

## CURRICULUM VITAE

**Professor KONSTANTINOS (Kostas) MATHIOUDAKIS,**  
**Athens, December 2016**



Dr Kostas Mathioudakis is a Professor in the School of Mechanical Engineering of the National Technical University of Athens (NTUA), Head of the Laboratory of Thermal Turbomachines, ([www.ltt.ntua.gr](http://www.ltt.ntua.gr)), teaching and performing research in the field of energy conversion through thermal machines. He has been Secretary-General<sup>1</sup> in the Ministry of Environment, Energy and Climate Change (MEECC) of the Hellenic Republic from December 2009 through to March 2015.

Professor Mathioudakis has had a distinguished academic career. His academic record includes numerous publications and international invitations to lecture, whereas leading companies worldwide have adopted methods and innovations based on his collaborative research. His research has been internationally recognized with numerous citations of his publications and the receipt of five international best paper awards.

His academic work has a strong international dimension, deriving from his significant international exposure and from the many partnerships he has developed with European companies, institutes and universities in the energy field. He has performed technical work under contract with industrial outfits across Europe, including all major European gas turbine manufacturers. Moreover, he has participated as an organizer and/or speaker in many international conferences and has been actively involved in international boards.

His work as Secretary-General has provided him with hands-on experience in planning, formulating and implementing energy policy. Serving in this post, he spearheaded extensive reforms, from their conception to their successful implementation while cooperation with stakeholders, especially industry and public bodies, constituted the cornerstone of this process. He was chairing key committees that support the development of Greece's energy sector, including the National Energy Planning Committee and the Committee for Emergency Fuel Supply Management.

He has extensive European and international experience. He has regularly represented his country in EU institutions while, during Greece's 2014 Presidency of the EU Council, he had the opportunity to represent the Energy Council in numerous events. He has led national delegations in various international organizations, notably representing Greece at the IEA's Governing Board. He has been actively involved in Greece's increasingly strategic role in international energy affairs, chairing bilateral Energy Cooperation Committees with several countries and negotiating complex Intergovernmental Agreements.

He has significant management experience, accumulated since his University career. He served as Director of the Fluids Section as well as of the Laboratory of Thermal Turbomachines, where he developed Experimental Facilities from scratch and managed the execution of many sizeable projects. His work at the Ministry has provided him with substantial experience in large-scale personnel management, running the 200-strong

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<sup>1</sup>December 1, 2009 to November 13, 2014, Secretary General for Energy and Climate Change. November 2014 to March 2015, following a restructuring of the MEECC organization, Secretary General of Energy and Mineral Resources.

General Secretariat of Energy. As Secretary-General he has managed the preparation, adoption and implementation of various policy measures, the drawing up and execution of the budget and of support programs for energy investments. He has headed financial activities and analyses performed by the General Secretariat. Moreover he has been in charge of several evaluation committees of major public tenders.

His mother tongue is Greek and he is fluent in English and French with basic knowledge of German.

Following is the timeline of Professor Mathioudakis' education and professional career, while his academic achievements and his extensive experience in Energy policy are further detailed in Appendices I and II respectively.

### ***Education***

- Degree in Mechanical Engineering from the National Technical University of Athens (NTUA), Greece (1980). Ranked first amongst his peers from entry and throughout his studies.
- Postgraduate Degree in Fluid Dynamics, from the Von Karman Institute for Fluid Dynamics, Brussels, Belgium (1981). Obtained with "Honours".
- Doctorate in Applied Sciences from the Katholieke Universiteit Leuven, Leuven, Belgium (1985). Obtained with "The Highest Distinction". The research for his thesis was performed at the Von Karman Institute for Fluid Dynamics.

### ***Career***

- March 2006 – present Professor, School of Mechanical Engineering, National Technical University of Athens (NTUA).
- December 2009 – March 2015 Secretary-General for Energy in the Ministry of Environment, Energy and Climate Change, Athens, Greece.
- August 2000 – Feb. 2006 Associate Professor, School of Mechanical Engineering, NTUA.
- February 1994-Aug. 2000 Assistant Professor, School of Mechanical Engineering, NTUA.
- May 1990 - January 1994 Lecturer, School of Mechanical Engineering, NTUA.
- May 1987- May 1990 Research Associate, Laboratory of Thermal Turbomachines, School of Mechanical Engineering, NTUA.
- October 1987- Feb. 1988 Appointed Lecturer (provisions L.407/80), Technical University of Crete.
- July 1985- May 1987 Researcher, Department of Propulsion, Air Force Technology Research Center, Athens, (military service).
- October 1981- May 1985 Research Assistant, Von Karman Institute for Fluid Dynamics, Brussels, Belgium.
- Summer 1981 Trainee, Department of Large Steam Turbines, Brown Boverie & Cie, Baden, Switzerland.

## APPENDIX-I

### HIGHLIGHTS OF ACADEMIC CAREER

Key achievements of Professor Mathioudakis' Academic Career can be summarized as follows:

- The formation of a research group in an area of activity field that he initiated at the Laboratory of Thermal Turbomachines (LTT), National Technical University of Athens' (NTUA), the area of Gas Turbine Condition Monitoring and Diagnostics, with globally acknowledged achievements, which gave international visibility to the group.
- The development of close ties between the LTT and industry in Greece and Europe, through the successful completion of research and service contracts.
- The establishment of New Test Facilities in LTT/NTUA.
- An intense and creative teaching career at the NTUA, in under and post-graduate curricula, including the introduction of four new courses for which he authored supporting books.

#### ***Academic Achievements, Distinctions***

His research has led to a significant number of publications, with over 180 scientific articles (Appendix III) in International Journals and Conferences, and is widely cited internationally<sup>2</sup>.

International Distinctions for his research:

- Best paper award of the Controls and Diagnostics Committee, at ASME International TURBO-EXPO, 1992.
- Outstanding service award of the 2002 Gas Controls, Diagnostics and Instrumentation Committee of ASME, International Gas Turbine Institute.
- Best paper award of the Controls and Diagnostics Committee, at ASME International TURBO-EXPO, 2002.
- Best paper award of the Education Committee, at ASME International TURBO-EXPO, 2003.
- PE Publishing Award for the best paper published in the Journal of Power and Energy, 2004.
- Best paper award of the Cycle Innovations Committee, at ASME International TURBO-EXPO, 2012.

As a result of the international recognition for his research work, he was asked to regularly Chair/Vice Chair sessions of international conferences, including the Annual International Conference on Gas Turbines (known as TURBO EXPO) of the International Gas Turbine Institute of ASME, the Biannual International Conference of ISABE (International Society of Air Breathing Engines) and the Biannual European Turbomachinery Congress.

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<sup>2</sup> Publications are listed under the Lab's site: <http://www.ltt.ntua.gr/index.php/publication>. They are also included in international data bases, such as:

144 in Google Scholar, <http://scholar.google.gr/citations?user=pfbLjpgAAAAJ&hl=el&oi=ao>, (h=24,i10=6 as of 22/12/2016)

125 in SCOPUS, <http://www.scopus.com> (Author: Mathioudakis K, h=16, as of 22/12/2016)

He has been invited to give lectures at many institutions in different countries including Pratt & Whitney, East Hartford, CT, in the USA, the von Karman Institute for Fluid Dynamics, in Belgium, the Institute of Engineering Thermophysics-Academy of Science, at the Shanghai Marine Diesel Engine Research Institute as well as at the Zhejiang University-Institute of Thermal Power Engineering, in China and the University of Ferrara in Italy.

He has been appointed in 2015 a Panel Member of the European Research Council.<sup>3</sup>

### ***Work with Industry***

He has performed work under contract with:

- Large industrial outfits in Greece (Public Power Corporation, Hellenic Petroleum, METKA, Hellenic Railways) as well as with the Hellenic Air Force and Hellenic Navy.
- Industry in various European countries, either under direct contract or within the frame of EC funded Research Projects (e.g. SNECMA, Metravib RDS and TURBOMECA in France, Rolls-Royce and European Gas Turbines in the UK, MTU in Germany, ENEL and FIAT Avio in Italy).

Under his leadership, the Diagnostics Group of LTT/NTUA has designed built and installed diagnostic systems in several power generation sites as well as a jet engine test facility.<sup>4</sup>

### ***Sample Energy Projects in Greece***

- Design, construction, installation and operation of diagnostic systems in gas turbines (HELLENIC PETROLEUM,2000, and PPC,2004).
- Technical support for the Project of the “Small Lavrio” Combined Cycle Gas Turbine power plant (PPC, 1998).
- Technical support for the Commissioning of the ABB GT10 gas turbine at Soroni, Rhodes, and technical training for monitoring its operation by PPC (PPC, 1998).
- Technical support for the Commissioning of two SIEMENS V 64.3gas turbines for the Thermal Power Station of Chania (PPC, 2000).
- Technical support for the Commissioning of the CCGT plant “Megalo Lavrio”, net output of 550 MW with emphasis on issues related to its three gas turbines EGT 9171E (PPC, 2001).
- Technical Support for the Commissioning of the CCGT plant “Komotini”, net output of 476.3 MW, with emphasis on issues related to the gas turbines ABB GT13E2 ( PPC,2003).

### ***Sample International Projects***

- OBIDICOTE: On Board Identification Diagnosis and Control of Gas Turbine Engines, financed by the EU (Collaboration with MTU Motoren-und Turbinen-Union München GmbH, Techspace Aero SA, Rolls Royce Plc, Lufthansa Technik AG, Fiat Avio SPA, Volvo Aero Corporation AB), 1/2/98-31/1/02.

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<sup>3</sup> <https://erc.europa.eu/evaluation-panels>

<sup>4</sup> Diagnostic Systems description at <http://www.ltt.mech.ntua.gr/index.php/services/diagnsystemn>

- EVI-GTI: The European Virtual Institute For Gas Turbine Instrumentation, financed by the EU (Consortium of 15, including MTU, SNECMA, Rolls Royce), 1/7/02-30/6/05.
- VIVACE: Value Improvement through a Virtual Aeronautical Collaborative Enterprise. *Integrated Project*, financed by the EU, 1/1/04-31/12/-07,
- AEROTEST: Remote Sensing Technique for Aeroengine Emission Certification and Monitoring. *Specific Targeted Project*, financed by EU, 1/3/04-28/2/07.
- TATEM: Technologies and Techniques for New Maintenance Concepts. *Integrated Project*, financed by the EU, 1/3/04-28/2/07.
- NEWAC: New Aeroengine Core Concepts. *Integrated Project*, financed by the EU, 1/5/06-30/4/10,
- Effects of Gas Dynamics on Transient Performance. Contract with SNECMA, 1/6/02-30/11/02.
- Study of Heat Transfer Effects on Turbine Performance. Contract with SNECMA, 20/1/02-19/6/03.
- Water and Hail Ingestion: Modelling of Water Phase Changes through the Compressor. Contract with SNECMA, 1/4/03-30/6/03.

### ***Setting-up Laboratory Infrastructure***

He was responsible for developing the experimental infrastructure for the Lab of Thermal Turbomachines. At the beginning of his engagement with the Lab, there were no test facilities. Through his leadership, management and personal involvement, the Lab today comprises modern infrastructure of test facilities and instrumentation<sup>5</sup>.

The main test facilities that were developed under his leadership are: A compressor test rig ( 750 kW/24000 rpm or 400 kW/80000 rpm arrangement), a transonic peripheral cascade test rig with rotating hub, two small “Free Jet” facilities, a test stand for industrial small blowers ( DIN 24163), linear cascade tunnel, a contra- rotating low speed compressor test rig and a small jet engine test rig. The most recent development is a unit for certification of natural gas meters, that was put in operation in September 2016.

The testing infrastructure now available at LTT/NTUA allows the performance of high quality research and services for industry, while supporting educational activities of a high standard for under and post-graduate students.

### ***Management/Administration at NTUA***

- Director, Lab of Thermal Turbomachines, 2006-2009, 2015-.
- Director, Fluid Section, School of Mechanical Engineering, 2007-2008, 2015-2016.
- Member of the Dean’s Committee of the School of Mechanical Engineering (2016/09-2018/09)
- Member of the NTUA Senate Committee for University Publications, representing the School of Mechanical Engineering, 2001-2009.
- Member of the NTUA Senate Committee for University Premises and Facilities, representing the School of Mechanical Engineering, 2009.

<sup>5</sup>A description of Research & Testing facilities and Instrumentation can be found at <http://www.ltt.mech.ntua.gr/index.php/lttfcl>

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