Matt Major MEng AUS

Director at MAJOR ENGINEERING LTD :: South-East England

Mechanical Design, Consultancy & General Engineering

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Experienced, versatile and hands-on mechanical engineer with a background in both detailed and top level design, across a variety of disciplines and industries. Proven ability to deliver high quality work, be it a small one-off job, or a large multi-million pound project.

Clients of MAJOR ENGINEERING LTD

- **3D Crowd, St Albans, Hertfordshire :: Medical**

Detailed design to modify emergency NHS face shields and analysis of 3D printer settings, to increase rate of manufacture without loss of performance/quality. Provided 3D printing services to the manufacturing effort. Image1 Image2

- **ISS Aerospace, Chieveley, Berkshire :: Aerospace**

Detailed mechanical design and configuration control of multiple battery and hydrogen fuel cell UAVs, utilising a combination of 3D printed structure and traditional build methods. Projects include a heavy lift platform for Total's 3D seismic imaging R&D, an experimental concept for a heavy lift, high performance aircraft, development of existing multi-functional modular quadcopter, and a larger multi-functional modular hexacopter. Image1 Image2 Image3

- **Open Cosmos Ltd, Harwell, Oxfordshire :: Space**

Provided design and manufacture advice to improve performance and reliability of CubeSat dispenser mechanism.

- **Remap, Sevenoaks, Kent :: Medical**

Design and build of a drum kit adaption to allow playing only by hand, by means of remotely actuated servo-assisted pedals, utilising Arduino microcontrollers. Enclosures fabricated and 3D printed in-house. Electronics built in-house. Image1 Image2

- **KISPE Ltd, Farnborough, Hampshire :: Space**

Produced Earth observation satellite concepts and internal layouts for various payloads with multiple configurations.

- **Sen Corporation Ltd, London :: Space**

Detailed design, drawing and configuration control of the SkyRider and SkyRider-M, a fixed and mechanised on-orbit pan/tilt 4K camera system for Earth observation. Launched in February 2019. Video1 Image1 Image2 Image3

- **Surrey Satellite Technology Ltd, Guildford, Surrey :: Space**

Consultancy services provided to SSTL working exclusively on Eutelsat Quantum, SSTL's first geostationary satellite. Design and drawing of honeycomb panels, and platform harness routing. Image1

- **Airbus Zephyr, Farnborough, Hampshire :: Aerospace**

Aerostructure engineering services provided to Airbus for their High Altitude Pseudo-Satellite (HAPS) solar-powered UAV – a cutting edge R&D project. Carbon composite structural design of working scale models; flight trial assistance; design and build of mechanical test rig used for testing and qualification of major structural components inside main wing. Image1

- **[Private Client], Cardiff, Wales :: Entertainment**

Detailed design and manufacture advice for private client wishing to build a custom pair of audiophile-grade stereo speakers. With client's specification in mind, multiple designs were considered with performance analysis for each. Image1 Image2

- **Ossatura Ltd, The Old Vinyl Factory, Hayes, Hillingdon :: Medical**

Detailed design and stress analysis for company startup, providing mechanical models and stress reports for the EvolvAble walking aid system – an innovative assistive device that can be configured throughout changes in the user's condition. Image1

- **Martin-Baker Aircraft Co. Ltd, Denham, Middlesex :: Aerospace**

Mechanical design consultancy provided to Martin-Baker, carrying out tolerance stack-up analysis on Eurofighter Typhoon ejector seat components, and recommending changes to Geometric Dimensioning & Tolerancing (GD&T) approach. Image1

Employment History

Surrey Satellite Technology Ltd, Guildford, Surrey :: Space

July '12 – June '15 **Lead Mechanical Engineer, Mechanical Design and Analysis**
Promoted to Lead Mechanical Engineer, carrying out detailed and top level design for both geostationary and earth observation satellites. Responsible for accommodation of major subsystems, and

integration of new payloads (telecommunication hardware, optical telescopes). Also responsible for own resources (labour and materials) and schedules. Mentor to Customer Engineer for AlSat-1B.

Main projects: *GMP-T Structural Qualification Model; AlSat-1B.*

Oct '11 – July '12 **Design Engineer, MCAD**

Mechanical design engineer in MCAD design office, initially carrying out work for Bids department producing many concepts and renderings, which included FORMOSAT-7. Later took over the design of the new GMP-T Power System and its associated mechanical ground support equipment (MGSE). Also provided assistance with build of DMC3 Structural Qualification Model.

Main projects: *GMP-T Power System.*

QinetiQ, Farnborough, Hampshire :: Space

Sept '08 – Oct '11 **Design Engineer, Space UK**

Mechanical design engineer in small drawing office, trained by senior ex-RAE/DRA/DERA engineers. Experienced working to ECSS standards. In addition to main projects, lead the development and implementation of sub-micron ion grid thickness measurement technique using X-Rays (T6 Ion Engine), design and manufacture of ion engine thrust calibration system (T6 Ion Engine), design and manufacture of proton collimator test apparatus (Environmental Monitoring Unit).

Main projects: *T6 Ion Engine (BepiColombo); UHF Transceiver (ExoMars); Environmental Monitoring Unit (Galileo).*

IDIADA, L'Albornar, Catalonia, Spain :: Automotive

June '05 – June '06 **Test Assistant, Durability**

Management of multiple vehicle tests, management & organisation of departmental drivers, recording test data for various clients, compilation of various weekly/monthly reports, vehicle inspection/maintenance.

Main projects: *Ssangyong; Proton.*

Key Skills

Design Detailed and top level mechanical design with experience of a wide range of materials and processes. Creation of parts, assemblies, drawings, BOMs and writing of build instructions. Can work to appropriate standards/processes (local and international). Knowledge of Design For Manufacture & Assembly (DFMA), Product Data Management/Product Lifecycle Management (PDM/PLM), Design Failure Mode Effects & Analysis (DFMEA), Design Verification Planning & Reporting (DVP&R). Extremely capable with both SolidWorks and Fusion 360 Computer-Aided Design (CAD) software, plus most of their features and add-ins, including sheet metal, weldments, surface/mesh modelling, rendering, Toolbox, Simulation (FEA). Experience with Solid Edge, and NX (Unigraphics).

Build Knowledge of one-off, batch, and mass production techniques. Assembly, integration and test/verification experience in both workshop and cleanroom. Honeycomb panel build and inspection experience. Familiarity with a wide range of workshop machines and hand tools, including 3D printers. Experience working with metal, plastic, ceramic, composite and wood for various applications. Proficient with electronics. Very quick to solve problems. Very high attention to detail.

Leadership Learnt decision-making skills and leadership during various permanent roles and temporary contracts. Experienced at managing own resources and schedule to meet deadlines. Able to delegate where appropriate. Good under pressure. Confident.

Teamwork An effective member of the team, and can quickly adapt to work with any person regardless of discipline or background (stress analysis, electronics, RF, radiation, thermal, systems). Very approachable. Always gives concise and honest answers. Good presentation skills.

Driving Full UK driving licence held (no convictions or points).

Language Native English speaker with excellent writing skills. Semi-fluent in Spanish.

Education

2003 – 2007 **Aerospace Engineering (4½ year sandwich course)**

University of Surrey, Guildford, Surrey.

HE1 67.4% ; HE2 63.0% ; HE3 62.2% ; Placement 80.0% *(received John Gunnell Memorial Prize for best performance during professional placement) ;* Masters 71.9%

Final Mark: MEng Merit AUS Distinction (67.5%)

Modules: Mathematics; Fluid Mechanics; Thermodynamics; Flight Mechanics; Mechanics of Solids; Design & Component Production; Personal & Professional Transferable Skills; Engineering & Project Management; Statics; Dynamics; Control Systems Engineering; Numerical Methods; Compressible &

	Incompressible Aerodynamics; Stress Analysis & Energy Methods; Aerospace Materials; Fracture Mechanics; Propulsion; Launch Vehicles; Guidance, Navigation & Control; Business Strategy.
1st Year Project:	Design, Make and Evaluate: Innovative Computer Desk for Use in a Virtual Learning Environment **68% (Merit & Instron 1st Prize)**
Final Year Industrial Project:	Mechatronic Design of Stereo Vision Robotic Heads and Human Head Dynamics Research **72% (Distinction)**
Multi-Disciplinary Design Project:	IMechE Formula Student: Chief of Powertrain Design & BEng Design Team Supervisor **79% (Distinction)**
2001 – 2003	Saltash Community School, Saltash, Cornwall.
A-Levels (2003):	Maths **(B)**; Physics **(C)**; Design **(B)**
AS-Levels (2002):	Information & Communication Technology **(B)**
1996 – 2001	Looe Community School, Looe, Cornwall.
GCSEs (2000/01):	**13** including Maths **(A)**; Physics **(A)**; English **(A)**; Graphic Products **(A)**; Resistant Materials Technology **(A)**
GNVQ (2001):	Information & Communication Technology **(Pass)**

Charity Work

Mar '20 – Present	**3D Crowd ::** Volunteer member. Delivering 3D printed solutions. Born out of the need to create PPE for the NHS during the global pandemic.
Sept '14 – May ‘20	**Remap ::** Member of Farnborough Panel. Volunteer engineer for design and build of custom-made equipment for people with disabilities, on a case-by-case basis.
Sept '13 – Sept '14	**MERU ::** Workshop volunteer building assistive equipment for children and young people with disabilities. Carried out general assembly of powered wheelchairs, plastic moulding, lathework.

Hobbies & Interests

Workshop	Huge passion for woodturning and general carpentry. Enjoy working with any material that achieves the goal. Current project is design and build of a Dobsonian telescope. Have a fondness of cars, currently finishing restoration of a custom '60 Morris Minor Saloon.
Computing	Interested in most aspects of computer hardware and software. A loyal Linux and Android user, can write Bash scripts and customise code. Enjoy experimenting with Raspberry Pi and Arduino.
Self-Sufficiency	Any and all jobs/repairs at home carried out by myself whenever possible. In process of renovating own house. Take pleasure in growing own fruit and veg, and collecting wild food. Homebrewing of ale and winemaking. Enjoy a pragmatic and technological approach to self-sufficiency.
Music	Enjoy listening to a wide range of music, in particular live music. Am a classically-trained flautist. Self-taught guitarist and ukuleleist. Currently learning piano.
Sport	Squash & Paragliding (currently hold Club Pilot license, working towards Pilot license).

References available upon request