

Mamoon Alyah, Principal Engineer

Chartered Engineer (CEng), Professional Engineer (PE), IRMCert, MIET



Over 36 years of experience acting as an expert on matters involving electromechanical equipment and power systems (generation, transmission and distribution) in industrial and energy applications.

Investigated hundreds of incidents (mechanical breakdown, fire, explosion, electrical faults ...etc) in power generation and industrial plants.

Acted as an expert witness preparing numerous expert reports and giving evidence in arbitration proceedings and jury trials involving disputes related to the cause and origin of incidents during construction, commissioning and operation of power plants, transmission and distribution substations in addition to power equipment in industrial and commercial properties.

Experience

CEERISK Consulting Limited – London, UK

Managing Director / Principal Engineer

- Investigate the root cause and liability following catastrophic failure incidents such as fires, explosions, electrical faults, mechanical breakdown and human error.
 - Inspect the site and examine relevant evidence
 - Design and perform forensic testing protocols
 - Gather data related to design, specifications and operational parameters of different types of equipment
 - Host meetings and engineering discussions on different systems
- Analyse design, specifications, drawings, tests and installations of various types of energy systems in different applications as part of a comprehensive RCA (Root Cause Analysis).
- Analyse performance and efficiency of different types of equipment (turbines, PV modules, battery cells, boilers, HRSGs and others) to opine on fitness for purpose and compliance with specifications, including analysis of operational parameters, trends, SCADA records, DCS data and other types of technical information
- Determine root cause and contributing factors of deterioration of efficiency of different systems including PV modules, turbines and other types of equipment
- Analyse cause of serial failures in renewable energy systems (wind and solar)
- Prepare expert reports (CPR 35 compliant) in relation to disputes involving the use and application of energy systems including conventional and renewable resources (thermal, wind, solar, hydro, and geothermal).
- Give evidence in different types of legal proceedings and ADR in compliance with rules of evidence in different jurisdictions (UK, USA, Australia, DIFC – Dubai, including ICC Arbitration).
- Provide engineering consultation on loss mitigation and prevention to utilities (public and private), contractors, manufacturers, large corporation and government agencies and municipalities in matters related to engineering risks.
- Carry out risk surveys and assessment of electromechanical equipment in large in critical infrastructure sites including power generation (thermal power, wind farms, utility-scale PV, CSP, combined-cycle) and heavy industrial plants (steel, cement, aluminium ...etc) and petrochemicals.
- Provide training to risk engineers, underwriters and claim handlers of international, regional and local insurance companies on methodologies and techniques of risk assessment and incident investigations

Qualifications

- **Bachelor of Science in Electrical Engineering** – KWT University, September 1986
- **Fire Inspector/Investigator** – Hennepin Technical College Minneapolis, MN, USA – 1996
- **Master of Business Administration (MBA)** – Lake Forest Graduate School of Business, IL, USA – 2008
- **Chartered Engineer (Registration No. 593908)** – Engineering Council, UK
- **Professional Engineer (Registration No. 26809)** – Board of Architecture, State of Minnesota, USA in addition to registration in multiple states
- **Into Court Training Course** – The Academy of Experts, London, United Kingdom February 2010
- **Expert Witness Courses** – Bond Solon Wimington Legal – UK
 - Excellence in Report Writing – July 2011
 - Excellence in Report Writing - Written Evidence – July 2011
 - Courtroom Skills Training – January 2012
 - Civil Law & Procedure – September 2012
 - Cross Examination - January 2013
- **International Certificate in Enterprise Risk Management** – IRM – London, UK 2016

Professional Associations

- Member – IEEE PES (Power and Energy Society)
- Member IET – Institute of Engineering Technology,
- Sr Member – National Academy of Forensic Engineers (NAFE), USA
- Member – International Association of Arson Investigators (IAAI), USA
- Member – UK Association of Fire Investigators, UK
- Member – Energy Institute, UK
- Corporate Member – The Association for Renewable Energy and Clean Technology, UK
- Corporate Member – Solar Energy UK
- Member – IMIA (International Association of Engineering Insurers)

Sample Forensic and Expert Witness Instructions

- Prepared expert report regarding **commissioning of electrical equipment** in ventilation system in construction project.
- Prepared expert report about the **commissioning process of an EFW (Energy From Waste) plant**, including issues concerning the commissioning and operation status of the plant.
- Acted as an expert witness in **ICC arbitration proceeding in DIFC courts** concerning a construction dispute involving the design, accreditation and installation of **switchgear and MCC assemblies** at a district cooling plant.
- Investigated a **fire at a wind turbine** in rural **Jordan**, caused by an electrical fault in a MV cable which was traced to workmanship defect that led to ignition inside a control panel at the bottom of a WTG.
- Investigated a **thermal energy storage system failure in a Solar CSP plant** in Morocco which involved review and analysis of the design, construction and fabrication of the thermal system at the plant.
- Acted as an expert witness testifying in jury trial regarding the failure of an **underground cable joint in Minnesota, USA**. The failure of the cable joint led to severe injury to one of the excavation contractor operatives working on site.
- Investigated fire and explosion in a 374-MVA **power transformer in a transmission substation in California, USA**. The investigation involved forensic testing and examination of HV bushing in Germany and tear down of the transformer in San Diego, California, USA.
- Investigated an electrical fault that caused an **explosion in a 345-kV (EHV) bushing** in a generation substation in Connecticut, USA. Following a 2-year investigation of damaged components, prepared an expert report and testified in deposition for over two days, presenting opinions related to the incident.
- Investigated the root cause of a fire caused by an electrical fault in a **VAR-Compensator** used at a **PV solar power plant** in south Jordan to improve power quality before connection to the EHV transmission substation. The investigation involved performing inspections, design review and analysis of power output of the PV plant.
- Investigated and prepared an expert report with opinions related to **cable ducting defects in wind turbine towers** in Scotland, UK. This included verification of adequacy of design specifications, installation methods, impact of variations on various electrical systems in addition to a number of other issues.
- Investigated damage to underground **oil-filled HV cables in Portsmouth, UK**. The damage to the cable was discovered after the cable was relocated by a contractor to facilitate the installation of new cables in the same trench.
- Prepared an expert witness report in relation to a severe electrical fault in **LV cable boxes at an off-shore wind farm** off the shores of London. The failures were caused by **workmanship deficiencies** during the installation of HV busducts into the cable boxes at the substation.
- Investigated multiple **failures of underground HV cable joints** that connected a newly constructed PV power plant to a grid substation in **Wales, UK**. The failures were due to installation deficiencies by the contractor which could not be rectified and required the replacement of the entire power circuits.
- Investigated a large number of underground cable failure incidents at multiple infrastructure construction sites in the State of Qatar. The investigation was commissioned by the insurance broker of the mega road projects in and around Doha in preparation to FIFA 2020. The investigation led to the development of a detailed risk management plan to secure the underground cables and ensure proper protection during mechanical excavation on sites.
- Prepared an expert report and testified at arbitration hearing regarding a dispute during the construction of a large gas turbine power plant in **Jordan**. The dispute centred on decisions by the EPC contractor to delays **energisation of the plant following a catastrophic failure** in one of the HV circuits connected to the substation that allowed the plant to supply power to the grid.
- Investigated an **explosion in a chiller unit at a transmission substation in UAE** which caused severe injury to operatives and significant damage to the building. In addition to the RCA, the investigation looked at failures in management and control procedures, HS policies, training of operatives and other contributing factors.

- Investigated electrical fault in **MV feeder cable at Al-Shuaiba Power Station** and Desalination plant south of Jeddah, KSA. The investigation identified installation errors following replacement of power transformer at the plant.
- Investigated **electrical fault in tap-off boxes installed at a commercial building in reading, UK** which caused significant damage to busbar system and other equipment. The fault was caused by improper installation which was followed by incorrect testing procedure leading to failures being undetected at the time of energisation.
- Led a team of investigators to complete RCA for a catastrophic **failure at a power plant in Helwan, Egypt** which involved a hydrogen explosion at the HV bushing connected to a generator driven by a steam turbine. The investigation team included metallurgical scientists, material testing laboratories, electrical and mechanical engineers.
- Prepared expert report regarding an **electrical failure in a switchgear assembly** at a TV production facility in Leeds, England. Prepared expert report for solicitors who used the findings in mediation.
- Investigated and prepared expert report on failure in a large electric motor used in a car crusher in Flint, Michigan in the USA. Testified in deposition at Circuit Court for the **County of Genesee, State of Michigan**
- Investigated injury to an electrical contractor at a power plant who died as a result of injuries sustained when he was electrocuted while affecting repairs in a switchgear in a coal fired **power station in Joliet, Illinois – USA**

Examples of condition and failure assessments

- Helwan Fertilizer – Helwan, Egypt
- CEGCO Aqaba Power Plant– Aqaba, Jordan
- Suez Steel – Suez, Egypt
- Alexandria Carbon Black, Alexandria, Egypt
- Afia Oil processing Plant, Jeddah, KSA
- Gulf Fluor – Abu Dhabi, UAE
- Wastewater infrastructure – Multiple Sites, Qatar
- Etlik Medical Campus construction site – Ankara, Turkey
- Izmir Medical Campus – Izmir, Turkey
- Galataport cruise ship terminal – Istanbul, Turkey

Professional Activities

- Presented webinars on different topics related to power systems and equipment including:
 - Investigating insurance claims in utility-scale solar power plants, CEERISK Webinar series- 2019
 - Investigation of Renewable Energy Claims, CEERISK Webinar series – 2019
 - Solar Energy Plants (PV and CSP), CEERISK Webinar Series – 2020
 - Investigating Turbine Failures, CEERISK Webinar Series – 2020
 - Thermal Power Plants, CEERISK Webinar Series – 2020
 - Insuring Renewable Energy, CEERISK Webinar Series – 2021
 - Energy Storage Systems, CEERISK Webinar Series – 2021
 - Turbine Blade Failures, CEERISK Webinar Series – 2021
 - Investigating Power Transformer Failures, CEERISK Webinar Series – 2021
 - Green Hydrogen, CEERISK Webinar Series – 2022
 - Rapid Transition to Renewable Energy, CEERISK Webinar Series – 2022
 - Subsea Cable Claims, CEERISK Webinar Series – 2022
- Contributed and chaired a number of working groups at IMIA (International Association of Engineering Insurers) on different topics related to power energy systems, including:
 - Chaired workgroup on the design, installation and engineering risks at Combined Cycle Power Plants, IMIA Annual Conference, Merida, Mexico 2015
 - Contributed to workgroup on Solar Thermal Power Plants, IMIA Conference 2014
 - Contributed to workgroup on Biomass Power Plants, IMIA Conference 2014
 - Chaired workgroup on Electrical Failures, IMIA Conference 2018
- Speaking engagements at different events in USA, UK, UAE and other locations on topics related to energy, power and insurance, including:
 - Root Cause Investigation of Engineering Claims, Xchanging, London, UK – June 2013
 - Investigating Gas Turbine Losses, Construction, Engineering and Energy SIG – CILA; Lloyd's, London, UK – April 2012
 - Investigating Power Line Incidents, Edison Electric Institute – Claims Conference, Alabama, USA 2008
 - Investigating Stray Voltage Claims, Natural Gas Claims & Litigation Association Conference, San Diego, CA – March 26-29, 2006
 - Engineering Losses, CILA Construction Energy and Engineering Special Interest Group, UK, October 2014
 - Challenges of Investigating Turbine Losses, CILA Annual Claims Conference, UK – September 2013

- **Root Cause Investigation of Transformer Failures:** CEERISK Consulting Engineering Webinars, London, UK
- **Electrical Failures not related to Weather Conditions:** IMIA Annual Conference, Singapore 2018 – Chaired working group on investigation and risk assessment of electrical failures.
- **Investigating Renewable Energy Claims in Remote Locations:** Onshore Energy Conference, London, 2018
- **Renewable Energy in the MENA Region:** Dubai International Financial Centre, Dubai, UAE March 2019
- **Location, Location' Location: Does it Matter – Sitting of Power Plants,** Onshore Energy Conference, London, UK 2016
- Authored articles on different topics including:
 - Challenges of offshore wind disputes – My Expert Witness Magazine – Summer Issue number 62
 - Insuring New renewable Technologies in Remote Locations – Middle East Insurance Review
 - Assessing Risk of Failure in Ageing Electrical Equipment – CEERISK Newsletter