



HALLIWELL

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SPECIALTIES

- Fire & Explosion
- Boiler & Thermal Oil Heater Failures
- Furnace and Refractory Damage
- Vehicle Accident Reconstruction
- Flood and Transit Damage
- Collapsed Structures
- Wind Turbine Failures
- Gas and Steam Turbine Failures
- Vehicle & Machinery Fires
- Machinery Breakdown
- Vessel Fires
- Post Accident Assessment of Machinery
- Hydro Turbine Generators

BIOGRAPHY

Anand who is qualified as a mechanical engineer has carried out more than 1350 investigations, since 2001 throughout Malaysia, Brunei, Thailand, Singapore, Indonesia, Taiwan, Vietnam, Philippines and Japan. Has overall responsibility for investigations and the quality of Halliwell's work in Asia. He has also given evidence as an expert witness with respect to fire investigation, vehicle accident reconstruction, damage assessment and engineering failures. He has been a certified fire and explosion investigator (CFEI) and certified vehicle fire investigator (CVFI) since 2005.

QUALIFICATIONS

- M.Eng (Forensic), University Technology Malaysia, 2023
- B.Eng (Mechanical) (Hons), University Technology Malaysia, 2000
- Certified Fire & Explosion Investigator (NAFI) 2005
- Certified Vehicle Fire Investigator (NAFI) 2005
- Certified Visual Wire Rope Inspector (Carl Stahl Evita Ltd course)

INDUSTRY MEMBERSHIPS

- National Association of Fire Investigators
- International Association of Fire Investigators
- The Institution of Engineers Malaysia
- Borad of Engineers Malaysia

PROFESSIONAL EXPERIENCE

- Halliwell, Director - Forensics, Asia (2025 – Current)

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- Forensic Services Asia, Engineerin (2001 – 2025)
- Consulting Engineer (June 2001 till April 2018)
- Operations Manager (May 2018 till March 2020)
- Engineering Director (April 2020 till April 2025)

ACHIEVEMENTS & NOTABLE ASSIGNMENTS

- Investigated Explosions at Petrochemical refineries at Petronas RAPID (Pengerang, Johor) in 2019 and 2020, Nghi Son Refinery (Vietnam) and PT ALP Petro Industri (Indonesia).
- Fire Investigation on marine vessels including cargo containers (HUB Kuching), passenger ships (Coral Island 1, Langkawi), barges, chemical tankers (Bunga Alpina, Labuan) and car carrier (Ah Shin, Vietnam).
- Assessment of the condition of phosphoric acid and sulphuric acid plants at a fertiliser factory in the Philippines, following a typhoon in 2013. Critical in the assessment was distinguishing between pre-accident damage and typhoon damage.
- Determined cause of damage to Tunnel Boring Machine (TBM) failures in Malaysia.
- Fitness for service assessment to a fire-damaged reactor at an oil refinery at CPC Corporation, Taiwan.
- Fitness for service assessment to a fire-damaged ship loader at Hanjin Shipyard, Subic Bay, Philippines.
- Investigated 292 MW Gas Turbine Damage at Petro Vietnam Power, Ca Mau, Vietnam.
- Investigated pitch bearing failure of Vestas wind turbine in Hokkaido, Japan.
- Determined cause of damage to a 1000 MW Toshiba Tandem Compound 4 Flow Steam Turbine at Jimah East Power Plant in Port Dickson, Malaysia.

TRAINING

- 2015 National Fire, Arson & Explosion Investigation Training Program, National Association of Fire Investigators International, Dallas, Texas, USA, March 2015.
- One Day Course on Corrosion Control of Steel Structures by Cathodic Protection, The Institute of Engineers, Malaysia (IEM), Kuala Lumpur, November 2014.
- One Day Course on HAZOP Training for Team Members – A Practical Approach, The Institute of Engineers, Malaysia (IEM), Kuala Lumpur, November 2014.
- Corrosion Control Methods: Why They Work and Why They Fail, Universal Training and Consultancy, Kuala Lumpur, November 2013.
- Welding Design Requirements for Pressure Vessel, The Institute of Engineers, Malaysia (IEM), Kuala Lumpur, February 2011.
- ASME Code Section VIII Division 1- Pressure Vessels, The Institute of Engineers, Malaysia (IEM), Kuala Lumpur, July 2010.

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- Boiler/Steam Plant – Operations and Maintenance, The Institute of Engineers, Malaysia (IEM), Kuala Lumpur, June 2010.
- Steel Wire Rope Flaw Detector – Operator's Training and Result Interpretation, Intron Plus Ltd, Kuala Lumpur, November 2009.
- Module C- Mechanical & Electrical, Sewerage Construction Manager Training & Accrediation Programme, Construction Industry Development Board (CIDB), Kuala Lumpur, July 2009.
- CSWIP 3.0 Visual Welding Inspector, The Welding Institute (TWI), Kuala Lumpur, May 2009.
- Fitness for Service (FFS) Assessment based on API 579-1/ASME FFS-1, The Welding Institute (TWI), Kuala Lumpur, July 2008.
- Certified Visual Wire Rope Inspector Training, Carl Stahl Evita Ltd, Singapore, January 2008.
- 2006 National Fire, Arson & Explosion Investigation Training Program, National Association of Fire Investigators & National Fire Protection Association, Sarasota, Florida, USA, August 2006.
- Pressure Vessel and Welding Practices, The Institute of Engineers, Malaysia (IEM), Kuala Lumpur, April 2006.
- 2005 Vehicle Fire, Arson & Explosion Investigation Science & Technology Seminar, National Association of Fire Investigators & Fire and Safety Engineering Technology Eastern Kentucky University, Richmond, Kentucky, USA, September 2005.
- Design of Power Plant Fire Protection Services, The Institute of Engineers, Malaysia (IEM), Kuala Lumpur, December 2003.
- SKF Bearing Technology and Maintenance, The Institute of Engineers, Malaysia (IEM), Kuala Lumpur, August 2003.
- Fire Protection from the Insurance Perspective, The Institute of Engineers, Malaysia (IEM), Kuala Lumpur, June 2003.
- Intermediate Fire Risk Inspection Workshop, The Malaysian Insurance Institute (MII), Kuala Lumpur, October 2001.
- Simple Fire Risk Inspection Workshop, The Malaysian Insurance Institute (MII), Kuala Lumpur, July 2001.

Experience: Has carried out more than 1350 investigations in the following areas:

BOILER AND THERMAL OIL HEATER FAILURES

- Has investigated about 100 boiler failures in palm oil factories, food processing factories, acid processing plant, glove factories, chemical refineries and power generation facilities including the Sultan Salahuddin power plant in Kapar, Selangor and Jimah power plant in Port Dickson. Types of boilers investigated include water tube, fire tube and combination boilers (fire and water tube), fueled by diesel, gas and various biomasses. Modes of boiler failures that have been investigated include:

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- Boiler tube ruptures
 - Boiler tube deformation
 - Leaks at steam drums of boiler
 - Pitting and general corrosion of boiler tubes
 - Explosions within boiler exhaust ducts
 - Collapsed buffer wall/refractory of boilers
 - Failure of low water level sensors
 - Failures as a result of a low water level condition.
- Explosions, fires, leaks and fatigue cracking of thermal oil heaters in a range of industries.

FURNACE AND REFRACTORY DAMAGE

- Examination of glass furnaces in Malaysia and Indonesia to distinguish long term damage from cooling damage following breakouts and power failures.
- Examination of boilers and gas heaters in Malaysia and Indonesia to separate long term refractory lining and baffle plate damage from fire and explosion accident events.
- Evaluation of different types of refractories subject to flooding in Vietnam and determining the extent of wetting and resulting damage
- Determining cause of breakout of molten aluminum through refractory lining in furnaces.
- Investigating explosions involving glass, annealing and enamel furnaces.
- Investigated ducting failure at steel plant.

FIRE INVESTIGATION

Has been investigating fires and explosions throughout Malaysia, Thailand, Singapore, Indonesia, Taiwan, Vietnam and Philippines for the past 23 years, with the following features.

- Industries include textile, power generation facilities, timber, paper, food, furniture, electronics, rubber gloves, palm oil processing, sugar cane, steel mills, electroplating, department stores, entertainment centers and transport facilities.
- Structures include shophouses, warehouses, various types of factory buildings, processing plants, furnaces, thermal oil heaters, gearboxes, silos and bridges.
- Vehicles include cars, motorcycles, trucks, buses, cranes and excavators.
- Marine vessels including cargo containers (HUB Kuching), passenger ships (Coral Island 1, Langkawi), barges, chemical tankers (Bunga Alpina, Labuan) and car carrier (Ah Shin, Vietnam).
- Causes have included arson, hotwork, electrical, smoking, mechanical (friction) and spontaneous ignition.
- Petrochemical refineries at Petronas RAPID (Pengerang, Johor), Nghi Son Refinery (Vietnam) and PT ALP Petro Industri (Indonesia).

TURBINE FAILURES

Have investigated gas turbine fires and damage in Vietnam and Malaysia. Investigations have been carried out on gas turbines with capacities of 30MW to 292MW. These gas

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turbines investigations are carried out at power plants and centralised gas district cooling plants.

Failure analysis/investigation have also been conducted on a wide range of steam turbines with outputs ranging between 1.6MW to 12MW. Most of the steam turbine investigations have been conducted at palm oil mills, bioenergy power plants and coal fired power plants.

POST ACCIDENT ASSESSMENT OF MACHINERY/STRUCTURES

Assessing the recoverability of machinery/equipment/structural members after fire or other damage. Skilled in the application of API579 Fitness for Service in respect of fire damage. Examples are as follows.

1. Assessment of the condition of phosphoric acid and sulphuric acid plants at a fertiliser factory in the Philippines, following a typhoon. Critical in the assessment was distinguishing between pre-accident damage and typhoon damage.
2. Carried out fitness for service assessment to a fire damaged stainless-steel dryer, structural members of support structure and ancillary components at Kerry Speciality Ingredients, Penang, Malaysia.
3. Fitness for service assessment to a fire-damaged thermal oil heater, its ancillary components and the support structure at Glovco Holdings Sdn Bhd, Selangor.
4. Fitness for service assessment to a fire-damaged reactor at an oil refinery at CPC Corporation, Taiwan.
5. Fitness for service assessment to a fire-damaged ship loader at Hanjin Shipyard, Subic Bay, Philippines.

TESTING OF WIRE ROPES AND SLINGS

Skilled in the evaluation of wire ropes and slings by visual examination and eddy current testing, in both the elevator and oil and gas industry. Has tested ropes at or from cranes and anchors at five offshore drilling rigs and floating vessels in Malaysia, Brunei, Indonesia and Netherlands.

COLLAPSED STRUCTURES

Determining cause of collapse and evaluation of damage to various equipment and structures as follows:

- Mobile tower cranes
- Telescopic cranes
- Crawler cranes
- Gantry crane
- Fixed tower cranes
- Chimneys
- Roofing structures
- Storage racks
- Weighbridges
- Fibreglass water tanks
- Palm/crude oil storage tanks
- Digester Tanks and silos

VEHICLE INVESTIGATION

- Single and multiple vehicle collisions, vehicle and heavy equipment fires.

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- Vehicle investigations involving locally manufactured (Malaysian), Japanese and continental models.
- Determining consistency of reported accident.
- Verification of vehicle identification numbers.
- Inspection of damaged engine and transmission gearboxes to distinguish between accidental damage and wear and tear.

MACHINERY BREAKDOWN

- Causes of machinery breakdown in diverse machinery, including printers, engines in generators, vehicles and compressors, turbines, air-conditioning chillers/compressors, ship engine failures and miscellaneous factory equipment.
- Investigated numerous failures of gearboxes for gas turbines, steam turbines and diesel generators. Failure investigation includes failure of the shaft, gear and bearing.
- Failure Investigation of gas and steam turbines at power plants, gas district cooling plants and palm oil estates.
- Failure Investigation of various types of valves at water supply pipes and oil storage tanks.
- Failure Investigation involving fire protection systems such as sprinkler and hose reel pumps, tanks and carbon dioxide fire suppression systems.
- Investigated several Failures involving Tunnel Boring Machines (TBM).

BREAK-INS

- Conducted investigations into break-ins at warehouses, shop-lots and sewage plant. Determined the manner in which the break-in was carried out.

FLOOD AND TRANSIT DAMAGE

- Experienced in the assessment of damage to mechanical parts of escalators and lifts, following flooding, and in transit damage to machinery and goods from flood, fire and impact.

RECENT LECTURES BY ANAND GHNAVELLO

- 2008 Insurance & Takaful Fraud Conference, Kuala Lumpur, January.
- 2014 4th International Claims Convention, Kuala Lumpur, May.
- 2016 6th International Claims Convention, Kuala Lumpur, April.
- 2016 Seminar on Vehicle Accidents to Etiqa Insurance, Kuala Lumpur, October.
- 2017 Innovative Approaches to Fire Stock Claims, Jakarta, March.
- 2017 Asian Claims Convention, Australasian Institute of Chartered Loss Adjusters, Ho Chi Minh City, April.
- 2023 Asian Claims Convention, Australasian Institute of Chartered Loss Adjusters, Bangkok, May.
- 2025 SILSR Seminar – Liability Explosion, Malaysian Reinsurance Berhad, Kuala Lumpur. August.

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Anand Ghnavello - Appearances as an Expert Witness

	Year	Country	Court Case	Type
1	May 2010	Malaysia	Shah Alam Sessions Court. QC Photo vs MCIS Zurich Insurance	Burglary
2	August 2011	Malaysia	Kuala Lumpur High Court Civil Suit No. S-22NCVC-331-2011. Sanichi Precision Plastic Sdn Bhd vs AMG Insurance Bhd.	Post Fire Assessment of Machinery
3	August 2011	Malaysia	Alor Setar High Court Civil Suit No. MT2-22-289-2009. Twill Textile Sdn Bhd vs The Pacific Insurance Berhad	Post Fire Volumetric Assessment of Stock
4	December 2011	Malaysia	Sandakan High Court Suit No. S22-57. Sinora Sdn Bhd vs Multi Purpose Insurans Bhd and Archilles Shipping Sdn Bhd	Fire Investigation
5	May 2014	Malaysia	Klang Sessions Court Suit No. B52-08-04/3013. Container Connection (M) Sdn Bhd vs CMS Lift-Truck Engineering Sdn Bhd	Engineering
6	April 2016	Malaysia	Kuala Lumpur High Court Civil Suit No. A53KJ-674-08/2014. Fitri Noor bin Samdin vs Siti Nooradawiyah binti Othman and Siti Maimunah binti Mohamad Letak	Accident Reconstruction
7	June 2016	Malaysia	Johor Bahru Sessions Court Suit No. A53KJ-981-08/2014. Au Sew Fon vs Jason Yeoh Jin Kheng	Accident Reconstruction
8	February 2020	Philippines	Arbitration between Phillipine Phosphate Fertilizer Corporation vs UCPB General Insurance Company, QBE Insurance & Charter Ping An Insurance Corporation	Engineering Damage Assessment
9	June 2024	Malaysia	Kuantan High Court Suit No. CA-22NCvC-15-06/2020. Kilang Sawit Lembing vs Mackenzie Industries	Engineering
10	October 2024	Malaysia	Penang High Court Suit No.: PA-22NCvC-101-07/2022 (Rainbow Supreme Sdn Bhd- v- Zurich General Insurance Malaysia Berhad) (Consolidated with Suit Nos. PA-22NCvC-102-07/2022 and PA-22NCvC-103-07/2022)	Engineering
11	January 2025	Malaysia	Kuala Lumpur High Court Suit No. WA-22NCC-584-08/2023. Classic Palm Oil Mill Sdn Bhd vs Berjaya Sampo Insurance Bhd	Explosion Investigation

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12	June 2025	Malaysia	Kuala Lumpur High Court Suit No.: WA 22NCC-827-11/2023. MForce Bike Holdings Sdn Bhd vs Allianz General Insurance Company Berhad	Fire Investigation
13	July 2025	Malaysia	Kuala Lumpur High Court Suit No.: WA 22NCvC-693-12/2022. Projek Lebuhraya Usahasama Berhad vs Tenaga Nasional Berhad	Fire Investigation
14	November 2025	Malaysia	Kuala Lumpur High Court Suit No.: WA 22NCvC-326-06/2023. Yap Kuang Hui vs Allianz General Insurance Company Berhad	Fire Investigation