

CURRICULUM VITAE

Surname, Name: Karellas, Sotirios
Date of Birth: 16.08.1977
Nationality: Greek
Family Status: Married / 2 Children
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PRESENT POSITIONS

NATIONAL TECHNICAL UNIVERSITY OF ATHENS

Athens, Greece
August 2019 – Now

Professor

[School of Mechanical Engineering](#), Thermal Engineering Section

Director of the Thermal Engineering Section

Director of the [Laboratory of Thermal Processes](#)

Member of the [Laboratory of Steam Boilers and Thermal Plants](#)

Member of the Deanery of the School of Mechanical Engineering NTUA

Chair of the Research and Innovation of [EULIST](#)

ENERGY COMPETENCE CENTER

Athens, Greece
September 2021 - Now

Coordinator of the Steering Committee of the [Center](#)

TECHNISCHE UNIVERSITÄT MÜNCHEN

Munich, Germany
September 2013 – Now

Visiting Professor

Fakultät für Maschinenwesen, Lehrstuhl für Energiesysteme

UNIVERSITÄT BAYREUTH

Bayreuth, Germany
September 2014 – Now

Visiting Professor Zentrum für Energietechnik (ZET)

EDUCATION

NATIONAL TECHNICAL UNIVERSITY OF ATHENS

Athens, Greece

Post-Doctor research at the lab. of Steam Boilers & Thermal Plants

February 2006 – December 2010

Research topics: Biomass and waste gasification and combustion, Gas-Tars analysis, Thermal power plants, Decentralized energy systems, CHP, Substitute Natural Gas, Hydrogen Energy, Organic Rankine Cycle

TECHNISCHE UNIVERSITÄT MÜNCHEN

Munich, Germany

PhD Candidate- Scientific Assistant (Chair of Energy Systems)

March 2001 – November 2005

PhD Thesis: "Online analysis of the composition of biogenous gases and their effect on microturbine and fuel cell systems" (Grade: Magna Cum Laude).

NATIONAL TECHNICAL UNIVERSITY OF ATHENS

Athens, Greece

Mechanical Engineering studies

September 1996 – March 2001

Diploma Thesis: "Integration of an air-inlet cooling system in gas turbine power plants". (Grade 10/10)

Diploma degree: 8,66 / 10 (Highest graduated student of mech. eng. for 2001, Graduation in 9 semesters)

PROFESSIONAL EXPERIENCE

NATIONAL TECHNICAL UNIVERSITY OF ATHENS

Associate Professor

June 2015-August 2019

Assistant Professor

January 2011-June 2015

THIRD PARTY AND CONSULTANT SERVICES – INDUSTRIAL ACTIVITIES

2007 – now

- Acceptance tests of the Power plants: Atherinolakkos Plant Units III and IV (2x50MWe), Aluminum de Grèce CoGen plant (334MWe+216MWth), Ag. Nikolaos (445MWe), Korinthos Power (424MWe), Samsun Turkey CCPP (2x435MWe), Denizli Turkey CCPP (774MWe), Aliveri CCPP (416MWe), Upgrading of GT1 and GT2 of Aluminum de Grèce CoGen plant (2x124MWe), SAMRA Power Station add-on combined cycle Jordan (145 MWe)
- Benchmark study, together with RWE, for the maintenance of the Units in Kardias Thermal Power Plant. Especially: Cleaning and repair works in the combustion chamber, armouring and maintenance of mills (2007)
- Technical services aiming at the performance of efficiency and environmental measurements of the Aghios Dimitrios power plant, of the Public Power Corporation of Greece - Industrial Research Project funded by TUV HELLAS S.A.. Scientific Responsible of the NTUA team acting as Third Party Team that installed the measuring chain and conducted the performance/acceptance tests for the NO_x refurbishment of Aghios Dimitrios lignite fired units III and IV (2016-2021)
- Technical Services for environmental and energetic measurements at the Thermal Power Plant of Kosovo B - Industrial Research Project funded by Ambiente s.c. for the project EuropeAid/136613/DH/SER/XK. Leader of the team that undertook several tasks related to the evaluation of the current status of the Kosovo B Thermal Power Plant and the requirements for future refurbishments. Provision of seminars to the engineers and the technicians of the plant for pollution abatement and environmental performance of the thermal lignite power plant of Kosovo B. (2016-2017)

- Consultant services in large power plant producers including: Feasibility studies for the installation of thermal power plants, cogeneration plants or energy storage plants in Greece, (Mytilinaios S.A., Motoroil Hellas, Elvalhacor), Feasibility study for the Long term prospects of CHP (VGB, 2016).
- Member of the team that published the EcoDesign Preparatory study on Steam Boilers for the European Commission (2014).

MEMBER OF THE CHP CERTIFICATION BODY OF NTUA 2012 – now
 Certification of Combined Heat and Power plants: Aluminum de Grèce CoGen plant (334MWe+216MWth), Serres, Drama, Agritex, DESFA, LAMDA DOMI SA, Hellenic Fertilizers CHP plant, Motoroil Hellas, Wonderplant S.A. (8MWe), BRIGHT (Special Lighting S.A.(125 kWel)), Greenhouses Savvidis S.A.(1MWe)

NATIONAL ENERGY STRATEGY CHAMBER (Ministry of development) Athens, Greece
Energy consulting services November 2007-May 2008
 Economic and technical evaluation of the energy mix in Greece, Solving of problems concerning the electricity sector in Greece (CO₂ emissions, summer peaks etc.), Clean coal technologies

ALSTOM POWER BOILER GmbH Stuttgart, Germany
Engineer in the fluidised bed firing systems department July 2005 – January 2006
 Responsible for the training and transfer of technology to Indian colleagues from the Alstom Power Indian Limited

HELLENIC SHIPYARDS Skaramangas, Greece
Junior Engineer (Trainee) July 1999 – August 1999
 Design department for ship production, welding department of train production and restoration

D I S T I N C T I O N S

- **Prof. Gianfranco Angelino award for the best poster at the 6th International seminar on ORC Power Systems, 11-13 October 2021 (ORC2021) Economic model predictive control on a waste heat recovery micro - ORC** E. Varvagiannis, I. Kalogeropoulos, T. Roumpedakis, P. Pallis, S. Karellas, H. Sarimveis
- **ASCE outstanding Reviewer 2013 in recognition of outstanding service as a reviewer for the Journal of Energy Engineering**, from American Society of Civil Engineers. March 2014
- **Young Energy Professional** scholarship from the State Government of Victoria Australia (for scientists under 35) at the second International Symposium on the Sustainable Use of Low Rank Coal in Melbourne. April 2012.
- Award **S.A. Routsis** for the **best scientific work from young scientist** at ECOS 2006 **An innovative biomass gasification process and its coupling with microturbines and fuel cell systems**, S. Karellas, J. Karl, E. Kakaras
- Award for the **Best Poster Presentation** in the Eighth Grove Fuel Cell Symposium, Elsevier, Poster title: **Integration of SOFC fuel cells systems in CHP-Systems with indirect gasification**, J. Karl, S. Karellas, D. Hein
- Scholarship of the Alexander Onassis Foundation for PhD studies in a foreign country (TU München)
- **Numerous awards for outstanding performance during the studies**

E D U C A T I O N A L W O R K

NATIONAL TECHNICAL UNIVERSITY OF ATHENS 2006-now
Undergraduate: Heat Transfer, Thermal Energy Conversion in power plants, Energy Management, Decentralized Thermal Systems, Pollution Abatement Technology at Thermal Plants, Equipment and systems of thermal processing, Environment and Development.
Postgraduate:
 Thermal Power Plants and Cogeneration, Environmental Technology and Management. Postgraduate Programme: Energy Generation and Management.
 Energy and Environment, Clean Technologies, Postgraduate Programme: Environment and Development.

NATIONAL TECHNICAL UNIVERSITY OF ATHENS 2011-2016
Education of Energy Inspectors: Combined Heat and Power production, Psychrometry, Refrigeration and air conditioning.

University of Western Macedonia 2017-2019
Postgraduate: Coal technologies, Master programme: Energy Resources, Technologies and Management

Technische Universität München (Visiting Professor) 2013-now
Postgraduate: Renewable Energy Technology I – Energy from Biomass,
 Master Programme: Master Studies in Power Engineering

Invited lecturer in international educational seminars-workshops 2014-now

Silisean University of Technology : International Summer school for PhD students on methods and technologies for energy transition and climate protection, 5-9 July 2021, Gliwice, Poland

Universität Bayreuth: Thermodynamic fundamentals of energy, Power plant technology, Regenerative and distributed energy systems, Energy conversion from biomass. Bayreuth International Summer School 2014, -15, -16, -17, -18 and -19, Bayreuth, Germany

Friedrich-Alexander Universität Erlangen- Nürnberg: Lecture title: Reversible ORC Prozesse für Carnot Batterien- Das EU-Projekt SolBioRev. Workshop: Carnot Batterien: Thermische Stromspeicher für Energiewend. 16.09.2021, Erlangen, Germany

Friedrich-Alexander Universität Erlangen- Nürnberg: Lecture title: Coal-to-SNG process simulation and economic evaluation. Workshop title: Methanisierung und Second Generation Fuels. 29.05.2012 – 30.05.2012 (1st Workshop), 12.06.2014 – 13.06.2014 (2nd Workshop) and 19.05.2016 – 20.05.2016 (3rd Workshop), Nürnberg, Germany

Univeristatea Tehnica GH. ASACHI: Lecture title: Heat Transfer in Organic Rankine Cycle Applications. Summer school title: Advances in Heat transfer enhancement: From Basic to Nano, 17.09.2012 – 22.09.2012, Iasi, Romania.

ALSTOM POWER BOILER Stuttgart, Germany July 2005 – January 2006

Responsible for the transfer of technology from ALSTOM Stuttgart to Indian engineers from APIL. Explanation of the functionality of the ALSTOM CFB boilers. Analysis of the ALSTOM standards concerning the design of CFB boilers

Supervisor of PhD, Diploma, Masters and Semester thesis

12 PhD thesis (NTUA) (5 finished, 7 ongoing)

January 2011-Now

More than 100 Diploma thesis (NTUA)

February 2007-Now

More than 70 Master thesis (NTUA)

February 2007-Now

Academic Responsible of ERASMUS and international students

September 2013-August 2020

3 Diploma thesis and 12 semester thesis (TUM)

March 2001 – June 2005

Supervisor of IAESTE students (TUM)

March 2001 – June 2005

European Energy Manager (EUREM)

Athens Greece

Lecturer in Refrigeration, Air Conditioning and Waste Heat recovery

February 2010 – Now

Organization: Greek-German Chamber of Commerce (16 Seminar hours)

Energy exploitation of biomass and waste in Germany

Ptolemaida, Greece

Invited lecturer for the training seminar: The energy exploitation of wastes

December 2004

in other countries, organized by the Institute for Solid Fuels Technology and Applications (ISFTA) (18 teaching hours)

TU München (Assistant Lecturer):

2001-2004

Methods of energy conversion, Combustion Laboratory, Energy production from Biomass, Numerical Methods in the power generation, Thermal power plants for electrical engineers

LANGUAGE SKILLS (Mark 1 to 5 for competence)

<i>Language</i>	<i>Reading</i>	<i>Speaking</i>	<i>Writing</i>
Greek	5	5	5
English	5	5	5
German	5	5	5
French	5	5	5
Spanish	5	4	4
Russian	4	4	3
Italian	3	2	1

RESEARCH PROJECTS

Scientific responsible for more than forty research programs at the National Technical University of Athens.

Indicatively presented here:

- 22 European research projects funded by the European Union (the five of them being the coordinator)
- 4 Greek research program funded by GSRT
- 3 Research services programs funded by international companies
- 7 Research services programs funded by Greek companies – operators
- 5 Research services programs funded by Greek public bodies - Municipalities
- 5 Research programs of other Professors (Participation as an expert-researcher)

PUBLICATIONS

More than 200 publications in international journals and proceedings of national-international conferences .

S. Karellas has **160 articles** at the Scopus database (www.scopus.com, date of Access 20.11.2022) with **4231 citations** (if the self-citations of all authors are excluded) and **h-index 34**. According to the Google Scholar S. Karellas has **173 articles** with **6900 citations** and **h-index 41** (date of access 20.11.2022).

Namely:

5 Books

12 Chapters in books

106 publications in scientific journals

59 publications in proceedings of international conferences (Peer Reviewed Papers)

35 publications in proceedings of international conferences (Abstract Reviewed Papers)

INTERNATIONAL SCIENTIFIC COMMITTEES

- Member of the **Editorial Board** of **Renewable Energy** (CiteScore: 13,6 Impact Factor: 8,634), Elsevier, **Associate Editor: Biomass and Solar Thermal** (since 2015), Subject Editor: Solar Thermal and Solid Biomass (2014 - 2015)
- Member of the **Editorial Board** of **Renewable and Sustainable Energy Reviews** (CiteScore: 28,5 Impact Factor: 16,799), Elsevier, **Associate editor: Thermal Processes (including biomass, gasification, waste heat recovery), Life Cycle Analysis (LCA), Life Cycle Cost (LCC) analysis, Carbon Capture and storage-utilization (CCS, CCU)** (since 2017), Associate editor: Energy Economics and Financing (2015-2017), Associate editor: Bioenergy and Hydrogen Energy (2013-2015)
- Member of the **International Editorial Board** of **Energy – The International Journal** (CiteScore: 13,4 Impact Factor 8,857), Elsevier (since 2014)
- **Guest Editor** of the Special issue “ORC 2021”, **Applied Thermal Engineering** (CiteScore: 10,7 Impact Factor 6,465)
- Member of the **Editorial Board** of the **International Journal on Heat and Mass Transfer - Theory and Applications** (IREHEAT), Praise Worthy Prize (2013-2016)
- Member of the **Editorial Board** of the **ISRN Renewable Energy Journal**, Hindawi Publishing Corporation (2012-2014)
- **Guest Editor** of the special issue “Nanofluids for saving energy”, of the **American Journal of Energy Engineering**, Science Publishing Group (2014-2015)
- **Guest Editor** of the special issue “Novel Analytical and Numerical Methods in Heat Transfer Enhancement and Thermal Management”, of the **Journal of applied Mathematics**, Hindawi (2015)
- Member of the **scientific committee** of the international conferences **ECOS2022, ECOS2021, ECOS2020, ECOS2019, ECOS 2018, ECOS 2017, ECOS 2016, ECOS 2015, ECOS 2013** (Track Director: System Integration, simulation and optimization), **ECOS 2012** (Track Director: Fluid Dynamics – Power plants components) and **ECOS 2008** International Conferences on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems
- **Chair of ECOS 2023**, 36th International Conference on Efficiency, cost, optimization, simulation and environmental impact of energy systems, Las Palmas de Gran Canaria Spain, June 25-30, 2023, Las Palmas de Gran Canaria, Spain
- Member of the **scientific committee** of the international conferences: **25th, 22nd, 21st and 20th European Biomass Conference and Exhibitions** Setting the course for a biobased economy. Stockholmässan Stokholm, Sweden 12-15 June 2017, CCH-Congress Center Hamburg, Germany 23-26 June 2014, Bella Center, Copenhagen, Denmark, 3-7 June 2013 (EU BC&E 2013) and Milano Convention Center, Milan Italy, 18-22 June 2012 (EU BC&E 2012)
- Chairman of the international conferences: **ORC 2023** (Review Chair), **ORC 2021** (Review Chair) and **ORC 2019** (Chairman), **International Seminar on ORC Power Systems**.
- Member of the **scientific committee** of the international conferences: **ORC 2017, ORC2015, ORC 2013, ORC 2011 International Seminar on ORC Power Systems**.
- **Member of the Board** (Member at large) of the Knowledge Center for Organic Rankine Cycle, **KCORC**
- Member of the **scientific committee** of the **15th International Conference on Environmental Science And Technology** 31st August - 2nd September 2017, Rhodes, Greece
- Member of the **honorary committee** of the The 7th World hydrogen technology convention – Czech Hydrogen days 20179 - 12 JULY 2017
- Panel Leader at the panel 4 Technology, products and systems of the **Industrial Efficiency 2016, organized by the European Council for an Energy Efficient Economy 12–14 September die Kalkscheune, Berlin**
- Member of the **review committee** of 41 international **journals** and one **scientific book**
- Member of the **examination committee** of the phd thesis of Mr. Andreas Schuster entitled: “Nutzung von Niedertemperaturwärme mit Organic-Rankine-Cycle-Anlagen kleiner Leistung”, July 2011 **TU München**
- Member of the **examination committee** of the phd thesis of Mrs Daniela Gewald entitled: “Waste heat recovery of stationary internal combustion engines for power generation”, July 2013 **TU München**

- Member of the **examination committee** of the phd thesis of Mr. Markus Preissinger entitled: "Thermoökonomische Bewertung des Organic Rankine Cycles bei der Stromerzeugung aus industrieller Abwärme", September 2014, **University of Bayreuth**
- Member of the **examination committee** of the phd thesis of Mr. Anish Mody entitled: "Numerical Evaluation of the Kalina Cycle for concentrating solar Power Plants", December 2015, **Technical University of Denmark, DTU**
- Member of the **examination committee** of inquiry in the doctoral thesis of Mr. Kevin Sartor entitled: "Développement d'un outil de simulation et d'analyse technico-économique et environnementale d'un réseau de chaleur", October 2018, **Université de Liège**
- Member of the **examination committee** of the phd thesis of Mrs. Matthildi Apostolou entitled: "Méthodologie pour la conception optimisée des réseaux de chaleur et de froid urbains intégrés", November 2018, **École doctorale Sciences des métiers de l'ingénieur, École nationale supérieure des mines (Paris)**
- Member of the **examination committee** of the phd thesis of Mr Dominik Klaus Meinel entitled: "Méthodologie pour la conception optimisée des réseaux de chaleur et de froid urbains intégrés", February 2020, **TU München**
- Member of the **examination committee** of the phd thesis of Mr Wolfgang Raphael Huster entitled: "Hybrid Mechanistic Data-driven Modelling for the Deterministic Global Optimization of Organic Rankine Cycles", September 2020, **RWTH Aachen**
- Member of the Habilitation committee (Gutachter) of Dr.-Ing. Ahmet Lokurlu, "Einsatz von Mittel- und Hochtemperatur-Solarthermie kombiniert mit Geothermie für industrielle Anwendungen und Gebäudekühlung, sowie Langzeitspeicherung", November 2022, Universität Duisburg-Essen.
- **Member of the Review Committees of European-International Funding bodies:** H2020 projects reviewer (EASME), Latvian Science Council (LV), Research foundation Flanders FWO (BE), Freiburg Inst. For Adv. Studies (FRIAS) and Univ. of Freiburg (DE), National Center of Science and Technology Evaluation (Kazakstan), VQR (IT), Israel's Ministry of Science, Technology and Space (Israel), Rannis – Icelandic Research Fund (IS), Competitive Research Grant (CRG), King Abdullah University of Science and Technology (KAUST) (Saudi Arabia), International Graduate School of Science and Engineering, TU München (DE), Technology foundation STW (NL), Chilean National Science and Technology Commission (Chile), Kuwait Foundation for the Advancement of Sciences (Kuwait), Fundação para a Ciência e Tecnologia (PT), Hellenic foundation for research and innovation (HFRI, EAIΔEK) (EL), Center for Renewable Energy Systems CRES (EL), General Secretary for Research and Technology GSRT (EL)
- Member of the "Energy-Platform" of GSRT in the framework of setting the Smart Specialisation strategy for Research and Innovation in 2014-2020.
- Representative of NTUA at the General Assembly of the Hellenic Foundation for Research & Innovation (HFRI, EAIΔEK).

NATIONAL REPRESENTATIVE AT THE EU

- Member of the **Greek delegation** to the Programme Committee "Secure Clean and Efficient Energy" under the Horizon 2020, acting as an **Expert (June 2014 – April 2019) and as National Representative (May 2019 – May 2021)**
- **Alternate National Representative of Greece** to the Coal and Steel Committee (COSCO) (**July 2014 – May 2019**)

MEMBERSHIP OF PROFESSIONAL BODIES

- Member of the Technical Chamber of Greece
- Member of the Onassis Foundation Fellows
- Member of the "Verein Deutscher Ingenieure - Gesellschaft Energietechnik (VDI-GET) "
- Member of COGEN – Hellas
- President of the Greek PhD candidates association of TU München Greeks@TUM (2003-2005)
- Member of the ASHRAE (American Society of Heating, Refrigerating and Air Conditioning Engineers)

PERSONAL INFORMATION

- **Music: Piano** (Degree from the Music School of NTUA, 1998), **Accordeon** (Degree and distinction from the National Music School, Halandri, 2001), **Eufonio** (Distinction as member of the Philharmonic Orchestra of the Municipality of Halandri-Greece, 1999), **Traditional Music Instruments** (Tzouras, Baglamas)
- Other activities: **Sports** (Bicycle, Volleyball, Basketball, Ski), Literature
- Military service: Sargent of the Engineering Body of the Greek Army (2006 – 2007)

LIST OF PROJECTS

[A] European Research projects funded by the EU

[A1] CO2freeSNG2.0: Advanced Substitute Natural Gas from Coal with Internal Sequestration of CO₂, (July 2013 – June 2016) www.co2freesng20.eu/index.shtml

Funding: EU - Program. Research Fund For Coal and Steel (RFCS) 2012

NTUA Budget (EU Contribution): €242.877,00

[A2] EXP-HEAT: Energy recovery in new and retrofitted heat pumps using a dedicated expander concept (December 2013 - May 2017), www.expheat.eu Funding: EU - Program. FP7, Research for the benefit of SMEs Coordinator: National Technical University (S. Karellas) NTUA Budget (EU Contribution): €414.880,00

[A3] CO2-GLASS: CO₂ reduction in the ETS glass industry by means of waste heat utilization (Dec. 2013 – Dec. 2018) Funding: EU - Program. CIP-SILC 2013 Coordinator: National Technical University (S. Karellas) NTUA Budget (EU Contribution): €117.035,70

[A4] BIOFFICIENCY: Highly-efficient biomass CHP plants by handling ash-related problems (Nov. 2016 – Oct. 2019) www.bioefficiency.eu Call: H2020-LCE-2016-2017 (Competitive Low-Carbon Energy), Topic: LCE-07-2016-2017, NTUA Budget: €277.000,00, Total Budget: €4.603.760,00

[A5] ZEOSOL: Integrated solar heating and cooling unit based on a novel zeolite chiller and heat pump (June 2017 - February 2020), www.zeosol.eu Funding: EU - Program. H2020-FTIPilot-2016-1, Fast Track to Innovation Pilot Coordinator: National Technical University (S. Karellas) NTUA Budget: €493.875,00, Total Budget: €2.751.875,00

[A6] HYBUILD: Innovative compact HYbrid electrical/thermal storage systems for low energy BUILDings (October 2017 - September 2021), www.hybuild.eu Call: H2020-EEB-2016-2017 (Call for Energy Efficient Buildings), Topic: EEB-06-2017, NTUA Budget: €288.750,00, Total Budget: € 5.995.840,00

[A7] BIOCONCO2: BIOTEchnological processes based on microbial platforms for the CONversion of CO₂ from iron-steel industry into commodities for chemicals and plastics (November 2017 – October 2021), www.biocon-co2.eu/ Call: LCE-07-2016-2017 (Call for Nanotechnologies, advanced materials, biotechnology and production), Topic: BIOTEC-05-2017, NTUA Budget: €413.825, Total Budget: €6.999.886,25

[A8] M-Benefits: Valuing and Communicating Multiple Benefits of Energy-Efficiency Measures (June 2018 - May 2021) www.mbenefits.eu Call: H2020-EE-2016-2017, Topic: EE-15-2017 NTUA Budget: €81.258,75, Total Budget: €1.868.490,00

[A9] SWSHeating: Development and Validation of an Innovative Solar Compact Selective-Water-Sorbent-Based Heating System (June 2018 – May 2022), www.swsheating.eu Coordinator: National Technical University (S. Karellas) NTUA Budget: €844.250,00, Total Budget: € 5.236.488,75

[A10] SolBio-Rev: Solar Biomass Reversible energy system for covering a large share of energy needs in buildings (May 2019 – April 2023), <http://www.solbiorev.eu/> Call: H2020-Lc –SC3-2018-2019-2020, Topic: LC –SC3-RES-4-2018 Coordinator: National Technical University (S. Karellas) NTUA Budget: €844.250,00, Total Budget: €4.790.536,25

[A11] HYFLEXPower: Hydrogen as a FLEXible energy storage for a fully renewable European POWER system. (May 2020 – April 2024), <https://www.hyflexpower.eu/> Call: H2020-LC-SC3-2019-NZE-RES-CC, Topic: LC-SC3-NZE-4-2019 NTUA Budget: €255.250,00, Total Budget: € 15.252.168,70

[A12] REGEN-BY-2: Next Renewable multi-GENERation technology enabled by TWO-phase fluids machines. (September 2020 – August 2024), <https://www.regen-by-2.eu/> Call: H2020-LC-SC3-2019-RES-TwoStages, Topic: LC-SC3-RES-1-2019-2020, NTUA Budget: €423.250,00, Total Budget: € 5.419.327,50

[A13] ReDREAM: Real consumer engagement through a new user-centric ecosystem Development foR End-users' Assets in a Multi-market scenario. (October 2020 – September 2024) <https://redream-energy-network.eu/> Call: H2020-LC-SC3-2020-EC-ES-SCC Topics: LC-SC3-EC-3-2020 – Consumer engagement and demand response NTUA Budget: €321.625,00, Total Budget: €7.204.492,5

[A14] RESPONSE: integRatEd Solutions for Positive eNergy and reSilient citiEs (November 2020 - October 2024) <https://h2020response.eu/>, NTUA Budget: € 136.000,00, Total Budget: € 23.475.257,25

[A15] Retradables, LIFE3R: Circular economy ecosystem to Recover, Recycle and Re-use F-gases contributing to the depletion of greenhouse gases (July 2020 - June 2023) <https://retradeables.com/N> MTUA Budget (EU Contribution): € 283.005,00, Total Budget: € 2.893.704,00

[A16] ENGIMMONIA: Sustainable technologies for future long distance shipping towards complete decarbonisation. (May 2021 – April 2025), Call: H2020-MG-2018-2019-2020, Topic: LC-MG-1-13-2020 NTUA Budget: €514.500,00, Total Budget: € 9.500.000,00

[A17] GreenDEALCO2: Green Deployment of E-fuels and Liquids based on CO₂ for closed and end-of-life coal-related assets (July 2021 – June 2023), Call: RFCS2020 Call of the research fund for Coal and Steel – 2020 NTUA Budget: €319.870,00 (EU Contribution €191.922,00), Total Budget: € 2.559.809,70

[A18] FRONTSHIP: A FRONTrunner approach Transition to a circular & resilient future: deployment of systemic solutions with the support of local clusters and the development of regional community-based innovation schemes

(Estimated October 2021 – September 2025), Call: H2020-LC-GD-2020 (Building a low-carbon, climate resilient future: Research and innovation in support of the European Green Deal), Topic: LC-GD-3-2-2020

NTUA Budget: €752.875,00, Total Budget: €18.968.452,50, Scientific Responsibilities: Prof. I. Paspaliaris, Prof. S. Karellas

[A19] Innovative and smart maintenance in solar energy systems (ERASMUS+)

(Feb. 2021 – Dec. 2022), Total Budget: € 34.368,00

[A20] ZHENIT: Zero waste Heat vessel towards relevant ENergy savings also thanks to IT technologies

(June 2022 – November 2025), Horizon Europe, Call: HORIZON-CL5-2021-D5-01, Topic: HORIZON-CL5-2021-D5-01-10, NTUA Budget: €656.500,00, Total Budget: €4.383.488,25

[A21] DECAGONE: DEMonstrator of industrial CARbon-free power Generation from Orc-based waste-heat-to-Energy systems (June 2022 – May 2026), Horizon Europe, Call: HORIZON-CL5-2021-D4-01, Topic: HORIZON-CL5-2021-D4-01-05, NTUA Budget: €429.875,00, Total Budget: €18.313.657,50

[A22] CarbonNeutralCO2: Truly Carbon Neutral electricity enhanced Synthesis of Liquefied Natural Gas (LNG) from biomass (November 2022 – October 2025), Horizon Europe, Call: HORIZON-CL5-2021-D3-03, Topic: HORIZON-CL5-2021-D3-03-03, NTUA Budget: €304.500,00, Total Budget: €3.306.160,00

[B] Greek Research Programmes (NSRF funding)

[B1] BioTRIC: Detailed Investigation and Optimization of Operation and Design of a Hybrid Biosystems Tri-production using a Supercritical Cycle Organic Rankine.

Funding: GSRT – ARISTEIA II (Feb. 2014 - July 2015)

NTUA Budget: € 250.000,00

[B2] SunClim: Integrated Solar Heating and Cooling System.

Funding: GSRT (Aug. 2018 - Jun. 2022), Partners: Cosmosolar EPE (Coordinator), Prime Laser Technologies ABEE, AUTH, NTUA Budget: € 190.887,00

[B3] Tes4Trig: Thermal Energy Storage for On-demand Solar Trigenation

Funding: GSRT, CSP ERANET, Partners NCSR “DEMOKRITOS”, Solar & other Energy Systems Laboratory (EL) (DE), Solar-Institut Jülich of the Aachen University of Applied Sciences (DE), CADE Soluciones de Ingeniería, S.L. (ES), Protarget AG (DE) MES ENERGY SA (EL)

NTUA Budget: € 117.000,00, Total Budget: €1.005.906,00

[C] Research programmes (Funded by International companies)

[C1] Marine ORC- Design and construction of ORC for marine applications

Funding: Det Norske Veritas AS (DNV) (Norway) (May 2013 - February 2015), Total Budget: € 92.250,00 (75.000,00 + 17.250,00 VAT)

[C2] P2GCons: Support of HPE on Power-to-Gas activities

Funding: Hitachi Power Europe GmbH (Germany) (January 2014 - February 2015), Total Budget: € 51.660,00 (42.000,00 + 9.660,00 VAT).

[C3] Technical services for environmental and energetic measurements at the thermal power of KOSOVO B

Funding: Ambiente S.C. (April 2016 - December 2018), Total Budget: € 89.900,00 (72.500,00 + 17.400,00 VAT)

[D] Research programmes (Funded by Greek companies or entities)

[D1] Techno-economic study of best energy performance requirements of buildings

Funding: Various bodies (March 2015 - December 2016), Total Budget: € 50.000,00

[D2] Technological and economic analysis power scenarios in Greece

Funded: EVIKEN (May 2015 - July 2015), Total Budget: € 7.380,00 (6.000,00 + 1.380,00 VAT)

[D3] Waste heat recovery in natural gas compression stations of the pipeline TAP

Funding: TransAdriaticPipelineAG Greece (June 2015-July 2015), Total Budget: €12.915,00(10.500,00+2.415,00VAT)

[D4] Carrying out and evaluation combined cycle units performance test

Funding: METKA SA (May 2013 to October 2013), Total Budget: € 7.380,00 (6.000,00 + 1.380,00 VAT)

[D5] Evaluation of the effect of dry additives (Limestone) in boiler efficiency level and the reduction of SO₂ emissions of SES Amyntaion

Funding: PPC (July 2011 - July 2012), Total Budget: € 54.070,80 (43.960,00 + 10.110,80 VAT)

[D6] Technical service and use of technical equipment for energy and environmental measurements in Agios Dimitrios Steam Power Plant of PPC

Funding: TÜV HELLAS A.E. (March 2016 - December 2021), Total Budget: € 123.000,00 (100.000,00+23.000,00 VAT)

[D7] Plan for the replacement of lignite in Western Macedonia and Megalopoli

Funding: GRANT THORNTON (September 2020 - March 2021), Total Budget: €18.600,00 (15.000,00 + 3.600,00 VAT)

[E] Research programmes (Funded by Greek public bodies)

[E1] Consulting for CHP unit at municipal Swimming

Funding: Municipality of Marathon (January 2012 - April 2013), Total Budget: € 6.765,00 (5.500,00 + 1.265,00 VAT)

[E2] Consulting services for Energy Recovery from Municipal Waste (Phase 1)

Funding: Municipality of Vari-Voula-Vouliagmeni (July 2016 - May 2017), Total Budget: € 24.552,00 (19.800,00 + 4.752,00 VAT)

[E3] Consulting services for Energy Recovery from Municipal Waste (Phase 2)

Funding: Municipality of Vari-Voula-Vouliagmeni (February 2018 - June 2019), Total Budget: € 29.884,00 (24.100,00 + 5.784,00 VAT)

[E4] Consulting services for Energy Efficiency in buildings within the framework of the EU Project PRODESA

Funding: Municipality of Vari-Voula-Vouliagmeni (March 2018 - June 2018), Total Budget: € 60.000,00 (48.387,10 + 11.612,90 VAT)

[E5] Techno-economic study of minimum energy requirements of buildings and building elements. Definition of reference nearly zero energy buildings

Funding: CRES (January 2017 - January 2018), Total Budget: € 69.440,00 (56.000,00 + 13.440,00 VAT).

[F] Participation in research programs of other scientific responsables or other institutes

[F1] Development of a small-scale low-temperature supercritical organic Rankine cycle with optimized scroll expander and evaporator, Funding: GSRT - COOPERATION II (April 2013 - July 2015), Scientific Responsible: K. Giannakoglou

[F2] Investigation of the penetration margins of all RES technologies in the non-interconnected islands
Funding: DEDDHE SA. (October 2013 – October 2014), Scientific Responsible: S. Papathanasiou

[F3] Preparatory studies for three Product Groups in the Ecodesign Working Plan 2012-2014, LoT7: Steam Boilers Financing: European Union (June 2013 - September 2014), Scientific Responsible: I. Psarras

[F4] WASSERMOD, Financing: GSRT – Greek-German Cooperation (June 2018 - July 2021), Scientific Responsible: G. Papadopoulos

[F5] PLURAL: Plug-and-use renovation with adaptable lightweight systems
(October 2020 – September 2024), Call: H2020-NMBP-ST-IND-2020-singlestage, Topic: LC-EEB-04-2020 - Industrialisation of building envelope kits for the renovation market (IA)
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[G3] Decentralized thermal systems (In Greek)

E. Kakaras, S. Karellas

Tsotras 2015, ISBN: 978-618-5066-25-3

[G4] Solar Cooling Applications

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[G5] Heat Transfer (From Physics to Mechanical Engineering) (In Greek)

S. Karellas, E. Kakaras, T. C. Roumpedakis

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[H] CHAPTERS IN BOOKS

[H1] Heat transfer in Organic Rankine Cycle Applications

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[J2] Evaluation of inlet air cooling methods for a combined cycle power plant

A. Preliceanu, S. Karellas, E. Kakaras, A. Doukelis

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E. Kakaras, A. Doukelis, A. Preliceanu, S. Karellas

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[J4] Simulation of an innovative stand-alone solar desalination system with an Organic Rankine Cycle

A. Schuster, S. Karellas, J. Karl

46th Conference on Simulation and Modelling, SIMS 2005, 13-14 October 2005, Trondheim, Norway

[J5] Conversion of Syngas from Biomass in Solid Oxide Fuel Cells

J. Karl, N. Frank, S. Karellas, M. Saule, U. Hohenwarter

The 4th International Conference on FUEL CELL SCIENCE, ENGINEERING and TECHNOLOGY, ASME, 19.06-21.06.2006, Irvine CA, USA

[J6] Innovative Applications of Organic Rankine Cycle

A. Schuster, S. Karellas, J. Karl

ECOS 2006 19th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 12-14 July 2006, Aghia Pelagia, Crete, Greece

[J7] An Innovative Biomass Gasification Process and its Coupling with Microturbine and Fuel Cell Systems

S. Karellas, J. Karl, E. Kakaras

ECOS 2006 19th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 12-14 July 2006, Aghia Pelagia, Crete, Greece

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E. Kakaras, A. Doukelis, S. Karellas, D. Giannakopoulos, S. Karamaliki

ECOS 2008 21st International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 24-27 June 2008, Krakow, Poland

[J9] Efficiency optimization potential in supercritical ORC process

A. Schuster, S. Karellas, R. Aumann

ECOS 2008 21st International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 24-27 June 2008, Krakow, Poland

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E. Kakaras, S. Karellas, A. Doukelis, P. Zovas

ECOS 2009 22nd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, August 31 - September 3 2009, Foz do Iguaçu, Brasil

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S. Karellas, A. Schuster, A. Leondaritis, R. Chritensen, C. Stenhede.

ECOS 2010 23rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, June 14-17 2010 Lausanne, Switzerland

[J12] Energetic and exergetic investigation of integrated RDF gasification energy generation systems.

S. Karellas, K. Panopoulos, G. Panoussis, E. Kakaras, I. Boukis

ECOS 2010 23rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, June 14-17 2010 Lausanne, Switzerland

[J13] Investigation of the introduction of heat pumps in the residential sector in Greece

S. Karellas, D. Giannakopoulos, E. Kakaras, A. Doukelis, K. Pappa, N. Barmparitsas, E. Eleftheriadis, P. Grunewald

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[J14] Integrated system Approach for increase of engine combined cycle efficiency

D. Gewald, S. Karellas, A. Schuster, H. Spliethoff

ECOS 2011 24th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, July 4-7 2011 Novi-Sad, Serbia

[J15] A modelling evaluation of Synthetic Natural Gas production from coal/lignite steam gasification

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ECOS 2011 24th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, July 4-7 2011 Novi-Sad, Serbia

[J16] Simulations of a fixed bed catalytic reactor for the production of methane from syngas

E.-I. Koytsoumpa, L. Griendl, S. Karellas, K.D. Panopoulos, A. Nikolopoulos, J. Karl, E. Kakaras

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[J17] Investigation of lignite pre-drying in a modern Greek power plant toward zero CO₂ emissions

M. Agraniotis, A. Koumanakos, A. Doukelis, S. Karellas, E. Kakaras

ECOS 2011 24th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, July 4-7 2011 Novi-Sad, Serbia

[J18] Economic investigation of a lignite to SNG process

S. Karellas, E. Kakaras

LOW RANK COAL, International Industry Symposium, April 16-19 2012, Melbourne, Australia

[J19] Energy and Exergy Analysis of Repowering Options for Greek lignite-fired Power Plants

S. Karellas, A. Doukelis, G. Zanni, E. Kakaras

ECOS 2012 25th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, June 26-29 2012 Perugia, Italy

[J20] Energetic and Exergetic analysis of waste heat recovery systems in the cement industry

S. Karellas, A.-D. Leontaritis, G. Panousis, E. Bellos, E. Kakaras

ECOS 2012 25th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, June 26-29 2012 Perugia, Italy

[J21] Assessment of different SNG production routes via the use of Greek low rank coal

E.I. Koytsoumpa, S.Karellas, E.Kakaras, Low Rank Coal, International Industry Symposium, 28 April-1 May 2014, Melbourne, Australia

[J22] Energy-exergy analysis and economic investigation of a cogeneration and trigeneration ORC-VCC hybrid system utilizing biomass fuel and solar power

S. Karellas, K. Braimakis

ECOS 2014 27th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, June 15-19 2014 Turku, Finland

[J23] Thermodynamic investigation of waste heat recovery with subcritical and supercritical low-temperature Organic Rankine Cycle based on natural refrigerants and their binary mixtures

K. Braimakis, A.D. Leontaritis M. Preissinger, S. Karellas, D. Brüggeman, K. D. Panopoulos

ECOS 2014 27th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, June 15-19 2014 Turku, Finland

[J24] The driving factors of CO₂ emissions from electricity generation: An Index Decomposition analysis for Greece and EU-28

D. Diakoulaki, C. Chatzifoti, D. Giannakopoulos, C. Karaboiki, S. Karellas

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[J25] Life Cycle Analysis and Life Cycle costing of Electricity generation based on lignite: Applie case study in Greece

D.-S. Kourkoumpas, G. Stamatiou, S. Karellas, P. Grammelis, A. Gypakis, E. Kakaras

Global Conference on Global Warming GCGW-15, 24-27 May 2015, Athens, Greece

[J26] Piston expanders technology as a way to recover energy from the expansion of highly wet organic refrigerants

D. Giaschi, R. Secchi, G. Galoppi, D. Tempest, G. Ferrara, L. Ferrari, S. Karellas

ASME 2015 and Energy Conversion Conference PowerEnergy2015, 28th June – 2nd July 2015 San Diego, California, USA

[J27] Energetic and exergetic evaluation of the hybridization of Combined Cycle Power Plants

S. Karellas, S. Kalogirou, A. Lappas, A. Papadopoulos, E. Kakaras
ECOS 2015 28th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 30th June – 3rd July 2015 Pau, France

[J28] Energy efficiency increase in a glass industry by means of waste heat recovery

I. Dolianitis, D. Giannakopoulos, C. Hatzilau, S. Karellas, G. Skarpetis, N. Christodoulou, N. Giannoulas, T. Zitounis
ECOS 2015 28th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 30th June – 3rd July 2015 Pau, France

[J29] Techno-economic analysis and comparison of an ORC-VCC biomass-solar Trigeneration system and a photovoltaic driven Heat pump

K. Braimakis, T. Roumpedakis, A. Thimo, S. Karellas
ECOS 2015 28th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 30th June – 3rd July 2015 Pau, France

[J30] Power to Fuel concept: Process analysis and economic evaluation

D.-S. Kourkoumpas, E. Papadimou, K. Atsonios, S. Karellas, P. Grammelis, E. Kakaras
ECOS 2015 28th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems, 30th June – 3rd July 2015 Pau, France

[J31] Waste heat recovery at the glass industry with the intervention of batch and cullet preheating

I. Dolianitis, D. Giannakopoulos, C. Hatzilau, S. Karellas, E. Kakaras, E. Nikolova G. Skarpetis, N. Christodoulou, N. Giannoulas, T. Zitounis
10th Conference on Sustainable Development of Energy, Water and Environment Systems, 27th September – 3rd October, 2015, Dubrovnik, Croatia

[J32] Experimental study on a low temperature ORC unit for onboard waste heat recovery from marine Diesel engines

A.-D. Leontaritis, P. Pallis, S. Karellas, A. Papastergiou, N. Antoniou, P. Vourliotis, N.-M. Kakalis, G. Dimopoulos
ASME ORC 2015, 3rd International Seminar on ORC Power Systems, 12-14 October 2015, Brussels, Belgium

[J33] Investigation and optimization of the operation and design of a small scale experimental trigeneration system powered by a supercritical ORC

T. Roumpedakis, K. Braimakis, S. Karellas
ASME ORC 2015, 3rd International Seminar on ORC Power Systems, 12-14 October 2015, Brussels, Belgium

[J34] Comparative energy and exergy analysis of compressed air energy storage and liquid air energy storage systems

P. Krawczyk, Ł. Szablowski, S. Karellas, E. Kakaras, K. Badyda
ECOS 2016 - the 29th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems June 19-23, 2016, PORTOROŽ, SLOVENIA

[J35] Simulation Research on the Optimal Operation of Flue Gas Pre-Dried Lignite-Fired Power Plant Firing High Moisture Lignite

X. Han, S. Karellas, M. Liu, J. Liu, J. Yan, D. Rakopoulos, E. Kakaras
ECOS 2016 - the 29th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems June 19-23, 2016, PORTOROŽ, SLOVENIA

[J36] Flexible two-stage turbine bleeding Organic Rankine Cycles (ORCs) for combined heat and power applications

D. Meinel, K. Braimakis, C. Wieland, S. Karellas, H. Spliethoff
ECOS 2016 - the 29th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems June 19-23, 2016, PORTOROŽ, SLOVENIA

[J37] Exergy analysis of a Naturally Ventilated Building Integrated Photovoltaic (BIPV) System

R. A. Agathokleous, S. A. Kalogirou, S. Karellas
ECOS 2016 - the 29th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems June 19-23, 2016, PORTOROŽ, SLOVENIA

[J38] Energy saving incentives for the European glass industry in the frame of the EU Emissions Trading Scheme

C. S. Hatzilau, S. Karellas, I. Dolianitis, D. Giannakopoulos, G. Skarpetis, T. Zitounis
Industrial Efficiency 2016 Berlin, 12-14 September 2016, Die Kalkscheune, Berlin, Germany

[J39] Semi-empirical model of a multi-diaphragm pump in an Organic Rankine Cycle experimental unit

F. D'Amico, P. Pallis, A.D. Leontaritis, S. Karellas, N.M. Kakalis, S. Rech, A. Lazzaretto
Contemporary Problems in Thermal Engineering (CPOTE2016), 15-16 September 2016, Gliwice, Poland

[J40] Energy analysis of Adiabatic Liquid Air Energy Storage System

P. Krawczyk, Ł. Szablowski, K. Badyda, S. Karellas, E. Kakaras
Contemporary Problems in Thermal Engineering (CPOTE2016), 15-16 September 2016, Gliwice, Poland

[J41] Energy and exergy analysis of advanced adiabatic compressed air energy storage system

Ł. Szablowski, P. Krawczyk, K. Badyda, S. Karellas, E. Kakaras, W. Bujalski
Contemporary Problems in Thermal Engineering (CPOTE2016), 15-16 September 2016, Gliwice, Poland

[J42] Modelling, design and thermo-economic evaluation of an ORC-ejector trigeneration system for waste heat recovery

K. Braimakis, A. Zitouni-Petrogianni, S. Karellas, S. Kalogirou
30th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2017), July 2-6 2017, San Diego, California, USA

[J43] Convective heat transfer coefficients of a naturally ventilated building integrated photovoltaic (BIPV) system

S. Kalogirou, R. Agathocleous, S. Karellas
30th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2017), July 2-6 2017, San Diego, California, USA

[J44] Molten silicon storage of concentrated solar power with integrated thermovoltaic energy conversion

A. Datas, M. Zeneli, C. Del Cañizo, I. Malgarinos, A. Nikolopoulos, N. Nikolopoulos, S. Karellas, A. Martí
Volume 2033, 8 November 2018, Article number 09000523rd International Conference on Concentrating Solar Power and Chemical Energy Systems, SolarPACES 2017; Santiago; Chile; 26 September 2017 through 29 September 2017; Code 141990
<https://doi.org/10.1063/1.5067099>

[J45] Integrated ORC-Adsorption cycle: A first and second law analysis of potential configurations

T. C. Roumpedakis, T. Christou, K. Braimakis, E. Varvagiannis, S. Karellas
31st International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2018), June 17-21 2018, Guimarães, Portugal

[J46] Life cycle assessment of a 1000 MW supercritical pulverized coal power plant under partial loads

X. Han, N. Chen, S. Karellas, M. Liu, J. Liu, J. Yan, E. Kakaras
31st International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2018), June 17-21 2018, Guimarães, Portugal

[J47] Modeling of a large-scale, biomass fired combined heat and power plant coupled with an alumina/aluminium production process

S. Hysenji, D. Grimekis, A. Doukelis, K. Panopoulos, S. Karellas
31st International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2018), June 17-21 2018, Guimarães, Portugal

[J48] Optimization of supercritical biomass-fueled power plants for industrial CHP, district heating and cooling

K. Braimakis, D. Magiri-Skouloudi, D. Grimekis, S. Karellas
32nd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2019), June 23-28 2019, Wrocław, Poland

[J49] Environmental evaluation of highly efficient large scale biomass-fuelled cogeneration plants

D. Magiri-Skouloudi, N. Dimiropoulos, D. Grimekis, S. Karellas
32nd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2019), June 23-28 2019, Wrocław, Poland

[J50] Study of vessel shape effect on charge/discharge rates of a silicon-based LHTES system

M. Zeneli, A. Nikolopoulos, N. Nikolopoulos, S. Karellas, E. Kakaras
32nd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2019), June 23-28 2019, Wrocław, Poland

[J51] Study of heat losses during charge, discharge and storage period of a LHTEs system operating at ultra-high temperatures

M. Zeneli, A. Nikolopoulos, A. Datas, N. Nikolopoulos, S. Karellas, E. Kakaras

32nd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2019), June 23-28 2019, Wroclaw, Poland

[J52] Environmental Performance of ZEOSOL solar cooling setup

G. Kallis, T. C. Roumpedakis, D. Magiri-Skouloudi, S. Karellas

32nd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2019), June 23-28 2019, Wroclaw, Poland

[J53] Performance results of a solar adsorption cooling and heating unit

T. C. Roumpedakis, S. Karellas, S. Vasta, U. Wittstadt, N. Harborth

Proceedings of the ISES Solar World Congress 2019 and IEA SHC International Conference on Solar Heating and Cooling for Buildings and Industry 2019, pp. 664-672

[J54] Exergetic efficiency potential of zeotropic mixtures of CO₂ and non-flammable, ultra-low GWP fluids as working fluids in double stage ORCs

K. Braimakis, S. Karellas

33rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2020), Osaka, Japan

[J55] Comparison of various absorption systems with respect to optimal coefficient of performance

G. Volpato, T. C. Roumpedakis, S. Karellas, C. Frangopoulos, S. Rech, A. Lazzaretto

33rd International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2020), Osaka, Japan

[J56] Replacing natural gas with renewable hydrogen in combined heat and power plants

E.-I. Koytsoumpa, A. Doukelis, S. Karellas

34th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2021), June 27 – July 2 2021, Taormina, Italy

[J57] Energy and exergy analysis of a waste heat recovery trigeneration system based on Organic Rankine Cycle and Ejector Cooling Cycle

K. Braimakis, C. Xynos, S. Karellas

35th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2022), July 3-7 2022, Copenhagen, Denmark

[J58] Environmental assessment of biological CO₂ capture and utilization (Bio-CCU) applications for the production of platform chemicals from industrial waste gases

D. Magiri – Skouloudi, O. Kallis, S. Karellas

35th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2022), July 3-7 2022, Copenhagen, Denmark

[J59] Environmental assessment of an industrial power-to-hydrogen-to-power system - towards decarbonization of existing natural gas fueled CHP plants

A. Macheras, D. Magiri – Skouloudi, S. Karellas

35th International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems (ECOS 2022), July 3-7 2022, Copenhagen, Denmark

[K] PUBLICATIONS IN PROCEEDINGS OF INTERNATIONAL CONFERENCES (Abstract Reviewed Papers)

[K1] Online Analyse der Qualität des Produktgases aus der Biomassevergasung mittels Laserspektroskopie

S. Karellas, F. Christ, J. Karl. 1. Tagung Deutsch-Griechische Forschung, 28-29 Juni 2003, Berlin, Deutschland

[K2] Exergetic and economic analysis of gas turbine concepts

R. Leithner, N. Aronis, A. Doukelis, E. Kakaras, S. Karellas

CLEAN AIR 2003 Seventh International Conference on Energy for a Clean Environment, Lisbon, Portugal, 7-10 July 2003

[K3] Heatpipe Reformer Prototyp A – Experimentelle Ergebnisse

Th. Metz, S. Kuhn, S. Karellas, J. Karl

Arbeitsgruppentreffen Wasserstoffreiches Vergasungsgas der FEE e.V., 15.09.2003, Merseburg (Halle), veröffentlicht in: Ökologische Stoffverwertung Berichte 1/03, Hrsg.: Fördergemeinschaft Ökologische Stoffverwertung e.V. Halle/Saale, FÖST Verl.: Henner-Verl., Grennigloh & Co.ohG, Halle /Saale, Deutschland

[K4] Erzeugung von Synthesegas mit dem Biomass Heatpipe Reformer – Betriebserfahrungen und Leistungsgrenzen

J. Karl, S. Karellas, S. Kuhn, T. Metz.

DGMK(Deutsche Wissenschaftliche Gesellschaft für Erdöl, Erdgas und Kohle e.V.) Tagungsbericht., Energetische Nutzung von Biomassen, 19.- 21.April04 Velen- Westf., Deutschland

[K5] Experimental Results of the Biomass Heatpipe Reformer

T. Metz, S. Kuhn, S. Karellas, R. Stocker, J. Karl, D. Hein

2nd World Conference and Technology Exhibition on Biomass for Energy and Climate Protection, 10-14 May 2004, Rome, Italy

[E6] Heatpipe Reformer – Experimentelle Ergebnisse

S. Kuhn, S. Karellas, T. Metz, J. Karl

10. Internationaler Kongress für nachwachsende Rohstoffe und Pflanzenbiotechnologie, 07-08 Juni 2004, Magdeburg, Deutschland

[K7] Use of the Raman spectroscopy for the analysis of the product gas from the allothermal biomass gasification

S. Karellas, J. Karl, T. Metz, S. Kuhn

VDI Optische Technologien, International Symposium on Photonics in Measurement, 23-24 June 2004, Frankfurt, Germany (VDI-Berichte 1844, pp. 23-30, ISBN 3-18-091844-6)

[K8] Highly Efficient SOFC Systems with Indirect Gasification. J. Karl, S. Karellas. Lucerne Fuel Cell Forum, 2nd International Fuel Cell Conferences with Exhibition, 28 June – 2 July 2004, Kultur- und Kongresszentrum Luzern, Lucerne, Switzerland

[K9] Online optical analysis of the product gas from the gasification of biomass

S. Karellas, M. Raindl, J. Karl

4. VDI Konferenz über optische Analysenmesstechnik in Industrie und Umwelt, 7.-8.10.2004, Düsseldorf, Deutschland (VDI-Berichte 1863, pp. 65-71, ISBN 3-18-091863-2)

[K10] Investigation of the influence of the gas quality from the biomass gasification on integrated systems with microturbines and fuel cells

S. Karellas, J. Karl

7th International conference on heat engines and environmental protection, May 23-25 2005, Balatonfüred, Hungary

[K11] Combined Heat and Power Production with the Biomass Heatpipe Reformer (BioHPR)

S. Kuhn, S. Karellas, J. Karl, T. Metz, H. Spliethoff

Bioenergy 2005, International Bioenergy in Wood Industry, Conference and Exhibition, 12-15 September 2005, Jyväskylä, Finland

[K12] Highly efficient conversion of syngas from biomass gasification in Solid Oxide Fuel Cells

J. Karl, S. Karellas, N. Frank, H. Spliethoff

14th European Biomass Conference and Exhibition. Biomass for Energy, Industry and Climate protection. Palais des congrès, 17-21 Octobre 2005, Paris, France

[K13] Online analysis of the tar content of the product gas from biomass gasification. Application on the BioHPR

S. Karellas, S. Kuhn, T. Metz, J. Karl.

14th European Biomass Conference and Exhibition. Biomass for Energy, Industry and Climate protection. Palais des congrès, 17-21 Octobre 2005, Paris, France

[K14] Degradation of Solid Oxide Fuel Cells with wood gas

N. Frank, M. Saule, S. Karellas, J. Karl.

7th European Solid Oxide Fuel Cell Forum, 3.-7.07.2006, Lucerne, Switzerland

[K15] Biomass combustion with ORC for decentralized bioenergy applications: A techno-economic approach

A. Rentizelas, S. Karellas, E. Kakaras, I. Tatsiopoulos

4th European Congress Economics and Management in Engineering, 27-30 Nov.07, Porto, Portugal

[K16] Application of laser spectroscopy for the quantitative analysis of biomass gasification tars

P. Mitsakis, S. Karellas, H. Spliethoff

16th European Biomass Conference & Exhibition. From Research to Industry and Markets 02-06 June 2008, Feria Valencia, Spain

[K17] Energetic and exergetic analysis of a retrofitted CCS plant firing low quality lignite

E. Kakaras, S. Karellas, A. Doukelis, A. Koumanakos, A. Manettas

The 35th International Technical Conference on Clean Coal & Fuel Systems. Coal: Rising to New Challenges, June 6 to 10, 2010, Sheraton Sand key, Florida, USA

[K18] Two step optimization approach for increase of Engine-ORC efficiency

D. Gewald, A. Schuster, S. Karellas, H. Spliethoff

ORC 2011 First International Seminar on ORC Power Systems, 22-23 September 2011, Aula Conference Center, TU Delft, The Netherlands

[K19] Activated carbon's adsorption potential of tar species from syngas in warm conditions

E.I. Koytsoumpa, C. Michailof, K. D. Panopoulos, P. Bour, S. Karellas, A. Lappas, A. Lemonidou

20th European Biomass Conference and Exhibitions Setting the course for a biobased economy. Milano Convention Center, Milan Italy, 18-22 June 2012

[K20] Investigation of the production of Substitute Natural Gas in Greece from local biomass feedstock by means of the BioHPR

S. Karellas, S. Kapodistrias, K. Panopoulos, J. Karl

20th European Biomass Conference and Exhibitions Setting the course for a biobased economy. Milano Convention Center, Milan Italy, 18-22 June 2012

[K21] Assessing the applicability of circulating fluidized bed gasification of five promising biomasses for energy production within a biorefinery: focus on agglomeration issues

C. Christodoulou, E.I. Koytsoumpa, K. D. Panopoulos, S. Karellas, E. Kakaras

20th European Biomass Conference and Exhibitions Setting the course for a biobased economy. Milano Convention Center, Milan Italy, 18-22 June 2012

[K22] Biomass feedstocks characterization for energy and biorefinery options. The case for giant reed, switchgrass and cardoon

M. Christou, E. Alexopoulou, C. Christodoulou, E.I. Koytsoumpa, K.D. Panopoulos, S. Karellas International Conference Biofuels for Sustainable Development of Southern Europe, 19-20 November 2012, Thessaloniki, Greece

[K23] Biomass feedstocks for energy markets. The case for giant reed, switchgrass and cardoon

M. Christou, E. Alexopoulou, C. Christodoulou, E.I. Koytsoumpa, K.D. Panopoulos, S. Karellas, IEA Bioenergy Conference Vienna, Austria 2012

[K24] Comparison of acid gas removal processes in coal-derived SNG production

E.-I. Koytsoumpa, K. Atsonios, K. D. Panopoulos, S. Karellas, E. Kakaras, 6th International Conference on Clean Coal Technologies, Thessaloniki, Greece, 12-16 May 2013

[K25] Feasibility and economic evaluation of lignite-to-SNG systems

E.I. Koytsoumpa, S. Karellas, K. D. Panopoulos, E. Kakaras, International Conference on Clean Coal Technologies, Thessaloniki, Greece, 12-16 May 2013

[K26] Circulating fluidized bed gasification of 1st and 2nd generation biofuel seed cakes after oil extraction

C. Christodoulou, D. Grimekis, K. Tsiotas, I. Papamihail, K. D. Panopoulos, D. Vamvuka, S. Karellas, E. Kakaras

21st European Biomass Conference and Exhibitions Setting the course for a biobased economy, Bella Centre, Copenhagen, Denmark, 3-7 June 2013

[K27] Economic evaluation of decentralized pyrolysis for the production of bio-oil as an energy carrier for improved logistics towards a large centralized gasification plant

K. Braimakis, K. Atsonios, K. D. Panopoulos, D. Vamvuka, S. Karellas, E. Kakaras

21st European Biomass Conference and Exhibitions Setting the course for a biobased economy, Bella Centre, Copenhagen, Denmark, 3-7 June 2013

[K28] Conceptual design of a permanent lunar outpost: Surface experiments and instruments for geophysics and geodesy study case

G. Tsakyridis, S. Karellas, C. Lange, R. Rosta, T. Van Zoest

This fourth annual Lunar Graduate Conference (LunGradCon 2013). NASA, AMES Research Center July 10, 2013.

[K29] Hybrid biomass and solar energy-based cogeneration and trigeneration systems combining ORC-VCC cycles

S. Karellas, K. Braimakis

ASME- ORC 2013. 2nd International Seminar on ORC Power Systems. October 7th & 8th, 2013, DeDoelen, Rotterdam, The Netherlands

[K30] Energetic and exergetic assessment of waste heat recovery systems in glass industry

S. Karellas, K. Zourou, K. Braimakis, E. Kakaras

ASME- ORC 2013. 2nd International Seminar on ORC Power Systems. October 7th & 8th, 2013, DeDoelen, Rotterdam, The Netherlands

[K31] EU Emissions Trading Scheme application in Bulgaria, Greece and Romania

C.-S. Hatzilau, D. Giannakopoulos, S. Karellas, E. Kakaras

Istanbul Carbon Summit: Carbon Management, Technologies & Trade, 3-5 April 2014, Istanbul, Turkey

[K32] Biomass pyrolysis kinetics modelling

Ch. Tsekos, E.-I. Koytsoumpa, K.D. Panopoulos, S. Karellas, E. Kakaras, V. Asouti

22nd European Biomass Conference and Exhibitions Setting the course for a biobased economy, CCH-Congress Center Hamburg, Germany, 23-26 June 2014

[K33] Energy saving potentials for industrial steam boilers – Findings from the Ecodesign process

A. Aydemir, K. Braimakis, S. Hirzel, S. Karellas, B. Ostrander, C. Rohde

10th European Conference on Industrial Furnaces and Boilers (INFUB-10), Gaia (Porto) - Portugal, at the Hotel Holiday Inn Porto Gaia. 7-10 April 2015

[K34] Selection and establishment of energy crops in abandoned and unused land for biomass production in cambrils

D.-S. Kourkoumpas, C.E. Papadelis, P. Grammelis, S. Karellas, E. Kakaras

26th European Biomass Conference and Exhibition, Copenhagen, Denmark, 14-18 May 2018

[K35] Modelling of a 3MW_{th} gasifier in aspenus™

D. Grimekis, M.A. Delgado Calvo, K. Panopoulos, S. Karellas

26th European Biomass Conference and Exhibition, Copenhagen, Denmark, 14-18 May 2018

[L] GREEK CONFERENCES

[L1] Διαρεύνηση της κατάλληλης μοντελοποίησης της εσωτερικής τριβής πολύ πυκνών ροών σωματιδίων στο σύστημα ανακυκλοφορίας ρευστοποιημένων κλινών ανακυκλοφορίας

A. Νικολόπουλος, Ν. Νικολόπουλος, Ν. Βαρβέρης, Σ. Καρέλλας και Εμ. Κακαράς

POH2010, 7^ο Πανελλήνιο Συνέδριο για τα Φαινόμενα Ροής Ρευστών, Θεσσαλονίκη, 12-13 Νοεμβρίου, 2010

[M] OTHER PUBLICATIONS

[M1-M3] Erzeugung wasserstoffreicher Gase aus kohlenstoffhaltigen Einsatzstoffen

St. Kuhn, S. Karellas, J. Karl, Th. Metz, D. Hein
BayFORREST-Statusbericht, 2001,
BayFORREST-Statusbericht, 2002,
BayFORREST-Abschlussbericht, 2003

[N] OTHER PRESENTATIONS

[N1] Integration of SOFC fuel cells systems in CHP-Systems with indirect gasification

J. Karl, S. Karellas, D. Hein
Eighth Grove Fuel Cell Symposium 24-26 September 2003 ExCel London, U.K. (poster presentation)

[N2] BioCellus, Biomass Fuel Cell Utility System

N. Frank, S. Karellas, J. Karl
Presentation in: H2-FC Technology Platform Operation Review Days, 8-9 December 2005, Brussels, Belgium

[N3] Υδρογόνο για παραγωγή ενέργειας

Σ. Καρέλλας, Ε. Κακαράς
Παρουσίαση στην ημερίδα για την Ενέργεια οργανωμένη από φοιτητικές παρατάξεις των σχολών, 13.06.07,
Εθνικό Μετσόβιο Πολυτεχνείο, Αθήνα

[N4] Εισαγωγή αντλιών θερμότητας στον οικιακό τομέα

Σ. Καρέλλας, Ν. Παππά
Παρουσίαση στην ημερίδα Blue Dealer Conference, Daikin Hellas, 17.04.2010, Filoxenia Resort, Καλαμάτα

[N5] Substitute Natural Gas (SNG) from lignite. Plant Performance & Economics

S. Karellas, E. Kakaras
LOW RANK COAL, International Industry Symposium, April 16-19 2012, Melbourne, Australia (poster presentation)

[N6] Comparison of energy storage systems with applications to solar thermal power plants – Case study for Crete. Power-to-gas research activities

S. Karellas, V. Markopoulos, A. Doukelis, M. Agraniotis, E. Kakaras
Energiespeichersektor : Forschung u. Technologie in Griechenland -Bilaterale Kooperationsperspektiven, Messegelände Stuttgart, Donnerstag 15.11.2012 (Invited speaker)

[N7] Assessment of different SNG production routes via the use of Greek low rank coal

E.I. Koytsoumpa, S.Karellas, E.Kakaras Low Rank Coal, International Industry Symposium, 28 April-1 May 2014, Melbourne, Australia (poster presentation)

[N8] Ερευνητικές δραστηριότητες για τη χρήση ηλιακής ενέργειας στην Ελλάδα

Σ. Καρέλλας Επιτροπή Ενέργειας Ακαδημίας Αθηνών, Ημερίδα: Έρευνα στον τομέα της Ενέργειας στην Ελλάδα, Αθήνα 30 Νοεμβρίου 2018