

# James Nicholas Cooper

## Technical Director



### Profile

Nick has undertaken bespoke design of equipment and products for a broad range of mechanical industries.

Early in his career he worked on the Sizewell 'B' Polar Crane and emergency cooling water system along with a number of other nuclear related projects at BNFL.

He has also been heavily involved in non-nuclear bespoke designs such as the backup system for the Channel Tunnel Boring Machines, (the worlds fastest continuous steel casting machines), wind turbines, through to the creep forming manufacturing facility for the A380 and the mechanical design for the Falkirk Wheel and the Gateshead millennium bridge.

### Key Experience

- Design and management of multidisciplinary bespoke solutions,
- Static and dynamic FE analysis
- Pressure system design to ASME VIII and BS5500
- Handling systems and analysis to BS2573 pts 1 and 2
- Hydraulic system design.
- Detailed design for manufacture.
- Production of CAD layout and concept drawings
- Design of steel structures to BS2573, BS5950 and Eurocode 3 and BS5400.
- Integration of gear and bearing drive systems.

### Profession

Mechanical Engineering

### Joined Atkins

October 2008

### Nationality

British

### Qualifications

BSc Engineering Science, FIMech, FREng

### Professional Associations

Fellow of the Royal Academy of Engineering, Fellow of the Institute of Mechanical Engineers

### Experience with Atkins (October 2008 to Present)

**Job Title:** Technical Director

- Development of IVA traction system for AWE
- Development of Bradwell pond de-contamination system

### Experience with M G Bennett & Associates Ltd, Rotherham

**1995 to October 2008: Managing Director and Principal Design Engineer**

**1984 to 1995: Director/ founding member of M G Bennett & Associates Ltd**

Since the inception of the company, associated with most of the design projects as Design Team Leader/Senior Design Engineer/Chief Engineer.

### Movable Structures:

- Working alongside British Waterways on submission for new Kelpie Boatlift at Grangemouth, Scotland
- Working alongside British Waterways on Prescott Channel Olympic water impounding scheme
- New iconic road bridge in Cork with Wilkinson Eyre and Arup
- Working with Flint and Neill Partnership and Marks Barfield Architects on new road bridge in Dublin
- Design of the support and drive system for a 150 m tall x 34 m diameter 65000 ton accommodation tower block
- Design of an innovative boat/barge lift for Royal Haskoning at Barrow
- Design of Falkirk Wheel Boatlift
- Design of six movable bridges of different types for the Forth & Clyde re-opening

- Design of the Big Idea footbridge at Irvine, Scotland, including structure, mechanical and electrical control equipment
- Sammy's Point Bridge, mechanical, electrical and hydraulic design services for the articulated foot and cycle bridge for The Deep Millennium Project, Hull
- Glasgow Science Bridge, design in conjunction with Building Design Partnership
- Design of Lowry Centre Lift Bridge, mechanical power hydraulic and electrical
- Design and commissioning of new centralised control system and hydraulic equipment for four movable bridges, two lock gates and penstocks at St Katharine Docks, London
- Design of mechanical, electrical, hydraulic and structural to the Torbay footbridge and impounding lock gate
- Heavily involved in the design and supervision of the Lowry (Manchester), Irvine (Scotland), Forton (Portsmouth) and Baltic (Newcastle) and Rochdale Canal (Oldham) Millennium Movable Bridges
- Cambridge Tram line - bespoke gantry for assembly of tram line track

#### **Other design projects have included:**

- Airbus A380 creep forming tool
- Airbus A380 wing handling system
- Design of pipe laying machine for AEA
- Design of sub-sea pipeline intervention tools
- Design of accumulated waste to compost plant
- Design of sub-sea 42" gate valves
- Design of 1MW wind turbine
- Design of Antarctic accommodation units
- Design of 5MW gas turbine marine propulsion systems
- Chief Engineer on the design of back up mechanical handling systems for the Channel Tunnel TBMs
- Design of 1MW gas turbine/gearbox vessel propulsion system
- Design engineer responsible for the complete design of the world fastest continuous casting machine. (Korea)
- Design of Pig Traps and piping systems related to both onshore and offshore installations for various clients including Philips Petroleum Co (UK) Ltd, Foster Wheeler, ETAP (Subsea innovative system for introducing 'pigs' underwater)
- Innovative design for high pressure closure systems
- Design of Directional Drilling Rigs with capability up to 250 tonne pullback for 1.05m pipes up to 1km pull
- Design of pressure and vacuum vessels with dimensions of 100m long for foam blowing operations
- Design of full range of butterfly check valves from 2" to 84" destined for use in the offshore oil industry
- Design of Rock, slurry, EPB and open face road header and back-hoe TBM's
- Design of world's largest off shore friction welding machine
- Design of Pembroke dock RO-RO ramp structure and M&E system
- Design appraisal and dynamic study of continuous slab caster at Llanwern, Port Talbot, Templeborough, steelworks
- Design of 2000 cubic metre process containment vessels to BS5500, A D Merkblatter and ASME VIII located in USA, Germany and Holland
- Automatic train direction equipment for London Underground Ltd
- Redesign of pulverised fuel pipe work installations at various power stations
- Stress analysis of aluminium die-cast component for textile machinery
- Design of a mobile grandstand
- Design of a 200 ton/day household waste anaerobic digester

#### **Nuclear Related Projects:**

- Dynamic modelling & seismic analysis of fuel charging machine and fuel assemblies (including drop fuel load case) for the AGRs at Hinkley Point, Torness and Heysham
- Impact assessment within the Decay stores associated with the AGRs
- Seismic analysis of the polar crane for Sizewell 'B' nuclear power station
- Seismic design & validation of 7 dockside cranes at Devonport Docks
- Seismic validation of lifting frame for nuclear submarine
- Design & seismic validation of shield door
- Thermal Analysis of superheater outlet header & seals at Dungeness 'B'

### **Experience with Skelton Hall Limited (1983 – 1984)**

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Employed by Skeltonhall Ltd to computerise their accounting system, which involved the development of a fully integrated job-costing program to produce monthly trial balance and profit and loss accounts. Assisted with stress analysis work relating to mine shaft headgear and shaft sinking winch drums.

### **Experience with GEC Electrical Projects (1982 – 1983)**

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After leaving Durham University, was employed by GEC Electrical Projects as a graduate trainee and worked on the commissioning and installation of the dynamic control system of a Royal Navy submarine recovery vessel.

### **RECENT TRAINING AND CPD:**

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- Research into publications and standards required whilst undertaking design work on projects
- Up to date training in Quality and Safety Procedures
- Training on the updated requirements for the design risk assessments in accordance with the Construction (Design and Management) regulations 2007

<b>Year</b>	<b>Award</b>	<b>Project</b>
2001	The Southern Association of the Institution of Civil Engineers	Forton Lake Opening Bridge
2002	The Saltaire Society in association with the Civil Engineers	Falkirk Wheel
2002	The Structural Steel Design Awards	Falkirk Wheel
2004	Institute of Materials, Minerals and Mining, Gold Medal	Airbus A380 Top Skin Creep Forming Facility