

## Career Summary

### Gary John Lock

**BSc, CEng, FIMechE MSOE MIRTE**

#### Profile

Business Manager responsible for the marketing, management and delivery of all projects in the Gas Turbine and Expert Witness sectors. Gary has over thirty years experience in mechanical engineering consultancy. His experience includes project management, design and analysis of structures, mechanisms and process plant. Gary has been involved in the design, analysis and project management of Gas Turbine projects for over 18 years.

#### Project Experience

- ▶ The dynamic analysis of Heavy Goods Vehicles. Particular expertise in the stability of articulated vehicles. Over 40 expert witness investigations undertaken.
- ▶ Expert witness support in the over-turn of a skip lorry.
- ▶ Numerous forensic investigations into the roll-over of vehicles using hand calculations and computer simulations.
- ▶ The conversion of a civilian off-road vehicle to meet military requirements.
- ▶ Investigations into the stability of military vehicles.
- ▶ Assessments into the stability of fork-lift trucks and dumper trucks.
- ▶ Expert witness support investigating the postulated failure of a chair mechanism and resulting injuries.
- ▶ The design and analysis of several mobile vehicles supporting video screens.
- ▶ Design and structural assessment of a stacking mechanism for a large mobile screen display unit,
- ▶ Design of a novel machine for evenly applying turf dressing.
- ▶ Conceptual design, detailed design and structural assessment of an aero-engine `blade-off` test rig.
- ▶ The design and assessment of external casings and pressure retaining components for a modified industrial gas turbine to reduce exhaust emissions.
- ▶ The design analysis and project management of sector and annular Gas Turbine combustion rigs.
- ▶ The design of a compressor for an industrial gas turbine replacing existing blades and vanes with higher performing components.
- ▶ The seismic and structural assessment (ASME III / BS 806) of over

#### Date of Birth

4 February 1961

#### Qualifications

Portsmouth Polytechnic  
Mechanical Engineering  
BSc(Hons) Upper Second

#### Membership of Professional Institutions

Chartered Engineer  
Fellow of the Institution of Mechanical Engineers  
Member of the Institution of Road Transport Engineers  
Member of the Institution of Operating Engineers  
Affiliate of the Institute of Traffic Accident Investigators

#### Discipline

Project management, Structural Integrity, Design, Finite Element Analysis, Vehicle Dynamics

#### Professional Training

Expert witness

#### Market Sectors

Gas Turbines  
Conventional & Renewable Energy  
Nuclear  
Transport

#### Previous Employers

Babcock Woodall-Duckham Ltd  
Atkins Research & Development  
Wimpey M.E.&C.

#### Software Summary

- ▶ ABAQUS
- ▶ ANSYS
- ▶ PSA5

#### Contact details

Frazer-Nash Consultancy Ltd  
Dorking  
Tel: 01306 885050

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50 vessels and piping systems for nuclear process plants

- ▶ The design and structural assessment of a helicopter landing test rig. The 16m x 12 m cantilevered platform was fully articulated and simulated a Type 23 Frigate operating in up to sea state 6.
- ▶ The design and structural assessment of a complex cross-flow recuperator for a marine gas turbine.
- ▶ Re-design of the suspension of a towed howitzer for improved stability.
- ▶ The concept design of a 400 metre diameter rotating structure for the entertainment industry.
- ▶ Verification of supporting calculations on Magnox core restraint structures.
- ▶ The design of a vibration monitoring device for overhead power cables.
- ▶ The design of sealed housings for naval communications equipment.
- ▶ The design of a military palm top computer casing.
- ▶ The design and development of a non-invasive device for measuring pressure in a cylinder.
- ▶ Concept and pre-production designs of a semi-automatic overprinting machine for the food/pharmaceutical industries,
- ▶ A structural assessment of welded aluminium railway carriages, including a detailed assessment of many ancillary mountings including the design and assessment of anti-climb units mounted to the headstock.
- ▶ The structural design of a wind turbine pitch control mechanism.
- ▶ Reliability, availability and life cycle costing of railway rolling stock.
- ▶ Analysis a space frame car chassis with subsequent design modifications to increase rigidity.
- ▶ The assessment of Process Plant (ASME VIII, BS806 & BS5500), structures (BS5950 & BS8118), cranes (BS2573), and bridges (BS5400).
- ▶ Analysis of composite vehicle structures including Tankers under normal operating and emergency/accident loadings. .
- ▶ Static and dynamic analysis of missile launchers including strength test support.
- ▶ Investigation into the failure of several large bore refractory lined gas pipes.
- ▶ An investigation into fluid `sloshing' in tanks using finite element methods.
- ▶ Installation, inspection and testing of petrochemical plant including NDT
- ▶ Detailed investigation into the effect of salt water corrosion on fatigue crack growth rates in steel.

## Employment History

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|----------------|---|
| 1988 - present | Frazer-Nash Consultancy Ltd   |
| 2019           | Group Business Manager – Energy Resources                               |
| 2007           | Business Manager – Gas Turbines, Conventional, Renewable and Industrial |
| 2006           | Business Manager – Gas Turbines   |
| 2000           | Sector Area Manager – Structures & Design                               |
| 1997           | Group Leader – Structures & Dynamics                                    |
| 1986 - 1988    | Babcock Woodall-Duckham Ltd<br>Stress Engineer – Vessels & Piping       |

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|-------------|---|
| 1983 - 1986 | Atkins Research & Development<br>Engineer/Analyst |
| 1979 - 1983 | Wimpey M.E.&C.<br>Undergraduate Trainee           |