

Curriculum Vitae

Dr Kyriakos Panopoulos

I.1 Personal details

Name	:	Kyriakos
Surname	:	Panopoulos
Date of Birth	:	01 December 1974
Place of Birth	:	Thessaloniki, Greece
Address	:	Sevastoupoleos 73, 11526 Athens, Greece tel.: 0030 210 – 7783595
E-mail:	:	panopoulos@certh.gr
Marital Status	:	Single

I.2 Main Studies

(1992-1998) Chemical Engineering Degree (5 year course), Aristotle University of Thessaloniki, Greece (www.auth.gr) . Grade (7.90 out of 10).

Diploma thesis: «AspenplusTM Simulation of integrated coal gasification combined cycle and with the application of Membranes and Shift reactors for CO₂ sequestration».

Thesis grade : Excellent (10 out of 10)

(1998 – 1999) MSc in Applied Energy with specialization in Energy system and Thermal Processes, School of Mechanical Engineering, Cranfield University, UK. (www.cranfield.ac.uk)

MSc thesis: “Biomass-to-Energy in Greece: Availability, Technology, and Economics”

Main subjects: Heat and Power technologies, Renewable Energy Sources, Heat transfer, Fuels and Combustions, Heat Management, Process Integration, etc.

(1999 – 2005) PhD in Chemical Engineering. National Technical School of Athens, Greece (www.ntua.gr)

Title: «Integrated Design of Thermochemical Processes for the production of Power from Biomass». Overview of the PhD: Biomass Gasification tests into a lab scale fluidized bed reactor. Measurements and analyses of product gas, Studies of integrated systems using the product gas into solid oxide fuel cells (see publications).

I.3 Additional studies (seminars)

I.3.1. Euro Summer School Short Course “Sustainability Assessment of Hydrogen Energy Systems”, 15 - 19 April 2002, Lisbon Portugal. IST Instituto Superior Técnico.

I.3.2. Seminar: “Membrane gas separation for sustainable fuel production and power generation , seminar”, 25-26 November 2002, Oslo Norway SINTEF - the Foundation for Scientific and Industrial Research at the Norwegian Institute of Technology.

I.3.3. VGB/PowerTech, Workshop Flue Gas Cleaning 2009, June 16/17 2009, Rome, Italy.

I.4 Computing

Process Simulation: AspenPlusTM, gPROMS, GateCycle, MathCad, Matlab, EES(Fchart)
Programming: Fortran

I.5 Languages

English (excellent)
French (working knowledge)
Greek (native)

I.6 Jobs – Activity

I.6.1. (2007- today)

Senior Researcher for CERTH/ISFTA (www.certh.gr) (Centre for Research and Technology Hellas/ Institute for Solid Fuels Technology and Applications).

Research topics:

Biomass Gasification, solid oxide fuel cells fueled by solid fuel product gas, second generation biofuels production via thermochemical pathways, Abatement of Emission of Trace Pollutants by FGD from co-combustion and environmental characteristics of by-products, ash related problems in power generation boilers, Environmental Laboratory based on ISO 17025:2005,

I.6.2. (2005 - 2006)

Military service in Hellenic Air Force as a sergeant specialised in Chemistry. Main activities: Laboratory work on airborne fuel and lubricants quality and SEM/EDS of lubrication materials for the diagnostics of eminent failure of 3rd generation jet fighters.

I.6.3. (2001 – 2006)

Member of the Research staff of the National technical University of Athens, Greece

Research topics:

Demonstration of BGL-Gasification under optimised conditions for the European and Asean Market., Energy production from fuel cells for the Greek National Natural Gas Company, Biomass gasification using an heat pipe reformer, Measures to improve availability and reduction in operating costs of coal and biomass burning power plants, Co-combustion of meat and bone meal in coal power plants. Development of an autonomous biomass-solar, thermally driven distillation system. Combination of Solid Oxide fuel cells with biomass gasification, Biomass fuel cell utility system (www.biocellus.com) etc.

I.7 Teaching experience

I.7.1. (1999 to 2005)

Assisting the teaching of undergraduate course “Biomass Utilisation” of the 9th semester of the course in Chemical Engineering of the National Technical University of Athens, Greece.

I.7.2. (2000 to 2005)

Teaching for the MSc Energy Production of the National Technical University of Athens the subject “Renewable Energy Sources”.

I.7.2. (2000 to 2010)

Supervised more than 30 diploma and MSc theses on the subjects of biomass gasification, solid oxide fuel cells, coal utilization etc.

II. Publications

II.A. Theses and Books

- II.A1. MSc Thesis: «Biomass-to-Energy in Greece: Availability, Technology, and Economics». School of Mechanical Engineering, Cranfield University, UK, 29.August.1998.
- II.A2. Chapter in Book: "Recovering Energy from Waste", Science Publishers Inc., USA and Oxford & IBH Publishing Co. Pvt. Ltd., Chapter 7: Electricity from Biological Wastes: European Scenario. Co-author: E.G. Koukios.
- II.A3. PhD Thesis: «Integrated Design of Thermochemical Processes for the production of Power from Biomass». School of Chemical Engineering, National Technical University of Athens, 21. April .2005.

II.AA. Translations of Technical Books into Greek

- II.AA1. "Heat Transfer", Donald Pitts & Leighton Sissom, Schaum's Outline Series, McGraw-Hill, 2001.

II.B. Publications in International Scientific Journals

- II.B1. "Experimental investigation of fluidised bed co-combustion of meat and bone meal with coals and olive bagasse"
Fryda, L., **Panopoulos, K.**, Vourliotis, P., Pavlidou, E., Kakaras, E.
Fuel, Volume 85, Issues 12-13, September 2006, Pages 1685-1699.
- II.B2. "High temperature solid oxide fuel cell integrated with novel allothermal biomass gasification: Part I: Modelling and feasibility study"
K.D. Panopoulos, L.E. Fryda, J. Karl, S. Poulou, E. Kakaras.
Journal of Power Sources, Volume 159, Issue 1, 13 September 2006, Pages 570-585.
- II.B3. "High temperature solid oxide fuel cell integrated with novel allothermal biomass gasification: Part II: Exergy analysis"
K.D. Panopoulos, L. Fryda, J. Karl, S. Poulou, E. Kakaras.
Journal of Power Sources, Volume 159, Issue 1, 13 September 2006, Pages 586-594.
- II.B4. "Meat and bone meal as secondary fuel in fluidized bed combustion"
L. Fryda, **K. Panopoulos**, P. Vourliotis, E. Kakaras, E. Pavlidou.
Proceedings of the Combustion Institute, Volume 31, Issue 2, January 2007, Pages 2829-2837
- II.B5. "Atmospheric fluidised bed gasification of promising biomass fuels in southern European regions"
Kyriakos D. Panopoulos, Lydia E. Fryda, Emmanuel Kakaras.
THERMAL SCIENCE, Volume 11, Issue 1, Pages 5 – 15
- II.B6. "High temperature electrolyte supported Ni-GDC/YSZ/LSM SOFC operation on two-stage Viking gasifier product gas"
Ph. Hofmann, A. Schweiger, L. Fryda, **K.D. Panopoulos***, U. Hohenwarter, J.D. Bentzen, J.P. Ouweltjes, J. Ahrenfeldt, U. Henriksen, E. Kakaras
Journal of Power Sources, Volume 173, Issue 1, 8 November 2007, Pages 357-366

- II.B7. "Exergetic analysis of solid oxide fuel cell and biomass gasification integration with heat Pipes"
L. Fryda, **K.D. Panopoulos***, J. Karl, E. Kakaras
Energy, Volume 33, Issue 2, February 2008, Pages 292-299
- II.B8. "Integrated CHP with autothermal biomass gasification and SOFC–MGT"
L. Fryda, **K.D. Panopoulos**, E. Kakaras
Energy Conversion and Management, Volume 49, Issue 2, February 2008, Pages 281-290
- II.B9. "Agglomeration in fluidised bed gasification of biomass"
L.E. Fryda, **K.D. Panopoulos**, E. Kakaras
Powder Technology, Volume 181, Issue 3, 12 February 2008, Pages 307-320
- II.B10. "Integrating biomass gasification with solid oxide fuel cells: Effect of real product gas tars, fluctuations and particulates on Ni-GDC anode"
Ph. Hofmann, **K.D. Panopoulos***, L.E. Fryda, A. Schweiger, J.P. Ouweltjes, J. Karl
International Journal of Hydrogen Energy, 33 (11), pp. 2834-2844
- II.B11. "Integrated CHP with autothermal biomass gasification and SOFC–micro Gas Turbine"
L.E. Fryda, **K.D. Panopoulos**, E. Kakaras.
VGB PowerTech, 88 (4), pp. 66-73+6-7, April 2008.
- II.B12. "Design and optimization of carbon-free power generation based on coal hydrogasification integrated with SOFC"
Perdikaris, N, **Panopoulos, K.D***, Fryda, L., Kakaras E.
FUEL, 88 (8), pp. 1365-1375
- II.B13. "Operation of solid oxide fuel cell on biomass product gas with tar levels $>10 \text{ g Nm}^{-3}$ "
Ph. Hofmann, **K.D. Panopoulos***, P.V. Aravind, M. Siedlecki, A. Schweiger, J. Karl, J.P. Ouweltjes, E. Kakaras
International Journal of Hydrogen Energy, Volume 34, Issue 22, November 2009, Pages 9203-9212
- II.B14. "Comparison between two methane reforming models applied to a quasi-two-dimensional planar solid oxide fuel cell model"
Ph. Hofmann, **K.D. Panopoulos***, L.E. Fryda, E. Kakaras
Energy, Volume 34, Issue 12, December 2009, Pages 2151-2157
- II.B15. "Synthesis, Modeling and Exergy Analysis of Atmospheric Air Blown Biomass Gasification for Fischer-Tropsch Process"
S. Spyrikis, **K.D. Panopoulos***, E. Kakaras
International Journal of Thermodynamics, Volume 12, Issue 4, December 2009
- II.B16. "Design and exergetic analysis of a novel carbon free tri-generation system for hydrogen, power and heat production from natural gas, based on combined solid oxide fuel and electrolyser cells"
N. Perdikaris, **K.D. Panopoulos***, Ph. Hofmann, S. Spyrikis, E. Kakaras
International Journal of Hydrogen Energy, Volume 35, Issue 6, March 2010, Pages 2446-2456
- II.B17. "Detailed dynamic SOFC modeling for electrochemical impedance spectra simulation"
Philipp Hofmann, **Kyriakos D. Panopoulos***
Journal of Power Sources, Volume 195, Issue 16, 15 August 2010, Pages 5320-5339
Ph. Hofmann, K.D. Panopoulos
- II.B18. "Investigation of Carbon deposition on Ni-GDC SOFC anodes"
J. Maček, B. Novosel, M. Marinšek, P. Hofmann, **K. D. Panopoulos***, J. P. Ouweltjes
Submitted to the Journal of Power Sources, 20.1.2010, awaiting final review.

II.C. Publications in proceedings of conferences with full text review

- II.C1. “Application of Membrane Separation in IGCC Processes for CO₂ Removal”
K.D. Panopoulos, S.P. Kaldis, G. Sakellaropoulos
ICCS 99 (International Conference on Coal Science) Taiyuan, September 12-17, 1999, Shanxi, People’s Republic of China.
(oral presentation)
- II.C2. “Thermoeconomic analysis of a SOFC based Tri-Generation System”
E. Kakaras, **K. D. Panopoulos***, L. Fryda, N. Perdikaris, P. Pilidis, M. Diacakis, A. Dominguez
16th ECOS, International Conference on Efficiency, Costs, Optimization, Simulation and Environmental Impact of Energy Systems, June 30 - July 2, 2003 Copenhagen, Denmark.
(oral presentation)
- II.C3. “Cotton residue gasification tests in lab scale fluidised bed”
E. Kakaras, P. Vourliotis, **K. D. Panopoulos**, L. Fryda
Clean Air 2003, Seventh International Conference on Energy for a Clean Environment, 7-10 July 2003, Calouste Gulbenkian Foundation, Lisbon, Portugal.
(oral presentation)
- II.C4. “Exergetic analysis of SOFC and biomass gasification integration”
K.D. Panopoulos, L.E. Fryda, J. Karl, S. Poulou, E. Kakaras
19th ECOS, International Conference on Efficiency, Costs, Optimization, Simulation and Environmental Impact of Energy Systems, 12-14 July 2006, Aghia Pelagia, Crete, Greece.
(oral presentation)
- II.C5. “Meat and Bone Meal as secondary fuel in fluidized bed combustion”
L. Fryda, **K. Panopoulos**, P. Vourliotis, E. Pavlidou, E. Kakaras
31st International Symposium on Combustion, 6-11 August 2006, University of Heidelberg, Germany.
(oral presentation)
- II.C6. “Study of In-Situ Desulphurization with Sorbent Addition in AFBFC”
Spyrakis, S, Fryda, L., **Panopoulos, K.***, Vourliotis, P., Koukouzas N., Kakaras, E.,
3rd European Combustion Meeting, Chania, Greece, 11-13 April 2007
(poster presentation)
- II.C7. “Synthesis, modelling and exergy analysis of atmospheric air blown biomass gasification for Fischer–Tropsch process.”
Stavros Spyrakis, **Kyriakos D. Panopoulos***, Lydia Fryda and Emmanuel Kakaras
ECOS2008, 21st International Conference on Efficiency, Cost, Optimization, Simulation and Environmental Impact of Energy Systems. Kraków, POLAND, June 24 – 27, 2008.
(oral presentation)
- II.C8. “Performance improvement of Anode Supported Cell by optimization of Anode Substrate Porosity”
Frans van Berkel, Loek Berkeveld, Pieter Nammensma, Philipp Hofmann, **Kyriakos D. Panopoulos** and Jan Pieter Ouweltjes
International Fuel Cell Conference with Exhibition, Lucerne/Switzerland, 30 June – 4 July 2008.
(poster presentation)

- II.C9. “Experimental evaluation of thermochemical use of two promising biomass fuels”
Kyriakos D. Panopoulos*, Despina Vamvuka,
 4th European Combustion Meeting, Vienna University of Technology, Vienna, Austria,
 14-17 April, 2009.
(poster presentation)
- II.C10. “Mercury and heavy metals emissions from a lignite-fired power plant with FGD”
 Sofia Toulou, Stavros M. Spyrakis, **Kyriakos D. Panopoulos***, Panagiotis Vourliotis
 and Nikolaos Koukoulas
 4th European Combustion Meeting, Vienna University of Technology, Vienna, Austria,
 14-17 April, 2009.
(poster presentation)
- II.C11. “Increase of boiler efficiency by means of targeted on-load cleaning utilizing
 information based on mathematical modelling and advanced measurement
 techniques”
 Hartmut Spliethoff, Juan Carlos Ballesteros, Christine Bertrand, Cristobal Cortes, Luis
 Ignacio Diez, Pablo Fontela Martínez, Christian Müller, Bernd Mussmann, Nikolaos
 Koukoulas, **Kyriakos Panopoulos**, Christoph Wieland, Tomasz Zagórski,
 POWER-GEN International, December 8-10, 2009, Las Vegas Convention Centre, Las
 Vegas, NV, USA

II.D. Publications in proceedings of conferences with extended summary review

- II.D1. “Biomass-to-Energy in Greece: Availability, Technology, and Economics”
K.D. Panopoulos, O. Badr
 1st World Biomass & Bioenergy Conference, 5-7 July 2000, Seville, Spain.
(poster presentation)
- II.D2. “Educating Engineers on Biomass Utilisation – A case study”
 Emm. Avgerinos, **K. D. Panopoulos**, E. G. Koukios
 1st World Biomass & Bioenergy Conference, 5-7 July 2000, Seville, Spain.
(poster presentation)
- II.D3. “Recent advances in the bioenergy field”
 E.G. Koukios, **K.D. Panopoulos**
 2nd National Congress on the Application of Renewable Energy Sources, Priorities in
 open market context., 19-21 March 2001, Athens, Greece.
(Oral presentation/ In Greek)
- II.D4. “The incorporation of bioenergy into the European Union electricity market– The Greek
 Case”
 E.G. Koukios, **K.D. Panopoulos**
 3rd Panhellenic Scientific Conference on Chemical Engineering, 31 May - 2 June 2001,
 Athens.
(Oral presentation/ In Greek)
- II.D5. “Demonstration of fuel cell technology for decentralised co-generation in Greece”
 E. Kakaras, D. Giannakopoulos, **K. D. Panopoulos**
 New and Renewable Technologies for Sustainable Development, June 24-26, 2002,
 Ponta Delgada, S. Miguel Island, Azores – Portugal.

- (*Oral presentation/ In Greek*)
- II.D6. “Integrated biochemical and Thermochemical Valorization of Sweet Sorghum for the production of energy.”
*D. Evangellou, A. Glynos, **K. D. Panopoulos** *, E.G. Koukios*
 4th Panhellenic Scientific Conference on Chemical Engineering, May, 29 – 31, 2003, Patras, Greece.
 (*Oral presentation/ In Greek*)
- II.D7. “Simulating Biomass Gasification: Thermodynamic Approach ”
*G. Protopapas, **K.D. Panopoulos** *, E. Kakaras, E.G. Koukios, S. Poulou.*
 4th Panhellenic Scientific Conference on Chemical Engineering, May, 29 – 31, 2003, Patras, Greece.
 (*Oral presentation/ In Greek*)
- II.D8. “Gasification of Cotton Residues”
*E. Kakaras, P. Vourliotis, **K.D. Panopoulos**, L. Fryda*
 3rd Meeting of the Greek Section of the Combustion Institute, 7-8 November 2003, University of Patras Conference Centre, Patras, Greece
 (*Oral presentation/ In Greek*)
- II.D9. ”Combination of thermochemical and biochemical production of biofuels from Sweet Sorghum”
*Stavros Spyrakis, ,Lydia Fryda, **Kyriakos Panopoulos***, Emm. Kakaras*
 2nd Panhellenic Conference of Alternative Fuels, Limni Plastira
 26 - 27 April, 2007 (in Greek)
- II.D10. “Experimental Results from planar SOFCs operated on hot cleaned gas derived from two experimental gasification facilities”
 Ph. Hofmann, A. Schweiger, L. Fryda, **K.D. Panopoulos***, U. Hohenwarter, J.P. Ouweltjes, J. Karl, E. Kakaras,
 15th European Biomass Conference & Exhibition, 7-11 May 2007, Berlin, Germany.
 (Oral Presentation)