2019-2021

- English translation and writing editing
- Literature review

Consulting Services

Independent, Engineering projects

Energy and metal-mechanical sector

México

2017-present

- Feasibility assessment of low temperature solar thermal installations
- Overhaul of photovoltaic systems
- Manufacturing processes improvement

Universidad Autónoma del Estado de México

Research Assistant, Academic Staff

Polymer degradation project

México

2013-2014

- Design and preliminary analysis of a CPC for polymer photo-thermo degradation

Grants & Awards

Grants

CONACYT: PhD's studies grant, 2020-2023

CONACYT: Master's studies grant, 2017-2019

FUNIBER: Master's studies grant, 2016-2017

UAEMéx: "Yurrieta Valdés" grant, 2014-2015

Awards

UAEMéx: "Ignacio Manuel Altamirano Basilos" Award, 2020

UAEMéx: Honors course in Master Degree, 2019

INEL: 2nd Place in XXVI National Thesis Awards, 2017

UAEMéx: Honors course in Bachelor's, 2016

Teaching activities

Universidad Autónoma del Estado de México

Lecturer, Sustainable Energy Systems Engineering (ISES)

México

2017-present

- Solar concentration, 2017-present
- Continuum mechanics, 2018-2020
- Trigeration and advanced cycles, 2019-present
- Turbomachinery, 2019
- Thermal systems design, 2020-present
- Collegiate Activities
 - Curricular redesign for the Sustainable Energy Systems Engineering program committee (ISES), 2023-2024
 - Elaboration of surveys for students of the educational program
 - Analysis of educational content
 - Secretary of Thermofluids Academy (ISES), 2022-present
 - Support in the planning and execution of collegiate activities:
 - Formation of work teams
 - Proposed Pedagogical Guides and Learning Unit Evaluation Guides *Thermal systems desing (ISES & IME) and Trigeration and advanced cycles*
 - President of the Renewable Energy Sources Academy (ISES), 2019-2022
 - Planning of collegiate activities:
 - Informative meetings
 - Formation of work teams
 - Review of departmental examination proposals
 - Elaboration of the Pedagogical Guide and the Evaluation Guide for the Learning Unit of *Solar concentration*
 - Secretary of the Renewable Energy Sources Academy (ISES), 2018-2019
 - Support in the planning and execution of collegial activities.:
 - Formation of work teams
- Human capital formation
 - Julio César A. M. (ISES). In progress.
 - Ximena Noemi C. S. (ISES). In progress.
 - Moises Ulises C. F. (ISES). In progress.

Universidad Autónoma del Estado de México
 Teaching assistant, Sustainable Energy Systems Engineering
 Dr. Miriam Sánchez-Pozos's class

México
 2019

- Radiation heat transfer (two months)

Es-kool ASESORES
 Professor, High-school and Bachelor's

México
 2018-2020

- Mathematics and physics course regularizations
- Preparation for admission to high school and bachelor's degree

Universidad Autónoma del Estado de México

Teaching assistant, Sustainable Energy Systems Engineering
Dr. Eduardo Rincón-Mejía's class

México

2016

- Solar concentration
- Continuum mechanics

Publications

Journal articles

1. González-Mora, E. & Duran-García, M. D. (2024). *Finite-Time Thermodynamics Efficiency Modeling Insights of Direct Steam Generation Solar Power Plants with Linear Fresnel Reflectors.* **Under review** in International Journal of Thermofluids, Elsevier.
2. González-Mora, E. & Duran-García, M. D. (2024). *Assessing Parabolic Trough Collectors and Linear Fresnel Reflectors Direct Steam Generation Solar Power Plants in Northwest México.* **Accepted** in Renewable Energy, Elsevier.
3. González-Mora, E. & Duran-García, M. D. (2024). *Alternative approach for the thermodynamic modeling of direct steam generation in parabolic trough solar collectors.* Journal of Thermal Science and Engineering Applications, ASME. DOI: 10.1115/1.4064819
4. Duran García, M. D., Jiménez García, J., García-Vallejo, M. (2023), González-Mora, E. & Weber, B. *Impact of Cost of Solid Biofuels on the Viability of their Application to Generate Process Heat in Mexico: A case of study.* Biofuels, Bioproducts & Biorefining, Wiley. DOI: 10.1002/bbb.2500.
5. González-Mora, E., Poudel, R. & Duran García, M. D. (2023). *A Generalized Maximum Work Rate Extraction Model for Solar Exergy in a Solar Power Plant.* Journal of Non-Equilibrium Thermodynamics, Walter de Gruyter GmbH. 48(1) DOI: 10.1515/jnet-2022-0080
6. González-Mora, E. (2021) *Evolution and further improvement opportunities of a non-imaging optics solar cooker design.* Academia Letters. DOI: 10.20935/AL3184
7. González-Mora, E., & Durán-García, M.D. (2021). *Energy and exergy (2E) analysis of an optimized solar field of linear Fresnel reflectors for a conceptual direct steam generation power plant.* Energies, 14(14), 4234. DOI: 10.3390/en14144234.
8. Duran García, M. D., Weber, B., Jiménez García, J., & González-Mora, E. (2021). *The application of solid biofuels as a source of process energy in Mexico: case studies using agave and coffee waste.* Biofuels, Bioproducts and Biorefining. DOI: 10.1002/bbb.2230.
9. González-Mora, E., & Durán-García, M. (2020). *Methodology for an Opto-Geometric Optimization of a Linear Fresnel Reflector for Direct Steam Generation.* Energies, 13(2), 355. DOI: 10.3390/en13020355.

10. Almazán-Sánchez, P. T., Marin-Noriega, P. W., González-Mora, E., Linares-Hernández, I., Solache-Ríos, M. J., Martínez-Cienfuegos, I. G., & Martínez-Miranda, V. (2017). *Treatment of indigo-dyed textile wastewater using solar photo-Fenton with iron-modified clay and copper-modified carbon*. *Water, Air, & Soil Pollution*, 228(8), 1-15. DOI: 10.1007/s11270-017-3489-z.
11. González-Mora, E., & Sánchez, M. (2014). *Desarrollo de un concentrador solar para la degradación acelerada de polímeros de desecho*. *Ideas en Ciencia*, 23(1), 47-58.

Conference papers.....

1. Rincón-Mejía, E.A., Islas-Espinoza, M. & González-Mora, E. (2023). *The Tolokatsin 2022, a sustainable solar oven*. In CONSOLFOOD 2023, La Coruña, Spain.
2. González-Mora, E., & Durán-García, M.D. (2023). *Alternative Methodology for Modeling Direct Steam Generation in Parabolic Collectors: A Study Case in Northeast Mexico*. In ECOS2023, Las Palmas de Gran Canaria, Spain. DOI: 10.52202/069564-0136.
3. González-Mora, E., & Rincón-Mejía, E.A. (2023). *A simple truncation criterion in CPCs using constructal theory*. In ECOS2023, Las Palmas de Gran Canaria, Spain. DOI: 10.52202/069564-0152.
4. González-Mora, E., & Durán-García, M.D. (2022). *Validation of an Alternative Methodology for Direct Steam Generation Modelling in Parabolic Collectors*. In Eurosun 2022, Kassel, Germany.
5. González-Mora, E., Poudel, R., & Durán-García, M. D. (2022). *Maximum work rate extractable from the sun*. In Thermodynamics 2.0. Boone, North Carolina, USA.
6. González-Mora, E. (2022). *Optimal truncation criterion for compound parabolic collectors: a thermodynamic justification*. In Thermodynamics 2.0. Boone, North Carolina, USA.
7. González-Mora, E., & Durán-García. (2022). *Propuesta de eliminación del coeficiente convectivo h para el modelado de flujo bifásico en concentradores parabólicos*. In CIES2022-XVIII Congreso Ibérico y XIV Congreso Iberoamericano de Energía Solar. Universitat de les Illes Balears, Palma, España.
8. González-Mora, E., & Rincón-Mejía. (2022). *Aplicaciones potenciales de un novedoso concentrador de óptica anidólica*. In CIES2022-XVIII Congreso Ibérico y XIV Congreso Iberoamericano de Energía Solar. Universitat de les Illes Balears, Palma, España.
9. González-Mora, E., & Rincón-Mejía, E. A. *Optical Evaluation of the Tolokatsin-2020 High-Efficiency Solar Cooker*. In ISES Solar World Congress 2021 (pp. 817-824). Online. DOI: 10.18086/swc.2021.31.03.
10. González-Mora, E., Rincón-Mejía, E. A., & Morillón, D. G. (2020). *Diseño constructal de CPCs y la evolución de los diseños Tolokatsin*. In CIES2020-XVII Congreso Ibérico e XIII Congreso Iberoamericano de Energía Solar (pp. 131-136). LNEG-Laboratório Nacional de Energia e Geologia, Lisboa, Portugal. DOI: 10.34637/cies2020.1.2013.
11. González-Mora, E., & Durán-García, M. D. (2020). *Comparativa del rendimiento teórico máximo y estimado de una planta solar de generación directa de vapor*. In CIES2020-XVII Congreso Ibérico e XIII Congreso Iberoamericano de Energía Solar (pp. 137-144). LNEG-Laboratório Nacional de Energia e Geologia., Lisboa, Portugal. DOI: 10.34637/cies2020.1.2014.
12. González-Mora, E., & Durán-García, M. D. (2020). *Maximum thermodynamic efficiency evaluation of a conceptual direct steam generation solar power plant*. In Thermodynamics 2.0 (pp. 49-52). Massachusetts, USA.

13. Rincón-Mejía, E. A., & González-Mora, E.. (2019). *Energy and Entropy Characterization of the Tolokatzin Solar Collector Designs for Multiple Applications*. In ISES Solar World Congress 2019 (pp. 941-946). Santiago de Chile, Chile. DOI: 10.18086/swc.2019.18.10.
14. González-Mora, E., & Durán-García, M. D. (2019). *Energy and Exergy (2E) Analysis of an Optimized Linear Fresnel Reflector for a Conceptual Direct Steam Generation Power Plant*. In ISES Solar World Congress 2019 (pp. 907-918). Santiago de Chile, Chile. DOI: 10.18086/swc.2019.18.07.
15. González-Mora, E., & Durán-García, M. D. (2019). *Optimización óptica de un reflector Fresnel lineal para generación directa de vapor*. In XLII Semana Nacional de Energía Solar. CDMX, México.
16. González-Mora, E., & Durán García, M. D. (2018). *Optimización óptica de un reflector Fresnel lineal para generación directa de vapor*. In Congreso Nacional de Estudiantes En Energías Renovables 2018. Temixco, México.
17. González-Mora, E., & Rincón-Mejía, E. A. (2018). *Análisis 2E de un sistema solar para tratamiento de aguas empleando óptica anidólica*. In XVI Congreso Ibérico y XII Congreso Iberoamericano de Energía Solar. Madrid, España.
18. González-Mora, E., Rincón, M. E. A., & Moreno, L. D. (2016). *Using a new solar sterilizer for surgical instruments as a solar oven for cooking*. In MEMorias del VIII Congreso Ibérico, VI Congreso Iberoamericano de las Ciencias y Técnicas del Frío (CYTEF 2016), Coimbra, Portugal.
19. González-Mora, E., Rincón Mejía, E. A., & Moreno Lawrence, D. (2016). *Propuesta solar para esterilizar material quirúrgico*. In 2° Congreso Internacional de Ingeniería En Desarrollo Sustentable. Toluca, México.
20. González-Mora, E., & Sánchez Pozos, M. (2014). *Desarrollo de un concentrador solar para la degradación acelerada de polímeros de desecho*. In XXXVIII Semana Nacional de Energía Solar (pp. 1396-1403). Querétaro, México. DOI: 10.1007/s13398-014-0173-7.2.

Book chapters.....

1. González-Mora, E., & Durán-García, M.D., & Lentz-Herrera, A.E. (2024) *Transitioning to Direct Steam Generation in a Mexican Integrated Solar Combined Cycle for Enhanced Efficiency*. In Artur Zaporozhets (Ed.), *Advanced Energy Technologies and Systems*. Springer. **Accepted**.
2. Rincón-Mejía, E.A., Islas, M. & González-Mora, E. (2024). *Potencial y límites de la energía solar*. In *Transición energética justa y sustentable*. CONACyT. **Accepted**.
3. González-Mora, E., & Durán-García, M.D. (2024). *Aplicación de "La nueva ingeniería" en el modelado de un reflector Fresnel para la generación directa de vapor*. UAEM. **Accepted**.
4. González-Mora, E., Poudel, R., & Durán-García, M.D. (2023). *Calculation of solar radiation exergy as a first input stage for biological systems*. En Albert Reimer (Ed.), *Horizons in World Physics* (pp. 231-258). Volume 310 Nova Press.
5. González-Mora, E., & Durán-García, M.D. (2022). *Approaching a LFR direct steam generation power plant towards an endoreversible heat engine*. In Artur Zaporozhets (Ed.), *Advanced Energy Technologies and Systems* (pp. 21-44). Springer. DOI: 10.1007/978-3-030-85746-2_2

6. González-Mora, E., & Rincón-Mejía, E. A. (2019). *Análise 2E de um Sistema Solar para o Tratamento de Água Utilizando Óptica Anidólica*. In J. Resendi Olivera (Ed.), *A Importância da Energia Solar para o Desenvolvimento Sustentável* (pp. 50–63). Atena Editora. DOI: 10.22533/at.ed.003190309

Current projects

AESCo - Solar heat

The AESCo project aims to harness solar energy using established technologies like PTC and LFR while pioneering new solutions. It focuses on meeting Mexico's industrial heat needs (SHIP) with a thorough evaluation to ensure viability.

Direct steam generation for CSP with linear concentrators

Analyze the technical feasibility of using linear concentrators for direct steam generation for concentrated solar power plants in México. The work was developed as part of the PhD research where a thermo-hydraulic model were developed.

Thermodynamic modeling and constructal law

Development of thermodynamic models for different applications for their design and implementation, minimizing entropy generation and application of constructal law.

Nonimaging optics

Design, improvement and evolution of anidolic optics systems for different applications (mainly CPCs using optimal truncation criteria).

Biofuels (SENER-CONACyT)

Analyze the feasibility of using BCS in medium and high power in the industrial sector in México. The project is on the framework of Solid biofuels cluster for medium and high-power heat and electricity generation.

Personal skills

Languages.....

Spanish: Mother-tongue

English: Fluent

Esperanto: Intermediate

Portuguese: Intermediate

Italian: Beginner

Russian: Beginner

TOEFL ITP 647, 2020

Duolingo course, 2021

Duolingo course, 2021

Duolingo course, 2022

Duolingo course, 2022

Other skills.....

IT: scripting and mathematical programming (EES, Mathcad, Matlab), generative AI, CAD (AutoCad, Inventor), \LaTeX , gnuplot, Microsoft Office

Technical: optimization, energy modeling, research

Organizational: project management

Relational: teaching, presentations

Courses, Licenses & Certifications

Statistical Thermodynamics Specialization: Coursera (In progress)

Generative AI for Everyone: Coursera (Certificado: U86GN4XGKT5V)

Inteligencia Artificial centrada en el ser humano: Coursera (Certificado: 7VSMB6L76AHH, 2024)

IA generativa en el aula: Coursera (Certificate ID: GRWUQ65Z4QZB, 2023)

MATLAB Fundamentals: Mathworks (2023)

MATLAB Onramp: Mathworks (2023)

Research metrics: Elsevier (2022)

Fundamentals of Concentrating Solar Thermal (CST) Applications and Next Technologies: 2nd SolarTwins Summer School. GÜNAM ODAK, Concentrated Solar Thermal Res. Lab. (2022)

Fundamentals of Concentrating Solar Thermal (CST) Systems: 1st SolarTwins Summer School. GÜNAM ODAK, Concentrated Solar Thermal Res. Lab. (2021)

Microsoft SharePoint: Una biblioteca virtual para la clase: Microsoft Educator Centre (2020)

Microsoft Teams: Creación y seguimiento de espacios de aula colaborativos: Microsoft Educator Centre (2020)

One Note en el aula... Una herramienta para proponer, colaborar y evaluar el aprendizaje: Microsoft Educator Centre (2020)

Unidades didácticas multiplataforma con Sway: Crear y compartir contenido interactivo: Microsoft Educator Centre (2020)

Talleres para el buen uso de Microsoft Teams en el salón de clases: UAEM (2020)

Talleres para el desarrollo de materiales didácticos a través de Microsoft Teams: UAEM (2020)

Boiler Types and Opportunities for Energy Efficiency: Energy University by Schneider Electric (Certificate ID: c4a975b7f9027789fe33706d137cfdc2, 2020)

Medición y comparación del rendimiento energético: Energy University by Schneider Electric (Certificate ID: 445f958c8c9389345a2572cd6e931e35, 2020)

Certified Peer Reviewer Course: Elsevier (2019)

Fundamentals of Manuscript Preparation: Elsevier (2019)

Organic solar cells - Theory and practice: Coursera, 2019 (Certificate ID: RA2AE7YF3PTD,2019)

Introduction to solar cells: Coursera, 2018 (Certificate ID: N6ZKRXY2NHX2,2019)

ER100: Introducción a las energías renovables: Solar Energy International (2018)

Alternative Power Generation Technologies: Energy University by Schneider Electric (Certificate ID: f3c5042c08e06d487994f2d63e6d5ca2, 2018)

Thermal Energy Storage: Energy University by Schneider Electric (2017)

Steam Systems I-VI: Energy University by Schneider Electric, 2017 (2017)

Foundations of Teaching for Learning: Introduction: Coursera (Certificate ID: XFNKZNWQLXPV,2017)

Statistical Thermodynamics: Molecules to Machines: Coursera (Certificate ID: GPJJ77Q5PWNN, 2016)

Wind Energy: Coursera (Certificate ID: PMZYR2B6YBBZ, 2016)

Energy 101: The Big Picture: Coursera, 2016 (Certificate ID: UVBDNTAUJWXH, 2016)

Materials Science: 10 Things Every Engineer Should Know: Coursera (Certificate ID: 443TEDK4R67H, 2016)

Energía Solar Fotovoltaica: Centro de Capacitación Eléctrica y Energías Alternas (Certificate ID: 402-83, 2016)

Introduction to Thermodynamics: Transferring Energy from Here to There: Coursera (Certificate ID: F22DBEMREY, 2014)

Associations

International Solar Energy Society, ISES

1310504

- Young ISES

Germany

2013-present

American Society of Mechanical Engineers, ASME

100691970

- Solar energy division
- Heat transfer division
- Advanced Energy Systems Division

USA

2013-present

Asociación Española de Energía solar, AEDES

Spain

2018-present

International Association for the Integration of Science and Engineering, IAISAE

EEUU

2024

American Solar Energy Society, ASES

300002869

USA

2016-2017

Engineering for Change, E4C

Volunteer

USA

2014-present

Journal referee

Renewable Energy

Soteris Kalogirou, Ed.

Solar thermal energy, Solar concentration, solar cookers

Elsevier

2019-present

Solar Energy

Ranga Pitchumani, Ed.

Solar thermal energy, Solar concentration

Elsevier

2019-present

Philosophical Transactions A. Special Issue

Umit Gunes, Ed., Thermodynamics 2.0: Bridging the Natural and Social Sciences

Thermodynamics

Royal Society

2023

Other interests

Music: drummer

Writing & reading

Traveling

References

Available upon request from FI-UAEM, Appalachian State University, IITCA-UAEM, Petroleum Development Oman, Universidad de Chile, Universitat de Lleida, Universidad Carlos III de Madrid, IMDEA energía, The National Academy of Sciences of Ukraine, Universidad Autónoma de la Ciudad de México, Instituto de Energías Renovables (UNAM), Instituto de Ingeniería (UNAM).

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