

CURRICULUM VITAE



NAME	PETER DAVID LUMLEY	
NATIONALITY:	British	
AGE	71	
QUALIFICATIONS:	BSc	Bachelor of Science (Hons) in Mechanical Engineering
	C. Eng	Chartered Engineer
	M.I Mech.E	Institute of Mechanical Engineers
	Eur Ing	Euro Engineer
	ASABE	American Society of Agricultural and Biological Engineers.
	Registered as an Expert with the Expert Witness Institute and the UK Register of Expert Witnesses.	
	Bond Solon training as a joint single expert.	
	Advanced Bond Solon personal tuition in giving evidence.	

SPECIALISATION:

- Process and Mechanical Equipment and Piping Design in the oil and gas, petroleum refining, petrochemical, organic chemicals, pharmaceutical and power generation and water treatment industries with specific experience of process plant design, fluid flow and pumping, procurement, construction and commissioning of refineries, oil /gas processing units, petrochemical plants (PP, LDPE, PET, PTA), cryogenic air separation units, water treatment filtration and deionization, effluent treatment units, FCC and hydro cracking units, sulphur recovery units, LNG/LPG/NGL plants, gas compression and gas/liquid pipelines, gas/liquid storage tank facilities and CHP Biomass and CCGT power generation.
- Extensive experience both as an Owner's Representative and as a Contractor in preparing and executing the EPC basic design, detailed design, procurement and construction and commissioning to international model forms of contract (FIDIC orange book and similar) of oil and gas production, processing facilities and pipelines.
- Specific experience of new and used process plant valuations and preparation of capital and operating cost estimates (quantum).
- Extensive experience in the Middle East including Oman, Saudi Arabia, Bahrain, Qatar, UAE and Iraq.
- Significant expert witness experience in UK High Court and the International Court of Arbitration on over 85 cases and giving oral evidence 36 times, including "hot tubbing".

EXPERIENCE:**Summary:-****1981-present****Manderstam International Group, London (MIGL)
– Consulting Engineers**

43 years experience of project and cost management, process and mechanical design and engineering in the offshore and onshore oil and gas production, processing and transportation systems (pipelines), petroleum refining, petrochemical (PP, LDPE, PET and PTA), organic chemicals including ammonia, pharmaceutical industries and CHP and CCGT power generation with the Manderstam Group of Consulting Engineers in Qatar and London offices as senior engineer, project engineer, project manager and then project director of UK office. Responsible for all front end process and mechanical design and the supervision of engineers and draughtsmen. Experience includes preparation of contract documents (FIDIC orange book and similar), process plant design, equipment specifications, cryogenic piping design, piping and insulation material specifications procurement, site project management and commissioning of wet sour natural gas processing plants including oil /gas separation units, cryogenic LNG/LPG/NGL separation, high-pressure gas compression and gas/liquid storage facilities both above ground and underground caverns, marine and road/rail terminals and gas/liquid pipelines.

Overseas work has included work in the oil and gas processing sector throughout the North Sea perimeter-Norway, Finland, Denmark, Germany, Austria, Spain, France, Holland and Italy, Algeria, Tunisia, Cyprus, Oman, Qatar, Abu Dhabi, Bahrain, Kuwait, Yemen, Sudan, Turkey, Iraq, Iran, Mexico, Trinidad, USA/Alaska, Canada, Russia, Ukraine, Azerbaijan, Georgia, Nigeria, Mali, Ghana, Pakistan, China, Hongkong, Vietnam, Philippines, Mozambique, South Africa and Australia.

Responsible for all work content, quality, performance and completion schedules using primavera software for scheduling and cost estimating.

1979- 1981**APV Company Limited, West Sussex**

(Manufacturers of large air cooled heat exchangers, distillation columns, aluminum extrusions and alloy

steel and stainless welding and fabrication of sheet metal products for the oil and gas and power industries).

Production Engineering Manager responsible for a team of three engineers and 15 craftsmen. Responsibilities included the design, specification and purchase of all new machine tools design and manufacture of jigs tools and fixtures (welding, press tools, extrusion dies and cold rolling). Undertook investigations in pump cavitation and vibration issues with large water/lard oil pumps.

1976-79

UK Ministry of Defence - Royal Ordnance Factory, Leeds (Military Vehicle Production)

Manager CAD/CAM machine tool section, responsible for production programming and IT support for all automated machine tools for machining armoured steel (high nickel alloy steels) and armoured aluminum.

Member of British Standards Institute (BSI) committee on CAD/CAM machine tools.

1975-76

UK Ministry of Defence - Military Vehicles Engineering Establishment, Chertsey, Surrey

Project Engineer on the research, design and development of the Challenger Main Battle Tank.

1971-75

UK Ministry of Defence - Graduate Apprentice

Initial training and experience as graduate apprentice with the Ministry of Defence (MOD) after winning MOD university scholarship. Work in welding and machining armoured steels and armoured aluminum.

List of relevant projects:-

Current

Since 1996 has carried out over 150 site surveys of offshore and onshore oil/gas production and processing facilities (LNG, NGL and LPG separation) and pipelines, refineries (with sulphur recovery units), petrochemical plants (PP, LDPE, PET and PTA), together with associated water treatment facilities. Work undertaken included design reviews and operation and maintenance cost analyses as part of the

annual benchmarking studies. Crude oil and petroleum products storage facilities include over 50 marine storage and loading facilities worldwide. Refineries have included all of PEMEX (Mexico) that represents 5% of global refining capacity. Pipelines have included some of the largest pipelines in the world:-Trans-Alaska pipeline, BP's BTC pipeline Azerbaijan to Turkey, BP's Forties pipeline system and Destin pipeline in Gulf of Mexico. FPSOs including Woodside Northern Endeavour and Woodside Cossack Pioneer.

Facilities at BP, ExxonMobil, ConocoPhillips, Agip, Statoil, Norsk Hydro, Dong, OMV, Nerefco, Williams Field Services, BHP, Qatar Petroleum, ADMA OPCO (Abu Dhabi), PDO, Woodside Petroleum, Petrofac, Sasol, NIOC (Iran), NCSP/ Dinh Co. (Vietnam), PEMEX (Mexico), British Gas, and Shell.

- 2024 Provided consultancy to overcome design failures of new gas supply system to the new energy centre at Allergy Therapeutics Ltd, Worthing.
- 2021-22 Prepared expert opinion on a patent on the design and operation of "hot bolting" of piping on behalf of Hydratight, UK Ltd to meet ASME B16.5 and general industry standards.
- 2021-22 Prepared expert opinion on behalf of Linde plc in respect to pressure vessel compliance to Pressure System Safety Regulations 2000, designed to BS EN 13445 and ASME VIII.
- 2020-23 Prepared a review of operating scenarios for the steam reforming process at the Shell Moerdijk Lower Olefins Plant in the Netherlands.
- 2018/19 Technical review of facilities to produce soda ash and byproducts and use of CHP steam and power generation at the soda ash plant, Northwich and Lostock, Cheshire, UK on behalf of Tata Chemicals Europe Ltd.
- 2018 Technical audit of the FEED and detailed design on the upgrading of the Pavlodar Refinery on behalf of Rominserv SRL, Romania.

- 2017-18 Review of piping design, 3-D model and isometrics in respect of claimed design and construction defects and remediation costs on behalf of HFL, Manchester.
- 2017 Review of over 100 variation claims and quantum on behalf of the JGCS Consortium, in respect to the NSRP new refinery in Vietnam, requiring review of preferential design development comments in regard to HAZOP studies and 3-D models.
- 2014-15 Technical audit and quantum on design changes, cost overrun by a contractor on Schlumberger designed produced water filtration skids on behalf of Schlumberger at a gas processing facility. Required review of preferential design development comments in regard to HAZOP studies, 3-D models and fabrication isometrics.
- 2014 Reviewed design of LPG/NGL gas refinery in Iran and gave advice on process operating scenarios. Confidential Client
- 2013 Consultancy advice on piping construction and commissioning of high pressure steam piping at a Biomass CHP power plant on behalf of RWE, Germany.
- 2011-12 Review and advice on a Gasholder designed to API620 /BS14015 for a major steel mill in Brazil on behalf of Ferrostaal, Essen, Germany.
- 2009/10 Investigated design and material non-compliances in design and supply of 100 ball valves (6 inch through 20 inch) for four (total 1400 MW) HRSG steam boilers (steam pressure 104 bar, temperature 565° C) dual fuel natural gas/fuel oil supplied by NEM, Holland for the Dubai Electricity and Water Authority Power and Desalination Station (phases I and 2). Work included FMEA (failure mode and effects analysis) and compliance with ISO 9002 procedures of non-destructive testing of castings for valve bodies.
- 2008 Reviewed valve and piping specifications and insulation specifications for cryogenic storage and pipe work at South Hook LNG terminal on behalf of CB&I John Brown.

- 2008 Review and update piping standards for GlaxoSmithKline including advice on material compatibility and insulation specifications and installation.
- 2008 Feasibility study including project capital and operating cost estimates for gas pipeline and gas conditioning units and water treatment plant and specification for supply of new CCGT power station in Nigeria on behalf PKF accountants. Work included interviewing government ministers on energy supply strategy and the market for private investment on new CCGT plants to overcome electric supply shortages in Nigeria.
- 2007-2008 Prepared techno-economic feasibility study, including capital and operating cost estimates, and basic engineering design for 40,000 tonne per annum citric acid plant in Saudi Arabia on behalf the private sector client. Work included provision of all utilities including ultra pure filtration for water treatment, demineralisation plant and effluent treatment plant.
- 2007 Review of basic design and operational costs for proposed GATE LNG terminal and storage facilities in Rotterdam on behalf of Gasunie
- 2006-2008 Undertook benchmarking cost analysis for the European Gas Transmission Initiative for all gas pipelines and storage facilities (both above ground and belowground) in Europe. The project required review and analysis of all operating and maintenance costs for pipeline systems, compressor stations and storage facilities for National Grid (UK), BGE (Eire), BEB (Germany), Enagas (Spain), Energinet (Denmark), Gassum (Finland), Gasunie (Holland), GRT gaz (France), OMV (Austria), Snam Rete Gas (Italy).
- 2005 Preparation of 20 valuations on behalf of the Kosovo Trust Agency for a variety of industrial process plants in advance of their privatisation.
- 2005 Carried out technical audits of operating and maintenance costs for PEMEX, the Mexican state owned oil company including all their refineries (including sulphur recovery units and LPG production

- and storage). The refining capacity represents 5% of global refining capacity.
- 2005 Preparation of due diligence report including review of the basic design and selection of equipment, valves and piping for a mini refinery in Russia on behalf of PKF accountants including assessment of proposed design of water treatment and effluent treatment facilities.
- 2005 Preparation of the valuation of a cement process plant in Sudan on behalf PKF accountants, London.
- 2004 On behalf of Brunner Mond, Northwich, undertook an analysis of manning levels and production costs at its Soda Ash plant together with the neighbouring Ineos sodium chloride plant
- 2004: Preparation of the design audit and due diligence report for \$80m loan for the expansion of ammonia production and storage facilities at a fertiliser plant including including review of cryogenic process plant and storage facilities and enhanced capacity of water treatment and effluent treatment facilities. Identified and prequalified prospective contractors - Client-ACHEMA fertiliser factory, Lithuania.
- 2003-4 Preparation of study on behalf of HRL (British Gas) on equipment maintenance and manning levels on the central production complex CPC1 (with main compression modules) and 5 further remote platforms DP3/4/6/8 and Calder - not normally manned in the South Field together with the North Field production and drilling platforms comprising the Morecambe Bay development with a capacity of 60 million cubic metres of gas per day (15% of UK peak gas demand).
- 2004 Team leader of a survey to review the technical and financial performance of the Cyprus Refinery Ltd on behalf of a potential purchaser. Work included environmental assessment including evaluation of water treatment and effluent treatment facilities.
- 2000-2003 Preparation of basic design and international bid documents, including preparation of detailed capital and operating estimates, for \$300 million extension to the Mughar cement plant, Ethiopia. Work included

- environmental assessment including evaluation of water treatment and effluent treatment facilities. Client- The Government of Ethiopia.
- 2003 Preparation of capital and operating cost estimates on behalf of BP for the future phases of developments in Azerbaijan in the Shah Deniz gas liquids (LPG and NGL) cryogenic separation and storage facilities.
- 2001 Team leader for the preparation of feasibility study, including capital and operating cost estimates, into a 300,000 tonnes per annum polypropylene plant in Saudi Arabia on behalf of the Kanno Group, Bahrain.
- 1998-2000 Undertook design audit and subsequent negotiations with contractors, reviewed international forms of model contract and advised on program schedules and cost estimates for AICHEMA fertiliser plant Lithuania - \$100M extension requiring two new main air compressors and air separation plant and new ammonia storage tank- Client The European Bank for Reconstruction and Development (EBRD).
- 1998 Carried out full technical and financial audit of the NAFCON fertiliser and urea plant at Port Harcourt on behalf of the NAFCON Executive Management Team and potential external investors. Carried out in-depth site audit of financial controls and production efficiencies with recommendations for plant modifications to improve efficiencies. Conducted in-depth discussions with Kellogg who were the local management contractor.
- 1998 Prepared basic design, project cost estimates, international bid documents (FIDIC orange book) and negotiated with contractors for the turnkey build of a \$60 million glass bottle factory in Eritrea. Work included environmental assessment including evaluation of water treatment and effluent treatment facilities.
- 1995-96 Analysed process operating problems with the cryogenic turbo expander modules at Total St Fergus Gas Separation Plant. The work included review of operation of cryogenic turbo expander for gas liquid separation Identified problems arising from not

operating in dense phase in offshore incoming pipeline and the resultant lack of LPG and NGL cuts available for sale.

- 1995-1996 Project manager for the contractor on the turnkey design, procurement, construction and commissioning of \$50M cotton ginning factory in Mali West Africa. Carried out all detailed design and procurement from Manderstam office. Work included environmental assessment including evaluation of water treatment and effluent treatment facilities - Client Wallace O'Connor Engineers and Contractors.
- 1994 - 1995 Project manager for EPC turnkey, design, purchase, construction and commissioning of extension to styrene monomer storage facilities (£20M) including contractor supervision at Huntsman, Manchester. Manderstam acted as main contractor and performed all basic and detailed design, procurement, logistics, site supervision and commissioning of works. Work included the provision of additional capacity for existing water treatment and effluent treatment facilities.
- 1992-1994 Project manager (on behalf of the owner) of new \$70M vegetable oil refinery in Damman, Saudi Arabia including client liaison, cost control, design approvals and site supervision of contractor during construction and commissioning. The scope of work included the design of water treatment and effluent treatment facilities - De Smet. Client: NABATI Vegetable Oil Co.
- 1991-1994 Team leader on feasibility studies into port access and loading jetty layouts for urea storage, transfer and ship loading on behalf of GPIC. Subsequently carried out on behalf of GPIC the conceptual design, bid documentation and project management support services for the new Urea plant constructed by a Japanese contractor. Client GPIC, Bahrain.
- 1991-1992 Project manager (on behalf of the contractor) for detailed design, procurement, construction and commissioning of 20km 6" NB offshore wet sour gas pipeline and onshore gas treatment and storage facilities (including the design of water treatment and effluent treatment facilities) in Qatar to BP Standards and Codes

of Practice on behalf of Medgulf Contractors - Client Medgulf.

1991 Carried out HAZOP study on behalf of Exxon Mobil at the Fawley refinery.

1981-1991 Project manager/ design engineer for the following projects which included writing the contractor bid documents, mechanical specifications, procurement and site supervision or construction and commissioning for the following projects:-

- Mods and revamp to LPG/NGL loading jetty at LPG/NGL plant. Messaid including review and specification of cryogenic insulation for jetty pipelines and loading arms
- specified, purchased and commissioned reverse osmosis water treatment unit.
- New gas booster compressor at LPG/NGL plant in Qatar.
- Wet sour gas pipeline pig launching/receiving plant in Qatar.
- Offshore/onshore 24" gas and 12" liquid pipelines, 4" NGL condensate pipeline.

Redesign of oil storage tank farm and the specification and procurement of two new crude oil storage tanks.

Other projects included:

- Process evaluation of C3 recovery scheme at NGL plant;
- Diagnosis of very large (7000 tonnes per hour) crude oil loading pump problems in Qatar (requiring special investigation into the behaviour of dissolved gases in crude oil);
- Evaluation of various design aspects of water re-injection scheme including Pipenet simulations and choke evaluations for rejecting water in depleted gasfield;
- Design and specification of two new wet sour gas dehydration units, firewater system for NGL plant, and new sour gas well head treatment plants.

EXPERT WITNESS EXPERIENCE

- 2021-24 Prepared expert reports and **gave evidence** at an International Arbitration in Paris in July 2022 and October 2024 on design and construction defects on a world scale ammonia and urea plant. Instructing solicitors. Instructing solicitors, Shearman & Sterling LLP, Paris and Gaillard, Baifatemi, Shelbaya Disputes, Paris.
- 2020-2023 Prepared expert reports and joint expert memorandum regarding damage to processing equipment and piping to caustic corrosion and process review of operating scenarios for the steam reforming process at the Moerdijk Lower Olefins Plant in the Netherlands. Instructing solicitors: Clausen Miller, London.
- 2021-2023 Prepared expert report and **gave evidence** at ICC hearing on the scope of the contractor's EPC work for wellheads, flow lines and central processing unit for gas and oil in Tunisia on behalf of the contractor's consortium. Instructing solicitors: Aglionby ADR, London.
- 2021-22 Prepared an expert report and **gave evidence** including hot tubbing on the design and construction variation claims for a biomass CHP plant at Hull on behalf of the contractor Galiford Try. Instructing solicitors, Pinsent Masons, Manchester.
- 2022 Expert opinion regarding the cause of the explosion and fire at National Petroleum Industrial Company's propylene polymers plant at Yanbu, Kingdom of Saudi Arabia, on 2 October 2018. Instructions Tecnimont S.P.A., Italy
- 2022 Gave expert advice in relation to a biomass CHP plant at the design, construction and commissioning of both an Anaerobic Digestion plant and an Energy from Waste gasification plant at a new waste disposal facility known as the EcoPark at Charlton Lane, Shepperton, Surrey. Instructed by Gowling WLG (UK) LLP, Birmingham.
- 2020-21 Prepared expert report and **gave evidenc** on design and construction defects on a world scale ammonia and

- urea plant. Instructing solicitors. Instructing solicitors, Shearman & Sterling LLP, Paris.
- 2021-22 Prepared expert opinion on design and operation of pipeline pigs for gas and liquid pipelines on behalf of a pipeline pig manufacturer in relation to a patent infringement case. Instructing solicitors McFarlanes LLP, London.
- 2021-22 Prepared expert report and **gave evidence** on a patent on the design and operation of “hot bolting” of piping on behalf of Hydratight, UK Ltd to meet ASME B16.5 and general industry standards.
- 2021-22 Prepared expert report and **gave evidence** on the design and commissioning of test rigs for flexible subsea piping between subsea equipment such as wellheads and floating production, storage and offloading facilities. Instructing solicitors Haynes Boone LLP, London.
- 2021 Prepared an expert report on design and operating/contamination issues at a plant to convert biomass (oils and fats) into biodiesel via transesterification at a biofuel plant at Immingham docks on behalf of Greenergy. Instructing solicitors, Kennedys, London.
- 2021 Provided expert advice on the design and construction variation claims for biomass CHP plant at Glasgow on behalf of the contractor Interterve. Instructing solicitors, CMS, Glasgow.
- 2021 **Gave evidence** at a retrial at the UK Crown Court on criminal proceedings on behalf of the SFO (Serious Fraud Office) regarding design and purchasing Single Point Mooring and subsea PLEMS in Iraq.
- 2020 Prepared expert report on installation, alignment and piping for two MAN Turbo compressors at Stublach Gas Storage facility, Northwich, UK. Instructing solicitors, Hill Dickinson LLP, Liverpool.
- 2020 Prepared expert report on chemical cleaning and internal preservation of piping systems at Stublach Gas

- Storage facility, Northwich, UK. Instructing solicitors, Hill Dickinson LLP, Liverpool.
- 2020 Prepared expert report on the fitness for purpose, claimed remedial works and delay of process and bottling equipment for syrup products. Instructing solicitors DAC Beachcroft LLP, Newcastle upon Tyne.
- 2020 Prepared expert report on supply and manufacturing costs of biocide (9.9% concentration of Alkyl C12–16 Dimethylbenzyl Ammonium Chloride (BAC)). Instructions from Wet and Forget Ltd.
- 2019-20 Prepared expert report and **gave evidence** at UK Crown Court criminal proceedings on behalf of the SFO (Serious Fraud Office) regarding design and purchasing oil facility equipment in Iraq.
- 2018-19 Prepared expert reports and **gave evidence** in ICC hearing in December 2019 in New York on design defects for an LNG plant and LNG storage for two LNG trains to be operated at Rumuji, Nigeria. Instructing lawyers FREEHILL HOGAN & MAHAR LLP | BAKER BOTTS LLP, New York.
- 2019 Prepared expert report and **gave evidence** at the Mediation on the scope of the contractor's EPC work for wellheads, flow lines and central processing unit for gas and oil in Tunisia on behalf of the contractor's consortium. Instructing solicitors: Decimus Fearon LLP, London.
- 2019-2021 Prepared expert report and **gave evidence** to ICC hearing on the design and supply of a CHP plant including GE gas turbines to Russia. Instructing solicitors Freshfields Bruckhaus Deringer, London and Paris.
- 2019 Prepared expert report on the design and supply of a CCGT plant including Siemens gas turbines in Georgia on behalf of Iveria Energy (Netherlands) BV. Instructing solicitors Kinstellar, Kyiv, Ukraine.
- 2019-20 Prepared expert report and **gave evidence** on the mechanical design of pasteurising tanks and heaters and

- a waste to biogas plant in UK. Instructing solicitors Reynolds Porter Chamberlain LLP (RPC), London.
- 2019 Prepared expert report as an expert adviser on the design of a enzyme production plant in UK. Instructing solicitors Weightmans LLP, Newcastle, UK.
- 2019-21 Prepared expert report and **gave evidence** at Mediation on the design and construction defects of a 100,000 m³ gasometer on behalf of Motherwell Bridge Cape. Instructing solicitors: Clyde & Co.
- 2019 Prepared expert report on design and construction defects of new diesel storage tanks and facilities at Boots, Nottingham. Instructing solicitors: Womble Bond Dickinson (UK) LLP.
- 2018-2019 Prepared expert report on loss of electrical power and shutdown at Stanlow Oil Refinery on behalf of Schneider Electric. Instructing solicitors: Pinsent Masons.
- 2018-2020 Prepared expert reports and **gave evidence** on the manufacture of aluminium profiles. Instructing solicitors Osborne Clarke LLP, Bristol.
- 2018 Prepared expert on the design and construction of gas pipeline in Northern Ireland on behalf of the contractor. Instructing solicitors A&L Goodbody, Belfast.
- 2018 Prepared expert report and **gave evidence** at ICC hearing in Paris on quantum/valuation of process equipment in the manufacture of seamless pipe for the chemical industries. Instructing solicitors: Charles Russell Speechlys LLP.
- 2016-2017 Prepared expert reports and **gave evidence** (including “hot tubbing”) on the design, materials and construction of oil and gas piping systems on behalf of the owner, Kuwait Oil Company (KOC) under an ICC Arbitration. Instructing solicitors: Holman Fenwick Willan LLP (hfw) London.
- 2017 Prepared expert reports and **gave evidence** on the design defects, materials and construction of a PET (Polyethylene terephthalate) manufacturing plant at

- Teeside on behalf of EP contractor, Uhde Inventa-Fischer GmbH under an ICC Arbitration. Instructing solicitors, Norton Rose Fulbright LLP.
- 2016 Prepared expert report and **gave evidence** on construction defects and remedial works on an EPC contract for the construction of a new LPG plant in Algeria on behalf Saipem Contractors, France. Instructing solicitors Gide: Loyrette Nouel A.A.R.P.I. Parris.
- 2015/16 Carried out site survey, review of design and construction records and prepared expert report on design defects, quantum and delay on a new pharmaceutical plant in Kent UK. Instructions from the owner GW Pharmaceuticals and Keating Chambers.
- 2014-2016 Prepared expert report and **gave evidence** at the International Court of Arbitration on behalf of the contractor in regard to alleged design and construction defects in an EPC contract for an offshore gas processing plant and gas pipeline in Rwanda. Instructing solicitors: Dentons UKMEA LLP.
- 2014/15 Prepared expert report and **gave evidence** on process and mechanical design defects and construction on a sour gas LPG processing plant and sales gas pipelines in Iraq. Instructing solicitors: Wilmer Cutler Pickering Hale and Dorr LLP
- 2014/15 Prepared expert report and quantum analysis on 3-D piping design and stress analysis work on a topside skid on behalf of Schlumberger. Instructing solicitors: CMS Cameron McKenna LLP.
- 2014/15 Prepared expert advice on the design and construction of PTA (pure terephthalic acid) production plants in China. Instructing solicitors: Smyth & Co, Hong Kong.
- 2014/15 Prepared two expert reports on design and defects on waste treatment plants including bioreactors, scrubbers and waste water treatment technology (SPR, MBBR, MBR) in in a combined waste heat power generation plant in Sussex.

- 2014/15 Preparation of expert report on investigation and analysis of problems with the EPC contractor in achieving steam cleaning of high-pressure steam pipe work in a combined waste heat power generation plant. Instructions from the contractor RWE Npower Renewables (Markinch) Ltd.
- 2014 Prepared expert report analysing the cost estimate and bid prepared for the design, procurement, manufacture and transport FOB Antwerp of a convection bank heat exchanger economiser for the power generating plant at Ruwais Fertiliser Industries Complex UAE.
- 2013-2014 Instructed by the International Court of Arbitration to give independent expert opinion and **gave evidence** to the Tribunal in respect to quantum on process and mechanical engineering issues at an LDPE plant in Germany.
- 2013-2014 Prepared expert report on design, construction and commissioning issues in relation to ash waste disposal at a major power generating station in Serbia on behalf of the contractor, Clyde Bergemann, Germany. Work included analysis of water filtration and recycling units. Instructing solicitors: Freeth Cartwright LLP.
- 2012-2014 Prepared expert report on the design and operation of a chemical etching line for automobile castings on behalf of Electromechanical Supplies Ltd following a fire at Howmet Ltd. Instructing solicitors: Kennedy's, London.
- 2012/13 Prepared expert reports and **gave evidence** on construction and commissioning defects on a 400,000 tpa LDPE plant on behalf of SABIC (Saudi Arabian Basic Industries Corporation). Instructed by Dickinson Dees Newcastle.
- 2012/13 Prepared expert report and quantum for Lytag Aggregates in respect of a claim against a consulting engineer in respect to the design and project management of a process plant using waste material feed (fly ash) from a power station at Drax UK. Instructed by Pinsent Masons, Glasgow.

- 2011/12 Prepared expert reports and **gave evidence** at the International Court of Arbitration on EPC (Kellogg) project cost estimates (quantum) and design and construction changes in respect to a 1,060 Mt/day nitric acid and ammonium nitrate plant in Egypt on behalf of the Owner. Instructed by White and Case, London.
- 2011/12 Prepared expert reports and **gave evidence** on the construction of access platforms and lifting operations at a boatyard that had caused serious personal injury to the operator. Instructing solicitors DWF, Manchester.
- 2012 Prepared expert report on design and construction defects at a coking plant at a power station in Brazil on behalf of Chinese Contractor, CITIC. Total value of claim \$150 million. Instructed by Messrs Bär & Karrer AG, Zurich.
- 2011/13 Prepared quantum analysis of like-for-like replacement of production machinery in respect to the owners claim for £63 million for rebuilding one of the largest confectionary factories in UK, following a major fire. Instructed by Evershed's, London.
- 2011/12 Prepared expert report and **gave evidence** at the International Court of Arbitration on behalf of BOTAS, a Turkish pipeline contractor in a dispute regarding the design and construction defects and repair costs (quantum) in the Azerbaijan to Turkey BTC pipeline. Instructed by Simmons and Simmons London.
- 2012 Prepared expert report on cement grout pump causing serious personal injury to the operator. Instructing solicitors, Stewarts Law, London.
- 2012 Prepared expert report on air operated hoist during maintenance operations in FCC reactor whilst unloading the refractory that caused serious personal injury to the operator. Instructing solicitors DWF, Manchester.
- 2011 Prepared an expert report and **gave evidence** to the ICC tribunal on construction and commissioning issues in regard to an air separation unit (ASU) in Oman on

- behalf of Air Products. Instructed directly by Air Products.
- 2011 Prepared expert report and quantum analysing the cost estimate and bid prepared by Birwelco Ltd to Uhde GmbH of €4,195,000 for the design, procurement, manufacture and transport FOB Antwerp of a convection bank heat exchanger economiser for the power generating plant at Ruwais Fertiliser Industries Complex UAE. Instructing solicitors Capital Law, Cardiff.
- 2011 Prepared expert report on behalf of Government of Kazakhstan on design defects, delay, disruption and preferential engineering on sour gas high-pressure flow lines, valves, oil and gas separation (LPG and NGL), storage and transportation systems in Kazakhstan in regard to Owners claims in excess of \$500 million. Instructed by Hill International.
- 2011/12 Prepared expert report on behalf of Petroleum Development Oman (PDO) on contractors claims totaling \$300 million on design defects, delay, disruption and preferential engineering on sour gas high-pressure flow lines, valves, oil and gas separation (LPG and NGL), and storage facilities. Instructing solicitors Lalive, Geneva.
- 2010 Prepared expert report and **gave evidence** in UK High Court on the failure of an access platform leading to personal injury. Instructing solicitors DWF, Manchester.
- 2010 Prepared expert report on breakdowns and quality control on a continuous strapping line at BS Eaton, Wolverhampton. Instructing solicitors Mills and Reeve LLP, Birmingham.
- 2009/10 Prepared expert reports on behalf of TAV Engineering in defense of the HSE prosecution relating to the failure of the overflow protection system and its alleged causation of the overtopping of storage tanks and subsequent explosion at the Buncefield oil storage depot in December 2005. This followed the successful civil defense in 2008 (see below). Instructing solicitors Halliwells, Manchester.

- 2009/10 Prepared expert report on design defects, delay, disruption and preferential engineering on the design and construction of cryogenic natural gas processing and storage facilities for LPG/LNG and in Yemen on behalf of Yemen LNG Company (major shareholder Total). Instructing solicitors Fried, Frank, Harris, Shriver and Jakobson, Washington.
- 2009/10 Prepared expert report and **gave evidence** on contaminated LPG feed to ethylene cracker at Borealis, Sweden. Work required investigation of two phase flow into heat exchangers, and metallurgical examination of corrosive acid attack on titanium by hydrofluoric acid.
- 2009/10 Prepared expert report of Costain Oil and Gas on the failure of a temporary strainer in the suction line to main gas compressor (13 MW) at National Grid compressor station, work involved fatigue analysis and vibration analysis due to high gas flow rates. Instructing solicitors Berryman Luce Mawer, London.
- 2009 Prepared expert advice on IRR calculations for send and pay agreements in respect to crude oil pipeline takeoff agreements on major pipeline in Sudan. Instructing solicitors: Watson, Farley & Williams, Bangkok.
- 2009 Analysis on behalf of the Owner, Maersk Petroleum, on delay, disruption and preferential engineering claims from an EPC contractor in respect to offshore accommodation modules and the Owners counterclaims regarding quality of engineering and programme issues. Instructing solicitors Holman Fenwick Willan, London.
- 2009 Prepared expert report on the quality of manufacture and fitness for purpose of alloy steel valves. Investigations required metallurgical examination and review of production processes to ISO 9002 procedures. Instructions received directly from NEM, Holland.
- 2008-2010 Preparation of expert report in the successful defence of a £700 million claim from Total regarding the failure of an oil storage tank at Buncefield Oil Depot and subsequent major explosion on behalf of TAV Engineering (supplier of the overflow protection

- system) insured by AIG. Instructing solicitors Halliwells London.
- 2008-2009 Prepared expert quantum report on the cost of repair of a high-speed aluminium rolling mill following a fire. Instructing solicitors: Kennedys, London and a DWF Manchester.
- 2008 Prepared expert report on design and construction project management issues comprising delay, disruption and preferential engineering for FEED (front end engineering design) and EPCC (detailed engineering, procurement, construction and commissioning) of a 4,500MT per annum Methanol Plant by Lurgi AG in Russia. Instructions received directly from Lurgi AG Frankfurt.
- 2008 Prepared expert advice on cryogenic storage and piping design and insulation requirements at South Hook LNG plant Pembroke UK, on behalf of John Brown (CB&I).. Instructing solicitors; Mayer Brown Rowe and Maw, London.
- 2008 Provided expert advice on the manufacture of finned heat exchanger tubes instructing solicitors Arnold Davies Arnold Cooper, London.
- 2007-2008 Prepared expert report and **gave evidence** at the International Court of Arbitration on behalf of Lurgi AG in respect to the design and construction of gas compression and underground storage (LNG) facilities in Turkey. Instructions received directly from Lurgi AG, Frankfurt.
- 2008 Prepared expert report on the quality of manufacture and fitness for purpose of stainless steel Jaguar fuel tanks in respect to a £500,000 claim against the stainless steel supplier. Investigated failures of deep drawing process undertaking FMEA (failure mode and effects analysis) and compliance with ISO 9002 procedures. Prepared expert report including metallurgical examination, and gave evidence at mediation. Instructing solicitors DLA and Cobbetts Birmingham.

- 2006-2007 Prepared expert reports and **gave evidence** at the International Court of Arbitration in the production of magnesium oxide in Jordan, on behalf of the Owner in successfully defending claims from the EPC contractor and pursuing counterclaims on equipment defects in a major process plant. The work had been undertaken under the FIDIC orange book on the basis of a basic design provided by the Owner and the dispute revolved around the extent of the basic design and alleged defects in the basic design. Instructing solicitors; Mayer Brown Rowe and Maw, London.
- 2007 Prepared expert report and gave evidence on the quality of manufacture and fitness for purpose in respect to a £200,000 claim from the purchaser against a manufacturer of a potato harvester. Instructions received from Freeth Cartwright, Manchester and Gross and Co, Bury St Edmunds.
- 2006 Prepared expert report on petroleum storage and filling facilities at Triumph Motorcycles following a major. Instructing solicitors, Greenwoods, London.
- 2005 Prepared expert report on petroleum, diesel and heavy fuel oil distribution and cost structures and refining margins in Ukraine in respect of a dispute on the valuation of a Ukrainian refinery and distribution network comprising 50 filling stations. Instructions received from Reid Minty, solicitors, London.
- 2005 Undertook site survey and prepared expert report on a petroleum filling station and underground storage facilities in respect to criminal investigation of petroleum product substitution by Avgas and VAT fraud. Instructing solicitors David Phillips and Partners, Essex.
- 2004 Prepared expert report on the pipe specifications and manufacturing methodology for pipe bombs in a criminal/terrorist investigation in Northern Ireland.
- 2002-5 Prepared expert reports and **gave evidence** on water treatment plant at jersey power station. The failure of plastic piping systems in the water treatment plant led to a spillage of concentrated hydrochloric due to incorrect design selection and quality control by the

- tank design and installation contractor. This led to a spillage of HCL causing £1 million consequential damage. Instructions received from GAB Robins, London.
- 2002 Prepared expert report on the world market for the petroleum additive TEL and providing advice on the valuation of a process plant to produce TEL. Instructions received from BP Collins solicitors, London.
- 2002-2003 Prepared expert report and **gave evidence** on the heat exchangers and cooling water/glycol system in two 2.3 MW standby diesel generators. Instructing solicitors, Rawlinson Butler, Crawley
- 2000-01 Prepared an expert report and **gave evidence** on project management issues comprising delay, disruption and preferential engineering including analysis of Primavera, on behalf of I. S. A. B. (Italy) in the International Court of Arbitration in defence of a \$250 million claim brought by Foster Wheeler and Snamprogetti regarding the basic and detailed design, procurement, construction and commissioning of an integrated gas combined cycle power plant in Sicily using heavy ends from the adjacent oil refinery. (Instructing solicitors Clifford Chance, Paris)
- 2000 Prepared an expert report and **gave evidence** as a single joint expert for Apple Engineering and Pacmatec in relation to a £20,000 dispute on mechanical handling (Instructing solicitors Shoosmiths and Sandersons)
- 1999 Prepared Expert report on the Owners's claim for lack of performance of table salt processing plant (heat and mass transfer systems) designed and constructed by GEC ALSTOM contractors.
- 1999 Prepared Expert report and **gave evidence** for Mixamate Holdings Ltd in respect of their successful claim against insurers (£30,000) for a piping failure in and cooling water system. (Shadbolt & Co instructing solicitors, Reigate).
- 1998 Prepared expert report for London Pumps UK Ltd in respect of their successful claim against a consulting

- engineer/design contractor for failure of a cooling water circuit and heat exchangers at Johnson and Johnson's pharmaceutical plant, Portsmouth. Value of claim £200,000 (McNulty & Co, Basingstoke instructing solicitors).
- 1998 Prepared expert report and **gave evidence** to the International Court of Arbitration on behalf the Contractor, in their successful defence of a \$20M claim by the Owner on the design of a vitamin C plant. Work included design review of all utilities including ultra pure filtration for water treatment, demineralisation plant and effluent treatment plant. (Berwin Leighton, London instructing solicitors).
- 1995-1996 Prepared expert report for Total Oil in their successful defence of £4.5M claim by BP over mechanical failure of a turbo expander machine at St Fergus Natural Gas Plant to separate LPG and NGL products. (Denton Hall, London instructing solicitors).
- 1990 Prepared evidence for ARCO (Atlantic Richfield) in defence of failure of mechanical equipment at Texaco Pembroke refinery. (McKenna & Co, London instructing solicitors).
- 1989-1990 Prepared Expert Report for Wimpey, as Contractor, in their successful defence of a £6M claim by Texaco, the Owner, relating to design of pressure vessels and mechanical failure of a vacuum loading system for catalysts at the Pembroke refinery. (Reynolds, Porter Chamberlain, London instructing solicitors).