

CURRICULUM VITAE

1. **Surname :** ORFANOUDAKIS
2. **Name :** Nikolaos
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(Mech. Eng. Dept.) 34400 Psachna-Evia, GREECE (business)
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ngorfanoudakis@gmx.de . **Telephone.:** +30 6932 723530 & +49 15777444259
3. **Date of birth :** 10 April 1962
4. **Nationality :** Greek
5. **Civil status :** married, two children
6. **Education :**

<i>Institutions :</i>	National Technical University of Athens, Greece
<i>Date:</i> <i>from(months/year) to (months/year)</i>	September 1980 – June 1986
<i>Degree(s) or diploma(s) :</i>	Diploma (Dipl.-Ing) in Mechanical Engineering (final mark: 7.5 out of 10)

<i>Institutions :</i>	Imperial College, University of London, United Kingdom
<i>Date:</i> <i>from(months/year) to (months/year)</i>	August 1988 – April 1994
<i>Degree(s) or diploma(s) :</i>	PhD in Combustion and Fluid Mechanics

<i>Institutions :</i>	International Welding Institute
<i>Date:</i> <i>from(months/year) to (months/year)</i>	September 2018 – July 2019
<i>Degree(s) or diploma(s) :</i>	Welding Engineer

7. Language skills : (Mark 1 to 5 for competence, where 5 is the highest)

<i>Language</i>	<i>Passive</i>	<i>Spoken</i>	<i>Written</i>
Greek	5	5	5
English	5	5	5
German	5	5	5

8. **Membership of Professional Bodies:**
 - Member of the "Verein Deutscher Ingenieure-Gesellschaft Energietechnik (VDI-GET)"
 - Member of the Technical Chamber of Greece
 - Member of the Association of the Greek Electro-Mechanical Engineers
 - Founding member of the Greek Section of the Combustion Institute and member of Board of Directors.
 - Member of the International Combustion Institute
 - Member of COGEN – Hellas (Technical Chamber for Cogeneration of Heat & Power)

9. Other skills (e.g. computer literacy, etc.) :

Experience on monitoring and evaluation of technical projects, use of common microcomputer software packages

10. **Present position :** *Professor* in Technical University of Sterea Ellada, Head of Steam Boilers - Turbines and Thermal Power Laboratory.

11. **Years within the company:** 21 years

12. **Key Qualifications:**
 - More than **35** years of experience on power production, emissions and environmental issues and on coal utilization in steam boilers & related topics.
 - **TÜV CERT Lead Auditor** (for ISO9000 & Environmental Management Systems) –Environmental Auditor Course (ISO14000 oriented) by Assessment,

Experience
relevant to
European
Programms :

- Certification and Environment Ltd.
- Technical Lead Assessor of the *National Accreditation System of Greece (NAS) for Assessing Inspection & Certification Bodies & Laboratories (ESYD)*
- Extensive experience in industrial *energy efficiency and energy audits*. He has implemented a number of energy audits at the sectors of cement, food, metals and has particular experience in Combined Heat & Power (CHP) and District Heating systems (see table at the end about acceptance tests of District Heating Systems in terms of energy efficiency as well as emissions of boilers –Kozani, Ptolemais, Serres). Energy audits in Serbia in all type of industries (cement, tyres, paper etc.)
- Technical Evaluator in the Greek Ministry of Industry for proposals in Energy Saving, CHP, Alternative Sources Energy
- Design, engineering and measurements in industrial heat process systems "Design and evaluation of coal burners". Project financed by the Commission of the European Communities (contract number C.E.C. / JOUF-0040-C)
- Scientific advisor of the Centre for Solid Fuels Technology and Applications in Greece (CSFTA) coordinated projects for DGXVII undertaken by CSFTA.
- *Design and evaluation* of a new low emission burner using fuels of low calorific value and *waste fuels* together with coal as main fuel. Project funded by General Secretariat of Ministry of Development - Greece. Collaborator of Institute for Technology and Research - Crete, Greece
- Project within the BRITE frame of programmes with the title «Optimization of perlite process for utilization in new building materials, BE7087. Scientific collaborator of NTUA.
- Investigation of the pressure cone and temperature field of the Fagot A/T missile system. Technical expert collaborator of NTUA.

13. Specific experience (in non-EU member countries)

Country	Date : from (months/year) to (months/year)	Name and brief description of the project
Romania	Sep. 01 to May 02	Environmental Audits in Steel Industry in Hunedoara – Romania. The project was related to measurements and evaluation of contamination of ground and rivers as well as emissions to atmosphere, due to the operation of Siderurgica - Steel Industry in Hunedoara. Involment in the steel production optimization in relation to quality and environmental matters. Steel Structures supervision
China	Summer 2001	Training of power plant engineers on combustion optimisation & emission reduction methods. The courses included new methods for power generation as far as efficiency is concerned (Combined Cycle, Intergtated Coal Gasification, etc.) and emission reduction techniques with the use of Best Available Techniques (BATs, CO2 reduction etc.).
Serbia	November 2003- March 2004	Training of industrial plant engineers on combustion optimisation & emission reduction methods as well as measuring campaign for the evaluation of efficiency and the environmental impact in various industries that included cement industry (TITAN), Vulcan industry (Tigar), Beer Industry (JAGODINSKA PIVARA), Automotive industry (Zastava), Paper & pulp Industry (Milan Stepanović Matroz), Chemical Industry (METHANOL & ACETIC ACID COMPLEX). Environmental Audits in industry and buildings.

14. Professional Experience Record:

Dates from (year) to (year):	06/1982 - 07/1982 & 08/1982 - 09/1982 & 06/1986 - 09/1986
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<p><i>Location:</i> <i>Company:</i></p> <p><i>Position:</i> <i>Description:</i></p>	<p>Heraklion-Crete / Egion/ Greece & Kozani Greece</p> <ul style="list-style-type: none"> Public Power Corporation (PPC). Steam Electric Power Station of Linoperamata (Crete) & SES Aghios Dimitrios, SES Kardias, SES Ptolemais and SES Amynteon (Northern Greece) Hellenic Military Industry <p>trainee Engineer</p> <ul style="list-style-type: none"> Work and familiarization in Combustion Systems, steam generators, steam turbines, lignite feeding and lignite mills, electrostatic precipitators. Participation in <i>acceptance test measurements</i> of PPC power plant (Unit III of SES Ag. Dimitrios). Familiarisation with construction-machining methods and design of new components
<p><i>Dates from (year) to (year):</i> <i>Location:</i> <i>Company:</i> <i>Position:</i> <i>Description:</i></p>	<p>10/1986 - 12/1986 & 1/1987 - 09/1988 & 09/1988 - 05/1994</p> <p>London and Athens</p> <p>National Technical University of Athens and Imperial College</p> <p>Freelance Mechanical Engineer, responsible for EEC Programms</p> <ul style="list-style-type: none"> Design and commissioning of various test facilities for CE marking (boilers) and other studies for steam boilers and relevant systems. More than 32 years involvement in measurements of boilers of various sizes (10kW to MWth) and relevant evaluation. <i>Design and supervision</i> for the <i>construction</i> of measuring system for coal combustion measurements <i>Detailed design</i> of the coal burners & <i>fluid mechanics</i> and <i>combustion</i> measurements (e.g. of pollutants etc.). The measurements were performed with a specially developed optical system for the simultaneous measurements of size and velocity of burning coal. The system was designed and supervised during its construction. In addition, special software in machine language for PDP-11 (control of counter and transient recorder via DMA and IEEE ports) and RATFOR for data acquisition and process.
<p><i>Dates from (year) to (year):</i> <i>Location:</i> <i>Company:</i> <i>Position:</i> <i>Description:</i></p>	<p>05/1994 - 12/1995</p> <p>Kozani and Athens Greece</p> <p>Hellenic Army and Research Centre of Hellenic Army</p> <p>Director of the engineering bureaux of 1st Greek Army Corps. Research Engineer at Research Centre of Hellenic Army.</p> <p>Head of Metallic Constructions Department that performed constructions for all the 1st Hellenic Army Corps. Involvement on special projects providing technical consultancy such as engineering support for the operation of multiple launchers, design and commissioning of various power plants installations (of various power output), design and test of night vision cameras, cryptographic apparatuses etc. for the needs of the Greek Army.</p>
<p><i>Dates from (year) to (year):</i> <i>Location:</i> <i>Company:</i> <i>Position:</i></p>	<p>02/1996 - 07/1999</p> <p>Athens</p> <p>TÜV Hellas S.A.</p> <ul style="list-style-type: none"> Head of Energy and Environment Section TÜV CERT Lead Auditor for Quality Systems & Environmental Management Systems. <i>Director</i> of the CE Section of TÜV Hellas S.A., for hot water boilers and gas apparatuses. As head of the CE marking - approval section for hot water boilers & gas apparatuses (according to relevant EU Directives: EC 92/42 & EC 90/396), conducted Inspections of product (in collaboration with accredited laboratories) and System Audits, to award the customers with CE certification. <i>Director</i> of the school for vehicle drivers used for the transport of dangerous substances (ADR). Special Training Course for Inspectors on ADR matters in Unna Germany 1995 (TUEV Akademie). Authorised ADR Inspector of the Greek Ministry of Transport and Communications (YME).

<p><i>Description:</i></p>	<p>Project Manager for all the projects undertaken within the company in the Energy and Environment area. Acceptance tests of various power (e.g. SES Ag. Dimitrios V, etc.) and industrial plants in terms of efficiency and environmental impact. Detailed studies for district heating systems and other thermal plants. Isokinetic measurements (VDI2066) for dust emissions at various plants. (List of projects is at the end eg. PPC power plants, oil extraction unit in Heraklion -Crete).</p>
<p><i>Dates from (year) to (year):</i> <i>Location:</i> <i>Company:</i> <i>Position:</i> <i>Description:</i></p>	<p style="text-align: center;">01/1987 – today</p> <p style="text-align: center;">Athens</p> <p style="text-align: center;">Freelance Mechanical Engineer</p> <p>Freelance Mechanical Engineer</p> <ul style="list-style-type: none"> • Special Consultant of TUEV Österreich Hellas, on Energy and Environmental matters. • <i>Design and evaluation</i> of a new low emission burner using fuels of low calorific value and <i>waste fuels</i> together with coal as main fuel. The project includes design of auxiliary equipment (fuel feeding system, exhaust gas system including the precipitators as well as all the needed mechanical components for the <i>fluid mechanics</i> and <i>combustion</i> measurements). Project funded by General Secretariat of Ministry of Development - Greece. Collaborator of Institute for Technology and Research - Crete, Greece. Application of the design in cement industry. • <i>Design, commissioning and evaluation</i> of a small (40kW thermal input) experimental furnace for perlite. The project included the design of the low emission swirl stabilised burner, automation - control system of the furnace and the perlite feeding apparatus. The project was within the BRITE frame of programmes with the title «Optimization of perlite process for utilization in new building materials», BE7087. Scientific collaborator of NTUA. • Design and construction supervision of metallic constructions for crane bridges manufacturers (eg. 2π Ltd; this company has workshop in Inofita). Preparation of welding procedures for all the metallic constructions of the company as well as construction supervision and assembly of all types of crane bridges. • Special project for the <i>measurement</i> and the evaluation of the thermal and pressure cone formed by a missile. Design of the measurement and triggering system. (Hellenic Army). • <i>Teaching</i> in special courses on steam boilers and steam turbines, coal combustion and applications – improvements of efficiency and emissions for large coal and lignite fired power plants. The courses are organized by Public Power Corporation (PPC) for the engineers working in power stations. • Study for the emissions from power plants with total thermal output over 50MW_{th}. (Ministry of Environment and Public Works). (for application of relevant directive EC 96/61 IPPC) • Professor at <i>Hellenic Air Force Academy</i> on Combustion, Boilers, Heating, Cooling and Air Conditioning. • Preliminary study for a waste (RDF) combustion power plant in greater Athens area (25MW_{el}). • Design and commissioning of several type of electro-mechanical engineering projects for industry and buildings. Co-generation & waste (RDF) combustion power plant studies. • <i>Design and evaluation</i> of a new low emission burner using fuels of low calorific value and <i>waste fuels</i> together with coal as main fuel for power and process industry. • <i>Teaching</i> in special courses on welding procedures and hoisting equipment • <i>Teaching</i> in special courses on combustion improvements of efficiency and emissions for large coal and lignite fired power plants. Energy conservation. Measurements techniques for Emissions and Energy studies. The courses are organized by the Greek Institute of Chemical Engineers. • Special technical evaluator of the <i>Greek Ministry of Development</i> and for the National Energy Program. • Acceptance tests for power plants conventional (SES Aghios Dimitrios V) and

	<p>combined cycle (SES Lavrio IV, SES Komotini I, Power Plant Atherinolakkos).</p> <ul style="list-style-type: none"> • Large Experience in Boiler Inspection (as TUEV Inspector and then as ESYD Assessor during evaluation of inspection bodies), specific work on optical inspection of welds in boilers etc. • Preliminary design of lignite Power Plant (2X280MWel) in Congo. The study included the High Voltage (400kV) Line as well as the mines exploration design. • Technical Lead Assessor of the National Accreditation System of Greece (NAS) for Assessing Inspection, Certification Bodies & Laboratories (ESYD). The subjects covered are all kind of Inspection (ISO17020) [including Vehicle Technical Inspection Centres -KTEO] Management Systems (ISO17021 for ISO9001, ISO14001, EMAS, ISO50001, ISO39001, ISO18001 etc), Personnel Certification (ISO17024)& Laboratories (ISO17025). • Main subcontractor of Atkins- Exergia for the due diligence of the power Plants in Greece prior the first privatization of PPC. Special involvement in all the lignite fired power plants. • Power Plant Renovation Evaluation, as subcontractor of EBRD-LDK. Pavlodar Power Plant 400MWel + 400 MWth, KAZAKHSTAN. • Environmental -Due diligence Audits in Steel Industry in Hunedoara - Romania • ADR special Inspector licencee • Special Greek State licensee for the detailed design of public works in the area of Mechanical and Electrical Engineering and Power Generation (highest degree – large scale installations). • Training courses on steam boilers, emission reduction techniques, optimal design of combustion equipment, energy efficiency, energy management in industry and buildings for the Technical University of Chalkis. • <i>Teaching</i> in special courses, organized by Public Power Corporation (PPC) for power plant engineers, on combustion, improvement of efficiency and emissions for large coal and lignite fired power plants. • Energy conservation. Measurements techniques for Emissions and Energy studies. Courses in industrial sector, organized by Institute of Chemical Engineers • Energy studies for District Heating Systems in Amynteo, Kozani, Florina. Acceptance tests for 2X27.5 MWth + 1X 24.5MWth for Boilers in Kozani and Ptolemais District Heating Systems • Environmental Audits in PPC Power Stations - Greece • Measurements in Power Plants & Training Courses on Clean Coal and Reduction Emissions for Chinese Power Plant Engineers • Preliminary Study of District Heating of Florina • Study for the RAE Bid & for the New Power Plant for Rhodes 150MWel • Efficiency Measurements (Boiler, Turbine, Generator, Condenser, Cooling Tower etc.) & Preliminary Design for DESOx of SES Magalopolis 300MWe. Dust load measurements according to VDI2066. • Measurements in Power Plants & Training Courses on Energy Audits in Serbia • Efficiency and emission measurements for acceptance tests of SES Agios Dimitrios 3 and 5, SES Komotini (Combined cycle), SES Lavrio 4,5 (Combined cycle), SES Atherinolakko (IC Engines). • Efficiency and emission measurements for Preliminary Design of DeNOx measures • Technical Due Diligence for Pavlodar - Energo Plant investment project consisting of the extensive upgrade of the CHP-3. • Boilers' Efficiency and emission measurements in District Heating System of Serres (Combined Heat and Power) and individual boilers from 20kW to 600kW in town of Serres • Preliminary Study for coal fired Power Plant (Fluidised bed) of 2X300MWel in Congo • Efficiency Measurements (Boiler, Turbine, Generator, Condenser, Cooling Tower etc.) & Preliminary Design for DESOx of SES Kosovo B 1 & 2 (2X300MWe). Dust load measurements according to VDI2066.
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- 15. Others:** Over 400 Audits in Quality Assurance Systems and several Enviromental Audits, in Industry and other Companies, as TÜV CERT Auditor.
- 16. NDT:** NDT Level II in PT, MT, UT, RI (ISO 9712). International Welding Engineer
- 17. Publications:**
1. Orfanoudakis, N. and Taylor A.M.K.P.: "Effect of particle shape on the measurement of size", Particle and Particle System Characterisation, 1992.
 2. Orfanoudakis, N. and Hardaloupas, Y., Taylor, A.M.K.P. and Whitelaw, J.H.: "Evaluation of a sizing instrument for non-spherical particles", 3rd World Symposium in Combustion Diagnostic Methods, Scheveningen, 1993.
 3. Orfanoudakis, N. and Taylor, A.M.K.P.: "Evaluation of a sizing anemometer and application to a small scale, swirl stabilised coal burner", 2nd World Symposium on Clean Environment Combustion Technologies, Lisbon, 1993 and then in Clean Combustion Technologies (ISBN 9056996215) Taylor and Francis, Ed. C. Papadopoulos.
 4. Orfanoudakis, N. and Taylor, A.M.K.P.: "Evaluation of an amplitude size anemometer and application to a swirl stabilised coal burner", Combustion Science Technology, Vol. 108, p. 255-277, 1995.
 5. Orfanoudakis N. G., Taylor, A.M.K.P. & Whitelaw J. H.: "Measurements of particle size, velocity and flux in the near burner zone of a model pulverised coal swirl burner", to appear in Combustion and Flame (acceptance note C3538).
 6. Hatziapostolou, G. Themelis and N. Orfanoudakis : "Design and Evaluation Measurements in a multi-fuel swirl-stabilised laboratory burner", 1st Meeting of the Greek Section of the Combustion Institute. Athens, November 1997.
 7. K. Krallis, N.G. Orfanoudakis, M. Founti and G. Seirlis "Investigation of the pressure cone and temperature field of the Fagot A/T missile system".3rd Meeting of the Greek Section of the Combustion Institute. FORTH - CPERI, Thermi, Thessaloniki, 26-27 November 1999.
 8. N.G. Orfanoudakis, A. Hatziapostolou and E. Mastorakos, "Design and evaluation measurements of a small swirl stabilised laboratory burner, fed with coal and or gaseous and liquid fuels". CCT2002 International Conference on Clean Coal Technologies for our future, Sardinia 2002.
 9. N. G. Orfanoudakis, A. Hatziapostolou, E. Mastorakos, K. Krallis, K. Sardi and N. Vlachakis "Experimental and numerical investigations in the near burner region of a versatile multi fuel burner". International Multiphase Conference in Santa-Fe, New Mexico, USA, November 2003.
 10. K. Krallis, N. Orfanoudakis, M. Founti, G. Zannis, N. Vlachakis: "Evaluation of boiler room losses through conventional and infrared camera methods", 3rd Combustion Institute meeting, November 2003, in Patras Greece.
 11. N. G. Orfanoudakis, A. Hatziapostolou, E. Mastorakos, K. Sardi, K. Krallis, N. Vlachakis & S. Mavromatis. "Design, evaluation measurements and CFD modeling of a small swirl stabilized burner". Conference for Numerical Modelling in Engineering, ICCMSE September 2003, pp. 474-478.
 12. N. G. Orfanoudakis, A. Vakalis, K. Krallis, A. Hatziapostolou & N. Vlachakis, "Emission reduction techniques and economics, Part 1: NO_x", Air Pollution 2004, pp. 791-800.
 13. V. D. Tsoukalas, St. A. Mavromatis, N. G. Orfanoudakis, A. K. Baldoukas, "A Study of porosity formation in pressure die casting using the Taguchi approach", IMechE 2004, Proc. Inst. Mech. Eng.rs, Vol. 218, Part B: J. Engineering Manufacture.
 14. N. G. Orfanoudakis, A. Hatziapostolou, K. Krallis, K. Sardi, A. Fatsis, N. Vlachakis, St. A. Mavromatis, V.D. Tsoukalas, "Experimental and numerical investigations in the near burner region of a laboratory scale burner". CCT2005 International Conference on Clean Coal Technologies for our future, Sardinia 2005.
 15. N. G. Orfanoudakis, A. Hatziapostolou, K. Krallis and N. Vlachakis, "Design and evaluation measurements of a

- swirl stabilised laboratory burner". Proc. IMechE 2005, Vol. 219, Part C, J. Mechanical Engineering Science, pp. 1079-1086.
16. N. G. Orfanoudakis, A. HatziaPOSTOLOU, K. Krallis, K. Sardi, N. Vlachakis, St. A. Mavromatis & V. D. Tsoukalas. "Experimental and numerical investigations in the near-burner region of a versatile multi fuel burner" in Computational Methods in Sciences and Engineering (ISBN 9812385959), Editor T. Simos.
 17. St. A. Mavromatis, A. K. Baldoukas, N. G. Orfanoudakis, V. D. Tsoukalas "The curve which defines the fillet shape of the generated gear teeth", IMechE 2005, Proc. Inst. Mech. Eng.rs, Vol. 218, Part B: J. Engineering Manufacture, (pp. 77-86).
 18. N. G. Orfanoudakis, A. HatziaPOSTOLOU, K. Krallis, E. Mastorakos, K. Sardi, D. G. Pavlou, & N. Vlachakis, "Design, evaluation measurements and modelling of a small swirl stabilised laboratory burner". IFRF web Journal, Article Number 200510, December 2005.
 19. P. Zervas, M. Koukou, N. G. Orfanoudakis & N. G. Markatos, "Evaluating low-temperature fuel cells performance for power generation: fluid dynamics study of PAFC systems at the cell level", accepted for publication in Proc. IMechE 2006, Part A.
 20. M. Gr. Vrachopoulos, M. K. Koukou, N. W. Vlachakis, N. G. Orfanoudakis, G. Thanos, A.E. Filios & J. Kaldelis, "Developing efficient tools to evaluate indoor environment issues: on site measurements and numerical simulation of indoor air flow in a test room", 2005 WSEAS Int. Conf. on Environment, Ecosystems and Development, Venice, Italy, 2-4 November 2005, pp. 272-277.
 21. A. Fatsis, N. G. Orfanoudakis, D. G. Pavlou, A. Panoutsopoulou, N. Vlachakis, «Unsteady flow modelling of a pressure wave supercharger», Journal of Automobile Engineering, Part D -2006, Vol. 220, issue 2 (pp. 209-218).
 22. Founti, N.G. Orfanoudakis and K. Krallis : "A small Diameter gas burner for a scale model experimental furnace", 1st Meeting of the Greek Section of the Combustion Institute. Athens, November 1997.
 23. K. Krallis and N. Orfanoudakis, "Basic characteristics of liquid and gaseous fuels", 2nd meeting of the Greek Section of the Combustion Institute. Athens 22nd May 1998.
 24. E. Kakaras and N. Orfanoudakis, "Gas Apparatus - product certification", 2nd meeting of the Greek Section of the Combustion Institute. Athens 22nd May 1998.
 25. D. Noussas, N. Orfanoudakis and A. Vakalis "Optimization studies for the installation and operation costs of District Heating Systems", One day meeting for District Heating and Co-generation in connection with optimization of the use of Greek solid fuels. Ptolemais 30th of May 1998.
 26. N. Orfanoudakis and A. Vakalis "Pre-Drying, the most effective method for upgrading the Greek Lignite". One day workshop on "Pre-drying Processes for the efficient and clean Utilisation of Brown Coals in the Enlarged EU Market", Athens April 26th, 1999.
 27. N. Orfanoudakis and A. Vakalis "The Co-generation of Heat and Electricity in large buildings with use of natural gas – New Athens Airport". Conference for Energy Saving Techniques organised by the Technical Chamber of GREECE – TEE, Athens 18-19 October 2000.
 28. A. Vakalis and N. Orfanoudakis "District Heating of towns with Co-generation of Heat and Electricity and heat pumping from lakes – application for the town of Kastoria". Conference for Energy Saving Techniques organised by the Technical Chamber of GREECE – TEE, Athens 18-19 October 2000.
 29. N. Orfanoudakis, K. Krallis, A. Vakalis, A. HatziaPOSTOLOU, N. Vlachakis: "Emission Reduction Techniques & Economics; the IPPC EC Directive", "Air Pollution 2003, Catania", September 2003 Italy.
 30. K. Krallis , N. Orfanoudakis, I. Statharas. "Selection of the optimum NDT methods for determination of steam boiler Remaining Life". 3rd International NDT conference, October 2003 in Chania Greece.

31. N. Orfanoudakis, A. HatziaPOSTOLOU, E. Mastorakos, K. Sardi, K. Krallis & N. Vlachakis "Velocity / temperature measurements in a swirl stabilised laboratory burner" Combustion Institute meeting, November 2003, in Orleane France.
32. N. Orfanoudakis and K. Krallis "Control and automation of steam boilers in the process industry". 2nd conference on Automation and control Technologies, Salonika October 1998.
33. N. G. Orfanoudakis, K. Krallis, A. Vakalis, A. HatziaPOSTOLOU and N. Vlachakis: "Emission Reduction Techniques and Economics". International Exhibition and Conference on Environmental Technology, Modern Power Plants Symposium, London 2005.
34. N. G. Orfanoudakis, A. Vakalis, K. Krallis, A. HatziaPOSTOLOU, and N. Vlachakis: "Emission reduction techniques and economics in coal-fired power plants". Power Plant Symposium in Serbia & Monte Negro, November 2004.
35. N. G. Orfanoudakis, K. Krallis, "SELECTION OF THE OPTIMUM NDT METHODS FOR DETERMINATION OF STEAM BOILER REMAINING LIFE", The 8th International Conference of the Slovenian Society for Non-Destructive Testing Application of Contemporary Non-Destructive Testing in Engineering September 1-3, 2005, Portorož, Slovenia.
36. M. Gr. Vrachopoulos, M. K. Koukou, R. Krikkis, G. Thanos, P. Kourtis, N. G. Orfanoudakis, A.E. Filios & J. Kaldelis, "Intergated approach for the assessment of indoor air quality in urban and rural environment", 2005 9 CEST, Rhodes - Greece, November 2005.
37. N. G. Orfanoudakis, K. Krallis "The application of NDT methods in periodic inspection of pressure equipment", The 5th National Conference of the Hellenic Society for Non-Destructive Testing "Non-Destructive Testing: Certification, Applications, New Developments" November 18-19, 2005, Athens, Greece.
38. N. G. Orfanoudakis, A. HatziaPOSTOLOU, K. Krallis, M.K. Koukou, A.D. Xenogiannis, K. Sardi, N. Vlachakis, M.Gr. Vrachopoulos, D. Chatzifotis, P. Panagiotidis "Investigation of safe combustion conditions in a laboratory burner", 1st International Conference on Experiments/Process/System Modelling/Simulation/Optimization, 1st IC-EpsMsO, Athens, 6-9 July, 2005.
39. N. G. Orfanoudakis, K. Krallis, "Analysis of the uncertainty for the measurement of dust load in furnaces' outlet", National Foundation for Nuclear Research "Demokritos, 2005.
40. International Conference on Heat Transfer, Thermal Engineering and Environment, Elounda, Agios Nikolaos, Crete Island, Greece, August 21-23, 2006 η εργασία: A. HatziaPOSTOLOU, N.G. Orfanoudakis, M.K. Koukou, G. Raptis, CFD modeling of the swirl-stabilised flame produced by a laboratory-scale combustor: selection of the turbulence model.
41. ENERGY and ENVIRONMENTAL SYSTEMS (EE'06), Chalkida, Evia Island, Greece, May 8-10, 2006: A. HatziaPOSTOLOU, K. Krallis, N. G. Orfanoudakis, M. K. Koukou, D. Chatzifotis, G. Raptis, Numerical Prediction of the Flow Field produced by a Laboratory-Scale Combustor: a Preliminary Isothermal Investigation.
42. N. G. Orfanoudakis, A. Vakalis+, K. Krallis, A. HatziaPOSTOLOU, N. Vlachakis "EMISSION REDUCTION TECHNIQUES & ECONOMICS IN COAL FIRED POWER PLANTS.". Modern Power Plants Symposium 2005, London.
43. "EMISSION REDUCTION TECHNIQUES & ECONOMICS IN COAL FIRED POWER PLANTS." focused on NO_x in "Lignite and Natural Gas in Electricity Production". Conference organised by Technical Chamber of Greece, Athens 9-10 June 2005.
44. N. G. Orfanoudakis, K. Krallis "The application of NDT methods in periodic inspection of pressure equipment", The 5th National Conference of the Hellenic Society for Non-Destructive Testing "Non-Destructive Testing: Certification, Applications, New Developments" November 18-19, 2005, Athens, Greece.

45. N. G. Orfanoudakis, K. Krallis, "SELECTION OF THE OPTIMUM NDT METHODS FOR DETERMINATION OF STEAM BOILER REMAINING LIFE", The 8th International Conference of the Slovenian Society for Non-Destructive Testing Application of Contemporary Non-Destructive Testing in Engineering September 1-3, 2005, Portorož, Slovenia.
46. "Investigation of Safe Combustion Conditions in a Laboratory Burner". N. G. Orfanoudakis, A. HatziaPOSTOLOU, K. Krallis, M.K. Koukou, A.D. Xenogiannis, N. Vlachakis, M.Gr. Vrachopoulos, D. Chatzifotis, P. Panagiotidis. 1st International Conference on Experiments/Process/System Modelling /Simulation/Optimization (1st IC-EpsMsO) in Athens, Greece, July 6-9, (2005).
47. "Experimental and numerical investigations in the near burner region of a laboratory scale burner". N. G. Orfanoudakis, A. HatziaPOSTOLOU, K. Krallis, K. Sardi, A. Fatsis, N. Vlachakis, St. A. Mavromatis, CCT2005 International Conference on Clean Coal Technologies for our future, Sardinia 2005.
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49. Design, evaluation measurements and modelling of a small swirl stabilised laboratory burner. N. G. Orfanoudakis, A. HatziaPOSTOLOU, K. Krallis & N. Vlachakis. European Meeting of the Combustion Institute, Crete 2007.
50. CFD Modeling of the Flow Field inside a Furnace Produced by a Laboratory-Scale Combustor. A. HatziaPOSTOLOU, N.G. Orfanoudakis, M.K. Koukou, G. Raptis. European Meeting of the Combustion Institute, Crete 2007.
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52. The application of Quality Assurance in NDT Inspection, Konstantinos Krallis, Nikolaos G. Orfanoudakis. 4th International Conference on NDT, October 2007 Crete.
53. Metrological Parameters for the evaluation of uncertainty on the verification of CO₂ emissions. Part 1. Power Plants. K. Krallis, D. Sotiropoulos, Prof. Dr.-Ing N. G. Orfanoudakis. 3^o National Metrology Conference, Salonica 2007.
54. Interlaboratory tests- Emissions Measurements at the exit of hot water boiler. K. Krallis, Prof. Dr.-Ing N. G. Orfanoudakis, Th. Papastergiadis. 3^o National Metrology Conference, Cyprus 2010.
55. Metrological Parameters for the evaluation of uncertainty on the verification of CO₂ emissions. Part 2. Process Installations. K. Krallis, Prof. Dr.-Ing N. G. Orfanoudakis. 3^o National Metrology Conference, Cyprus 2010.
56. The Application of NDT on Hoisting Equipemnt, Chr. Ziogas, Konstantinos Krallis, Nikolaos G. Orfanoudakis. 7th NCNDT of HSNT Athens, 15-16 October 2010.
57. The Application of NDT & use of Standards on Boilers, Chr. Ziogas, Konstantinos Krallis, Nikolaos G. Orfanoudakis, A. Ksenogiannis. 7th NCNDT of HSNT Athens, 15-16 October 2010.
58. Statistical Analysis of Emissions Measurements in Interlaboratory tests. K. Krallis, Prof. Dr.-Ing N. G. Orfanoudakis, Th. Papastergiadis. 4^o National Metrology Conference, NTUA Zografos-Campus, Athens 3-4 February 2012.
59. Comparison of primary and non-intrusive methods for the measurement of flow rate. Sensitivity tests for ultrasonic flow rate measurement. K. Krallis, Prof. Dr.-Ing N. G. Orfanoudakis, Chr. Ziogas. 4^o National Metrology Conference, NTUA Zografos-Campus, Athens 3-4 February 2012.
60. **ΕΚΤΙΜΗΣΗ ΑΒΕΒΑΙΟΤΗΤΑΣ ΣΤΙΣ ΔΙΑΣΤΑΣΕΙΣ ΑΣΥΝΕΧΕΙΩΝ ΠΟΥ ΠΡΟΣΔΙΟΡΙΖΟΝΤΑΙ ΜΕ ΜΗ ΚΑΤΑΣΤΡΕΠΤΙΚΕΣ ΔΟΚΙΜΕΣ**, Κωνσταντίνος Κράλλης, Νικόλαος Γ. Ορφανουδάκης. 6ο Τακτικό

Συνέδριο Μετρολογίας, 13-14 Μαΐου 2016, Μετρολογία 2016.

61. Interlaboratory tests- Emissions Measurements at the exit of hot water boiler. K. Krallis, Prof. Dr.-Ing N. G. Orfanoudakis, Th. Papastergiadis. Metrology 2018, Athens, May 2018.

KEY Projects undertaken by Dr.-Ing. N.G. Orfanoudakis			
PROJECT	Company – Institute	Remarks	
		Manmonths	Budget
Study for steam boiler for Optimisation and rational use of energy	LIZAS S.A.	2	500000 Dra
Preliminary Study for Co-generation of 11MW thermal power (steam) and 2MW electrical power.	ATHENIAN BREWERY (AMSTEL-HEINEKEN) S.A.	2	600000 Dra
Detailed Design and Commissioning of a test bench for hot water boilers	ELOT and National Technical University of Athens (NTUA)	3	500000 Dra
Detailed Design and Commissioning of a test bench for radiators	Tsonopoulos Ltd	1	300000 Dra
Certification Measurements of hot water boilers	Various Greek Manufacturers of Hot water boilers	20	4000000 Dra
Measurements and Evaluation of various heat recovery equipment.	NTUA - Thermal Engineering Section	1	200000 Dra
Study for the modification of various steam operated equipment.	NTUA - Thermal Engineering Section	1	200000 Dra
Detailed Engineering Design and Measurements of new hot water boilers with high efficiency and up to 70000kcal/h.	KLIMAGERAEETE S.A.	5	1530000 Dra
Detailed Studies for various electromechanical Projects e.g. electrical substation (22kV / 0.4kV) Study for the modification of existing steam boiler	Various Customers as for example: a) NEOKEM S.A. b) Hellenic Air Force	30	10000000 Dra
		3	800000 Dra
		1	100000 Dra
<i>Design and supervision</i> for the <i>construction</i> of the optical system for the simultaneous measurement of size and velocity of coal particles (or generally of non-spherical particles)	IMPERIAL COLLEGE University of London and NTUA	20	300000 sterling pounds
<i>Detailed design</i> of the coal burners, the feeding system, the exhaust system including the precipitators as well as all the needed mechanical components for the <i>fluid mechanics</i> and <i>combustion</i> measurements (e.g. of pollutants etc.). The project also included efficiency and emission measurements	IMPERIAL COLLEGE University of London and NTUA	40	325000 sterling pounds

<i>Design and evaluation of a new low emission burner using fuels of low calorific value and waste fuels together with coal as main fuel. The project includes design of auxiliary equipment (fuel feeding system, exhaust gas system including the precipitators as well as all the needed mechanical components for the fluid mechanics and combustion measurements)</i>	ITE-IESL TITAN CEMENT COMPANY S.A.	8	2000000 Dra
<i>Design, commissioning and evaluation of a small (40kW thermal input) experimental furnace for perlite (BRITE program). The project included the design of the low emission swirl stabilised burner, automation - control system of the furnace and the perlite feeding apparatus</i>	NTUA _ Thermal Engineering Section BE7087	8	2000000 Dra
<i>Design of Natural Resin process equipment.</i>	ANDRIOTIS	4	1500000 Dra
<i>Design Approval of Direct Dryers of Agricultural Products of the Static Tray Type with the use of LPG.</i>	Thermie Project (IN/00196/94/HE)	10	14000000 Dra
<i>Measurements of the efficiency of hot water boilers (3X10MW) for the support of the peak load of Kozani District Heating System.</i>	DEYAK	1	2000000 Dra
<i>Detailed Study of a pilot plant (0.6MW) for the District Heating and Cooling of Buildings with the use of Biomass.</i>	Centre of Renewable Energy Sources (CRES)	5	8000000 Dra
<i>Detailed Study for test bench of hot water and steam (10bar) boilers using biomass, liquid and gas fuels.</i>	Centre of Renewable Energy Sources (CRES)	6	8000000 Dra
<i>Preliminary Study of the District Heating Plant of Amynteon, Filotas and Levea</i>	Municipality of Amynteon	4	30000000 Dra
<i>Preliminary Study of the District Heating Plant of Lavrion</i>	Municipality of Lavrion	2	-
<i>Various Measurements of Energy and Environmental parameters for various types of industries and hotels.</i>	CINAR S.A.-NOMICOS S.A. (Tomato process factory)., Giannoulis S.A. (Olive seed oil production)., KNAUF S.A. (Gypsum products), KNOSSOS ROYAL, CRETAN VILLAGE etc.	14	3000000 Dra

Study for the new technologies for the minimization of the emissions of the Industries connected to energy production EEC Directive 96/61/EC 24-9-96 (IPPC).	Greek Ministry for the Environment and Public Works	8	20000000 Dra.
Special Technical Evaluator for the National Energy Program.	Greek Ministry of Development	1	
Special Measurements and evaluation of thermal and pressure cone behind a missile.	Greek Army General Staff, Technical Corps	8	9000000Dra.
Study for the new technologies for the minimization of the emissions of the Industries connected to mineral production EEC Directive 96/61/EC 24-9-96 (IPPC).	Greek Ministry for the Environment and Public Works	8	25000000 Dra.
Teaching duties at National Technical University of Athens (NTUA), for EU programmes on Coal Combustion and emission reduction.	NTUA	24	-
Technical advisor duties at National Technical University of Athens (NTUA)	NTUA	24	
Study for the modification of the steam plant of NTUA	NTUA	2	300000 Dra.
ISO9000 Audits	TUEV Hellas in over than 250 companies	50	40000000 Dra.
Over 100 Electro-Mechanical studies and Erection supervision for Industry and Private Sector (Heating, Ventilation, Air-conditioning, special military equipment – crypto equipment)	Various customers and the Greek Army-General Staff	190	120,000,000 Dra.
Dust Measurements according to VDI2066 (Electrostatic Precipitators and filter bags)	Giannoulis S.A., Tsekouras S.A., PPC-SES Aghios Dimitrios V, Pesineue_Aluminium Hellas, Halyps Cement Company, PPC-SES Aghios Dimitrios III, Diamant Board, Diamant Winter	15	70000000 Dra.
Power Plant Renovation Evaluation	EBRD, Pavlodar Power Plant 400MWel + 400 MWth	3	500000 Euros

Acceptance Tests (efficiency and emission measurements)	<ul style="list-style-type: none"> ➤ Unit V PPC-SES Aghios Dimitrios (Boiler 1150MW_{th}, Turbine, Preheaters, Generator 376.5MW_{el}, Mills, electrostatic precipitators, emission measurements), ➤ Unit III PPC-SES Aghios Dimitrios (Boiler 950MW_{th}, Turbine, Preheaters, Generator 310MW_{el}, Mills, electrostatic precipitators, emission measurements) ➤ Unit IV PPC-SES Laurio (Boiler, Steam and Gas Turbines, emission measurements, Generators 550.5MW_{el}) ➤ Unit I PPC-SES Komotini (Boiler, Steam and Gas Turbines, emission measurements, Preheaters, Generators 476.5MW_{el}) ➤ Atherinolakkos Power Plant _Crete 2X51Mw_{el} (Diesel Engines, Steam Boilers, emission measurements, Generators, HV Station) 	12	300000000 Dra.
Acceptance Tests of District Heating Boiler 2 X 27.5MW _{th} , in Kozani and Ptolemais and 3 X 10MW _{th} in Kozani. (efficiency and emission measurements)	LOOS Hellas S.A. ARXITEX S.A.	0,1 0,1	1000000 Dra. 900000 Dra
Detailed Study of District Heating of Amynteon, Filotas, Levea	DETEPA, ANFLO S.A.	8	25000000 Dra.
Measurements of VOC's in fuel DEPOT of SHELL	SHELL	0,1	500000 Dra.
Acceptance tests for blowers	Chatziloukas S.A., Halyps Cement	0,5	2500000 Dra.
Acceptance tests for Air Conditioning	CITROEN Hellas	0,1	500000 Dra.
Study on Gasification of Greek Lignites, effect on emissions	British Gas Lurgi	12	20000000 Dra.
Measurements and acceptance tests of Electrical Boards in medium Voltage during earth quake laboratory simulation.	ABB Hellas S.A.	0,2	2000000 Dra.
Preliminary Study for the EMAS system of PPC-SES Megalopolis_B	PPC - Production Department	1	2000000 Dra.
Preliminary Study of District Heating of Servia – Platanorema	Kozani Regional Authority	10	20000000 Dra.
Preliminary Study for Power Station (Fluidised bed) of 30MW _{el} with the use of RDF (waste)	Attika Regional Authority	10	20000000 Dra.

Detailed Study of District Heating of Megalopolis	Megalopolis Regional Authority, X. Konstantinidis S.A.	8	25000000 Dra.
Environmental -Due diligence Audits in Steel Industry in Hunedoara - Romania	European Union project	4	5000000 Dra.
Environmental Audits in PPC Power Stations - Greece	PPC – WS Atkins Ltd., Exergia S.A.	4	5000000 Dra.
Measurements in Power Plants & Training Courses on Clean Coal and Reduction Emissions for Chinese Power Plant Engineers	LIEP China / European Union project	1	2000000 Dra
Preliminary Study of District Heating of Florina	Florina Regional Authority	10	20000000 Dra.
Study for the RAE Bid & for the New Power Plant for Rhodes 150MW _{el}	EON & Eunice Energy Ltd	6	150000 EURO
Efficiency Measurements (Boiler, Turbine, Generator, Condenser, Cooling Tower etc.) & Preliminary Design for DESOx of SES Magalopolis 300MW _e . Dust load measurements according to VDI2066.	PPC Power Plant Megalopolis (lignite fired)	2	70000EURO
Measurements in Power Plants & Training Courses on Energy Audits in Serbia	SEEA / European Union project	1	100000 EURO
Efficiency and emission measurements for Preliminary Design of DeNOx measures	➤ Unit V PPC-SES Aghios Dimitrios (Boiler 1150MW _{th} , Turbine, Preheaters, Generator 376.5MW _{el} , Mills), Electrostatic precipitators	0.5	20000 EURO.
Technical Due Diligence for Pavlodar - Energo Plant investment project consisting of the extensive upgrade of the CHP-3.	➤ European Bank for Reconstruction and Development	1	20000 EURO
Boilers' Efficiency and emission measurements in District Heating System of Serres (Combined Heat and Power) and individual boilers from 20kW to 600kW in town of Serres	➤ ITA –District Heating System of Serres	1	50000 EURO
Preliminary Study for coal fired Power Plant (Fluidised bed) of 2X300MW _{el} in Congo	Gecamines	20	1700,000,000 Euros
Efficiency Measurements (Boiler, Turbine, Generator, Condenser, Cooling Tower etc.) & Preliminary Design for DESOx of SES Kosovo B 1 & 2 (2X300MW _e). Dust load measurements according to VDI2066.	KEK Kosovo	1	30000 Euros