

Contacts:

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Education:

- Degree in Mechanical Engineering obtained at the Politecnico di Milano disputing a thesis on natural gas fired combined cycles for electric power generation.
- PhD degree in Energy Engineering obtained at the Politecnico di Milano discussing the thesis “Humid air gas turbine cycle (HAT) fired with natural gas or integrated with coal gasification processes”.

Main steps in academic career:

- In 1996 awarded with a 2 years post-doc fellowship granted by the Italian Government for research activity about fossil fuel fired power plants with low CO₂ emissions.
- From 1999 to 2002, assistant professor of "Fluid machinery" at the Department of Energetics, Politecnico di Milano.
- In 2001, visiting research staff member at the Princeton Environmental Institute, Princeton University, New Jersey, USA.
- From 2003 to 2015, associate professor of "Energy systems and power generation" at the Department of Energy, Politecnico di Milano.
- Current position, professor of "Energy systems and power generation" at the Department of Energy, School of Industrial Engineering and Information Technology, Politecnico di Milano.

Current teaching assignments:

Lecturer of the following courses held at the Politecnico di Milano

- Fundamentals of energy conversion, (8 Credits) for students in Environmental Engineering (BSc level)
- Advanced energy systems (8 Credits) for students in Energy Engineering (MSc level)

Management positions held in academic institutions:

- Member of the steering committee of the Department of Energetics of Politecnico di Milano (2006-2007)
- Member of the steering committee of the Department of Energy of Politecnico di Milano (2011-2016)
- Quality Assurance Responsible for the course in Energy Engineering (since 2013)

Participation in international research projects funded by peer reviewed calls:

- Italian delegate in the Management Committee of the COST action 543 “Research and Development of Bioethanol Processing for Fuel Cells” (2007-2009)
- Responsible of the Work Package "Membrane integration in power generation plants" of the FP7 DEMOYS "Dense Membranes for Efficient Oxygen and Hydrogen Separation" project (2010-2014)
- Co-responsible of the Work Package "Technology implementation plan for a large scale CLC-based power plant" of the FP7 Democlock "Demonstration of a cost effective medium size

Chemical Looping Combustion through packed beds using solid hydrocarbons as fuel for power production with CO₂ capture" project (2011-2016)

- Member of the Politecnico di Milano research team of the FP7 ASCENT "Advanced Solid Cycles with Efficient Novel Technologies" project (2014-2016)

Experiences in evaluation of international research projects:

- Evaluator in the field of "Clean Coal Technologies" for the selection process of research projects submitted for funding to the 7th Framework Programme of European Union (2008), Brussels, Belgium, November 2008.
- Member of the Review panel of the projects funded by the US Department of Energy – National Energy Technology Laboratory (NETL), in the Advanced Gas Turbine field (2010), Morgantown (WV), USA, April 2010
- Evaluator for the selection process of research projects submitted for funding to the Global Climate and Energy Project (GCEP) at Stanford University (2011)
- Evaluator for the selection process of research projects submitted for financial support to the Technology Foundation STW funded by the Dutch Government (2012)

Experience in evaluation of scientific publications:

- Associate editor (two triennial terms: 2009-2014) of the "Journal of Engineering for Gas Turbines and Power" (ASME Transactions). Major subject: Electric Power
- Reviewer of technical papers for the following scientific reviews:
 Journal of Engineering for Gas turbine and Power
 International Journal of Greenhouse Gas Control
 International Journal of Energy Research
 International Journal of Global Warming
 International Journal of Hydrogen Energy
 Journal of Solar Energy Engineering
 Applied Energy
 Applied Thermal Engineering
 Energy - The International Journal
 Energy Conversion and Management
 Energy & Fuels
 Fuel Processing Technology
 Journal of Power and Energy
 Journal of Power Sources
 Journal of Power Technologies
 Chemical Engineering Communications
 Chemical Engineering Science
 Advances in Environmental Research
 Fuel Processing Technology
 Renewable Energy
- Reviewer and session chair/organizer for several IGTI Turbo-Expo Congresses and International Conferences on Greenhouse Gas Technologies (GHGT)

Other responsibilities:

- Invited speakers at the "Conference on cycles for low carbon dioxide production", School of Engineering, Cranfield University, Cranfield (United Kingdom), March 2003.
- Invited speakers at the "Panel on CO₂ compression", ASME Turbo Expo 2007 Conference, Montreal (Canada), May 2007.
- Scientific director of the LEAP Laboratory (Piacenza Laboratory for Energy and Environmental Studies) of Politecnico di Milano since 2008

Current memberships:

- Member of the American Society of Mechanical Engineers (ASME)
- Member of the International Gas Turbine Institute (IGTI) "Cycle Innovation" committee
- Member of Zero Emission Platform (ZEP)

Acknowledgments:

- PhD thesis awarded with ENEA (Italian National Agency for Energy and Environment) prize in 1998
- Three "Best paper awards" received at the ASME International Gas Turbine & Aeroengine Congress:
 - 1993: award appointed by the Electric Utilities & Cogeneration Committee to the paper "Predicting the Ultimate Performance of Advanced Power Cycles Based on Very High Temperature Gas Turbine Engines"
 - 2003: award appointed by the Electric Power Committee to the paper "A Thermodynamic Analysis of Different Options to Break 60% Electric Efficiency in Combined Cycle Power Plants"
 - 2005: award appointed by the Coal, Biomass & Alternative Fuels Committee to the paper "Carbon-free Hydrogen and Electricity from Coal: Options for Syngas Cooling in Systems Using a Hydrogen Separation Membrane Reactor"
- "Carmelo Caputo" award appointed for the Energy production and conversion sector, at the 63° Congresso Nazionale ATI (Italian Thermal Engineers Association Congress), to the paper "Innovative process for oxygen production at very low power consumption", 2008

Publications:

During his entire career, the Paolo Chiesa was author or co-author of over 100 publications in the field of energy conversion.

Indexes of scientific research impact (accessed on 11 May 2016):

Thomson Reuters Web of Science database

Documents: 65

1387 total citations by 931 documents

h-index : 19

Scopus database

Documents: 83

1580 total citations by 1076 documents

h-index: 19

Research contracts with industrial companies and public organizations:

A substantial research activity has been carried out by the applicant in the frame of research contracts awarded to the Department of Energy at Politecnico di Milano. The following list includes the most relevant ones:

- Performance assessment of Integrated Gasification Combined Cycle (IGCC) power plants,

- performed on behalf of Eniricerche (February 1994).
- Improving the energy balance of the WSA-SNOX process for simultaneous SO_x and NO_x abatement from coal fired boiler flue gas, performed on behalf of Enel (May 1995).
 - Energy recovery from liquefied natural gas (LNG) re-gasification process, carried out on behalf of Enel (December 1995).
 - Estimate of the actual emission factors of the regional vehicle fleet from results of the "blue label" inspection and maintenance program, performed on behalf of Regione Lombardia (November 1999).
 - Study and design of a gas turbine cycle with pre-combustion CO₂ capture, performed on behalf of ENEA (April 2001).
 - Technical and environmental analysis of using hydrogen as gas turbine fuel, performed on behalf of CESI (December 2001).
 - Perspective of the electricity generation sector in Italy over the next 20 years, performed on behalf of CESI (March 2002).
 - Zero CO₂ emissions hydrogen production from natural gas by metal oxides reduction-oxidation (redox) systems, performed on behalf of Enitecnologie (October 2004).
 - Application of H₂ separation membranes in low CO₂ emission IGCC plants, performed on behalf of CESI (June 2005, principal investigator).
 - Optimization of energy production in industrial districts, performed on behalf of CESI (October 2005, principal investigator).
 - Outlook on power generation technologies at year 2030, performed on behalf of CESI (February 2006, principal investigator).
 - Comparison of models for evaluation of the thermodynamic properties of H₂O, NH₃ and CO₂ mixtures at typical conditions of urea production plants, performed on behalf of Snamprogetti (October 2007, principal investigator).
 - Production of liquid fuels from biomass by thermo-chemical processes, performed on behalf of Eni (May 2009, principal investigator).
 - CO₂ capture from natural gas fired combined cycle plants, performed on behalf of Edison (June 2009).
 - Salinity gradient systems for electric power generation, performed on behalf of Enel (December 2011, principal investigator).
 - Scenario analysis for hydrogen fired gas turbines, performed on behalf of Enel (December 2013, principal investigator).
 - CO₂ capture from natural gas fired power plants. Innovative technologies for horizon beyond 2025, performed on behalf of Edison (December 2013).
 - Analysis of Compressed Air Energy Storage (CAES) system performed on behalf of Enipower (July 2014, principal investigator).
 - Energy recovery from liquefied natural gas (LNG) re-gasification terminals, carried out on behalf of Saipem (in progress).
 - Natural gas fired, low CO₂ emission oxy-combustion power plants, carried out for the IEA-GHG Programme under supervision of AMEC-Foster Wheeler (June 2015, principal investigator).
 - Natural gas fired, low CO₂ emission oxy-combustion power plants, carried out for the EPRI under supervision of AMEC-Foster Wheeler (June 2016, principal investigator).

Milano, 11 May 2016

Paolo Chiesa