Richard Burgess

Business Manager

Profile

Richard is the Business Manager of the Design office in Rotherham, responsible for the supply of detailed mechanical design solutions into the Nuclear and other industries.

From a strong mechanical engineering background Richard has previously taken lead designer roles in a variety of projects ranging from the creep forming facility used for the Airbus A380 wing skins, to bespoke design for large wind turbines.

Key Experience

- An experienced mechanical and control engineer with significant engineering lead experience
- Software developer with focus on extending commercial CAD and FEA packages
- Static & Dynamic FEA
- Coaching and development of Engineering skills

Profession

Mechanical Engineering

Multi-Point Control Systems

Joined Atkins

October 2008

Nationality

British

Qualifications

MA (Hons) MEng

Professional Associations

Experience with Atkins *(October 2008 – Present)*

Job Title: Business Manager

- **Botlekbridge** – Lead mechanical engineer preparing FEED for two off 100m x 50m lift bridges as part of the A15 scheme in Rotterdam, Holland. Design undertaken to Dutch codes.
- **Tidal Turbine Design** – Lead engineer, design development of 1.2MW tidal turbine prototype to be installed off the coast of Pembrokeshire. Responsible for all aspects of mechanical design from load development, powertrain layout, nacelle and yaw structures and foundation interaction.
- **Kelpie Structures & Displacement Lock** – Concept and methodology development. M&E Design works of landmark structure.
- **Advanced Casting FEA** – Modelling of solidification process using novel casting techniques for Inconel 625. Main stop valve design to ultra super critical levels utilising test data to develop process with client.
- **Pseudo Direct Drive Gearbox Design** – Mechanical and assembly design of non contact magnetically geared generator. Advanced materials, analysis and assembly techniques and novel mechanical design in order to package the concept to tight tolerances under the affects of significant permanent magnet forces.
- **DML Transport & Alignment System** – Mechanical, hydraulic, electrical and control design for system to move reactor access house across the dock.
- **High Integrity Transport System** – Seismic and ground shock analysis supervision on transport system for heavy military X-Ray generator
- **Suspension Bridge Dehumidification** – Concept design of static and mobile gantries for access to suspension bridge cables. Lead M&E team to supply power, integrate control systems and provide cable monitoring and reporting SCADA systems for Humber, Forth and Severn suspension bridges
- **Wind Turbine Blade Testing Rigs** – Supervising Engineer on a variety of static and mobile extreme and fatigue test rigs for major wind turbine manufacturer. Work includes structural and mechanical design, hydraulic systems design and control philosophy and software.
- **Bellows Manipulator** – Design of articulating trolley to allow puddle pool bellows to be transported through the pipework at Hinkley Point B power station to allow replacement.
- **Conwy Tidal Gate** – Mechanical design and software implementation of automatically controlled marina impounding gate.

Experience with M G Bennett & Associates Ltd ***(1996 to October 2008)***

Job Title: Systems Engineer & Senior Analyst

- **Prescott Channel** - Electrical & Mechanical Design Supervisor - Design of safety systems to IEC 61508/ IEC 62061
- **Airbus A350 Facility Control System Design** - Multi point control system incorporating five autonomous vehicles, ten static stations and further operator input and safety locations. Single network architecture with wireless safety throughout
- **Begnagh Lift Bridge** – Design and implementation of safety rated control system for fully automatic (unsupervised) operation of road lifting bridge. Automatic boat detection required SIL rated safety functions protecting key areas around and under the bridge during movement. Mechanical design of bridge lifting components.
- **DML Dockside Refuelling Cranes** - Supervision of analysis for crane seismic qualification and drop load stability
- **Aerobic Digesters** - Design and implementation of multi point control system for waste processing plant. Bespoke batch managing SCADA system, to manage process and provide detailed process reports for DEFRA approval
- **York Millennium Footbridge** - Temporary works design and supervision. Production of drawings for manufacturing
- **Airbus UK** - Tooling and process design for creep forming of upper wing skins on Airbus A380 Super Jumbo. Flexible tooling taken from concept to detail drawings of demonstrator unit
- **Factory Equipment** - Electrical, control system and software design for brake lining press – 500 tonne with precise temperature control. Electrical, control system and software design for flexible Kevlar stretching press – working through a series of pre-set programmes to take fibres to extreme work hardened position
- **70m Welding Station** - Control system and software design for automated trough welding machine
- **Reinforcing Plate Forming Cell** - Concept study into automated cell for forming aircraft wing reinforcing plates. Single stage press and measuring centre used to feedback plate deformations and iterate further pressing to reach desired shape
- **1MW Horizontal Axis Wind Turbine** - Project manager of design and analysis phase of project (total project value £1 million). Development of time history based fatigue analysis for fabricated and welded structures to accurately assess eighteen channel loading
- **Sub sea pig launching system** - Detail design engineer on first system of this type. Allows pipe cleaning equipment to be deployed 300m below sea level allowing more remote oil sites to be realised
- **High pressure gate valve** - Design and analysis of 42” Class 1500 valve (5 metres high) – largest in world. For use sub sea and on surface in new European fields
- **Check valve** - Design and analysis of three large diameter low pressure check valve up to 84” nominal diameters
- **Epicyclic gearbox deflection analysis** - Non standard use of FE software to model components and interferences within gearbox
- **Design, finite element analysis and optimisation** of moving sections of steel continuous caster; increased flexibility and reduced weight achieved using hydraulic action instead of traditional cam methods
- **Stability analysis of dockside crane** subjected to vehicle impact and rope drop load cases using FE software
- **Investigation into use of hydrostatic yaw bearings** in wind generation schemes. Also conceptual design investigations of mechanical sections of 3MW wind turbine

Movable Structures:

- **Forth Road Bridge, Dehumidification System** - Supervisor of mechanical design. Design and implementation of cable monitoring system involving data collection from 72 locations on the bridge. Data stored using SCADA system and available for viewing and interrogation over the Internet
- **Begnagh Lift Bridge, Ireland** - Mechanical design and safety related software using Siemens S7F platform
- **BoNess Harbour Lift Bridge** - Design and implementation of wireless safety system and bridge control software
- **Forton Lake Bridge** - Review and maintenance of inverter controlled lift bridge
- **Vasteras Bridge, Sweden** - Design supervision of 100m architectural dual bascule bridge with 40m opening span. Design supervision of control software with remote operation via radio link
- **Thorne Swing Bridge** - Control software for remote wireless operation
- **Gateshead Millennium Baltic Bridge** - Engineering Supervisor responsible for mechanical and electrical design of award-winning bridge
- **Pembroke Dock Ferry Terminal** - Design of alternative buoyancy system, finger type upper deck ramps and hydraulic and control system for the two moving ramps. Authoring of all PLC software and commissioning of terminal. Preparation of Operation and Maintenance manuals for terminal operation. Preparation of method statements for erection of terminal and maintenance procedures for link span bearings

- **Lowry Centre Footbridge** - Authoring of all PLC software for 100m moving lift bridge. Dual Cegelec PLC's communicating over a proprietary network, handling all positional, speed and actuation calculation. System commissioning.
- **St Katharine's Dock** - Remote monitoring system installed - 9 PLC system interrogations and reprogramming from remote sites.

1995 – 1996

MEng in Manufacturing Engineering involving industrial seminars and industry based consultancy projects including:

- WIP Reduction
- Line Side Delivery
- Contractor Assessment
- Heat Treatment Process Modification
- Land Rover Requisition System

1992 - 1995

BA in Manufacturing Engineering

RECENT TRAINING AND CPD:

- IOSH Safety for Senior Leaders
- Atkins senior management development programme
- Coaching for Senior Leaders
- Atkins management development centre
- Completed the course, assessments and examination for Functional Machine Safety – Level 1: Safety Practitioner, organised by Siemens International, SITRAIN certified
- Training on the networking of PLC's (Programmable Logic Controllers), organised by Siemens
- Up to date training in company Quality and Safety Procedures
- Training on Internet Enabled SCADA, organised by Siemens and Bennett Associates
- Training on the updated requirements for the design risk assessments in accordance with the Construction (Design and Management) regulations 2007