

Eng. Hiyam Farhat

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Years of Experience: 21years in Engineering (of which 15yrs in industry/ 6yrs in academia)

Fields of expertise: Teaching, Turbomachinery, Automotive, Quality Management Systems

Qualifications and Affiliations

Roma TRE University Rome, Italy:

PhD candidate/researcher

expected graduation 2022

Wright State University Ohio, USA:

- Masters of Science, Mechanical & Materials Engineering 2009
- Bachelor of Science, Mechanical Engineering 2005
- Minor: Business Administration
- Member of the American Society of Mechanical Engineers (ASME)
- American Society of Non Destructive Testing (ASNT)
- American Welding Society (AWS)
- Member of European Turbine Network (ETN)

<p>Industrial certifications and specialized trainings</p> <ul style="list-style-type: none"> • IATA Train the trainer course (2022) • AWS CWI no 14013271 • ASNT RT LIII cert. no.213912 • Radiation Safety Officer cert. no.PCC0221 • ISO 9001:2008 Lead Auditor cert. no. LA2/13/AB/44135 • ISO17025 Auditor cert. no. PCC0285 • Failure Analysis Workshop - Nice Turbine Forum (2015) • GE MS5001 + MS6001B DLN Heavy-duty gas turbines training (2011) • Black belt training (2009) • Green belt certification (02/21/2008) • Mechanical design fundamentals (2008) • "Industrial Controls & Troubleshooting" Certification from Edison Community College (2005) 	<p>Competencies and Experience</p> <ul style="list-style-type: none"> • Leadership of multi-disciplinary and multi-cultural teams • Product Repair, development, and improvement • Strong technical knowledge of turbine machinery and repair • Degradation modes evaluation of ex-serviced and life limited components • Metallurgy and NDT methods (RT, ET, PT,UT) • Project Management (Manufacturing and repair) • Quality Management System (Design, Implementation, and Optimization) • Six Sigma and Lean Methodologies (Manufacturing) • Failure Mode & Effect Analysis FMEA and Control Plan (Design and Maintenance) • System audits as per ISO 9001:2008, ISO 17025; TS 16949, TS 29001.
<p>Software Skills</p> <p><u>Advanced:</u> Minitab, AutoCAD, PC-DMIS <u>Basic:</u> Microsoft Project 2010, Solid Work, Visual Basic, "C" Programming, Matlab, Ansys</p>	<p>Language Skills</p> <p>Arabic: native language English: Fluent Italian & French: Intermediate Spanish: Basic</p>

Publications and Presentations

Book: *Operation, Maintenance, and Repair of Land-Based Gas Turbines*, Elsevier, 2021

“Novel Gas Turbine Challenges to Support the Clean Energy Transition”, *Energies*, MDPI 2022.

“On the possibility of using an industrial steam turbine as an air expander in a Compressed Air Energy Storage plant”, *Journal of Energy Storage*, Elsevier, 2022.

“New lifing criterion for land-based gas turbines in flexible operation mode”, *Energy Reports*, Elsevier, 2022. (Presented at the [8th International Conference on Energy and Environment Research ICEER 2021](#), 13-17 September)

“Empirical methodologies to life extensions of Gas Turbine Blades emphasizing retirement for cause strategy”
[Shariah Energy meet, 2018](#)

“Evaluation of failure modes of GT blades and life extension considerations- Qualitative to Quantitative approach”
[Dubai Aramco MAF, 2016](#)

“Gas Turbine (GT) shrouded blades tip curling and creep investigations”
[Nice Turbine Forum, 2015](#)

“GT tip-shrouded blades creep investigations at Ansaldo Thomassen Gulf (ATG) –impact of creep on TIP geometry”
[PowerGen Asia Bangkok, 2015](#)

ACADEMIC EXPERIENCE

(6.5 Years – researcher/ adjunct instructor)

PhD Candidate/Researcher

(November 2019 -present)

Roma TRE University, Rome, Italy

- Development of new models for predicting the gas turbine's efficiency and life consumption as results of GT components degradations.
- Assessment of components' degradation impact on the critical GT health parameters.
- Evaluating the energy system flexibility, in particular the rise in renewable energy penetration on gas turbines' operations.
- Researching storage methods such as Compressed Air Energy Storage (CAES) to support sustainable energy policies.

Adjunct instructor

Abu Dhabi University, Abu Dhabi, UAE

- List of courses instructed (AY, 2009-2010): Calculus I, College Mathematics, and Mathematics for Science & Technology, and General Statistics.

Instructor assistant/tutor**Wright State University, Cincinnati, Ohio, USA**

- Assisted and tutored courses (AY, 2006) Statics, Failure Analysis, and Calculus (all levels)

Research Assistant**University of Toledo, Toledo, Ohio, USA**

- Fiber reinforced polymers applications (AY, 2001)

INDUSTRIAL EXPERIENCE*(March 2009 -March 2019)***Ansaldo Energia- Gulf (AEG), Abu Dhabi, UAE**

AEG is a state of the art turbine repair workshop within **Ansaldo Energia Group** and dedicated to the repair of GE F5, 6, 7 and 9, Siemens 94.2, Mitsubishi M701D and Alstom GT26.

Engineering and Quality Control Manager

- Multi-disciplined team management in areas of Metrology, NDT, Metallurgy and repair technologies
- Technical qualifications of GE (repairs and rotor overhauls), Siemens and Mitsubishi Turbine components repairs – R&D of Alstom GT26 component repairs
- Responsible for budget, schedule and resource planning for repair developments and Special processes technology investment
- Achieving company-wide objectives and targets- currently developing the Repair Center of Excellence within the group
- Performed as a Lead auditor as per ISO9001:2008 between 2012 and 2015
- Company's ASNT RT LIII and Radiation Safety Officer (approved by HAAD) –up to 2015
- Technical Support to the tendering and procurement departments
- Developing and delivering accurate automated reporting for all inspection processes
- Personnel training programs and certifications NDT (as per SNT-TC-1A) and welders (per ASME Section IX) certifications
- Failure investigations and resolutions

Selected achievements;

2018 Developed first V84.2 V6&7 repairs in UAE.

Completed Ansaldo expansion project (Phase I) including Equipment specifications and Buy-offs, Optimized layout design and SAP integration of repair routers.

2017 Developed first F-class repairs in UAE for the GT26 Gas Turbine.

Expanded life extension program to include rotors residual life assessment.

2016 Lead 7 Kaizen events responsible for optimization of inspection and repair hours (15-20% overall improvements in inspection and restoration activities).

2015/2016 Developed a program (**SKARP**: Specialized knowledge applied repair process) for the life extension evaluation of blades and other life limiting components.

2015 Correlation of creep and geometrical changes in shrouded blades contributed to improved accuracy in estimating remaining shroud life.

Overhauling of repair scopes and inspection quality plan toward improved efficiencies (blades and nozzles).

2013/2014 Cutting overall Cost of Quality achieved through implementation of in-house calibration program (in accordance with ISO 17025) – rework reduction (7% per year) - inspection turnaround time (10% per year) - labor hours and error reduction in reporting and document control processes by implementation of robust databases and in house training.

2011/2012 Full implementation of Automated Business Management System to support the company's QMS – clean audit achieved in 2012.

(Aviation/Automotive; Jun 03- Aug 09)

Design Engineer

GE Evendale, Ohio, USA

Reporting to the CF6 & M&I Structures Section manager, my responsibilities included;

- Review and substantiation of nonconforming CF6 and LM6000 engines structure hardware
- Presenting technical data to internal and external customers
- LM6000 marine engine hot section structures hardware including design modifications & service repair (issued over 25 new and improved designs).
- Project leader of new product development including new & upgraded steam injection (up to 40k lbs/hr) gas engine
- Design engineer of new hardware (Baffle) for the LM600 STIG compressor rear frame

Process Quality Engineer

Faurecia Exhaust Systems, Inc. Franklin, Ohio, USA

- Launch member of new exhaust project "U387" for the newly introduced Ford Edge through the entire cycle of development including equipments buy offs, process & flow definition, and PPAP. (Successful launch completed on time and within budget).
- Led various lean projects and Hoshin activities to improve Quality and production systems efficiencies starting from supplier to customer indicators.
- Internal auditor as per ISO/TS 16949

Intern Engineer Copeland Corporation, Sidney, Ohio, USA

Aug 02- Jun 03

- Design modification drafting of compressor parts
- Collaborating with technicians during the evaluation and testing of new compressors ratings
- New equipments qualifications and relevant capabilities studies
- Inspections using CMM's, and FARO Arms

References:

Fausto Nepote (Ex Managing Director of Ansaldo Energia - Gulf)

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Han den Boer (Ex Engineering Manager at Ansaldo Thomassen - Holland)

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Fergus Lavers (Integration Manager at Ansaldo Energia)

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