

# Bio-medical System Design, Development & Manufacture

making ideas...  
reality



Chelsea Technologies Group Ltd



## Why Choose Chelsea?

**Our expertise and practical experience in the design, development and manufacture of analytical instruments makes us the ideal partner for your next project.**

### Value for money

We offer unique design, development and manufacturing capabilities at competitive rates all under-one-roof.

### Rapid development timescales

We take pride in our ability to deliver innovative products to your timescales and have a large catalogue of design solutions that can be adapted to get your project moving quickly.

### Avoid the pitfalls

Instrument development can be a highly complex multi-disciplinary activity. With over 30 years experience gained specifically in the development of analytical instruments we have the expertise to avoid many of the pitfalls that can lead to costly project overruns.

### Innovative design

We blend innovative design with the practical requirements for performance and manufacturability. Our scientists and engineers help you to find the right balance between specification and cost while meeting the operational requirements of the end user. Always we aim to fully understand the science and technology behind your product before developing an appropriate design.

### Product engineering

We design for production from the outset and as manufacturers have a vested interest in getting this aspect of the design right. Our team has a wide knowledge of modern technologies and can advise on appropriate tooling and manufacturing methods to ensure cost effective production. Further lead times and costs are reduced by eliminating the inevitable learning curve in transferring a design from developer to manufacture,



*Product Design*



*PCB Layout Design*

### Versatility

We can contribute at any stage in your development, including: due diligence, feasibility, concept development, specification definition, project management, product costing, detailed design, value engineering and sub-contract manufacture.

### Added Value

With our own range of analytical products we keep in touch with the latest technological developments and by anticipating end-user demands, we can add significant value to your ideas.

### Project management

Our proven ability to manage complex technical developments ensures we deliver projects on schedule and to budget. Projects are broken down into fixed price phases and a designated manager acts as your single point-of-contact for all project related issues.



*Test and Calibration*

### Manufacturing

Our flexible manufacturing facility handles batch sizes from 10's to 1000's. We operate to full Good Manufacturing Practice and work closely with you to develop the level of quality you require, so ultimately we can store and ship finished product direct to your customers. Our longstanding relationships with world-wide component suppliers both increases the viability of designs and allows us to provide you with accurate production costs and delivery timescales throughout the project.

### Industry wide experience

Our experience has been gained in working across the whole spectrum of industry from technology start-ups to multi-nationals. This gives us a broad understanding of the technical and commercial requirements of your market.

## Case Studies

### Point of Care PCR system

Chelsea Technologies Group has recently developed OPTI GENE an innovative, rapid and flexible PCR system for **Osmetech Molecular Diagnostics Inc** that will enable genetic testing to be performed in the near Point of Care market.



The OPTI GENE uses proven, well-accepted PCR technology. The development challenge for us, however, was to design a cost effective system that would provide a random access capability and fully independent thermal cycling of up to 12 sample tubes. A novel, non-imaging, optics design was developed to allow a sensitive fluorescence measurement to be taken from each sample tube in real-time. Full connectivity was achieved by embedding a PC card in the instrument, which allowed an intuitive graphical user interface to be presented on a touch panel LCD display.

### Pulsifier

The Pulsifier uses a reciprocating beater-bar to send shockwaves through a food sample to drive microbes into solution to aid microbial analysis. Food suspensions produced in this way are much clearer than can be achieved using traditional blenders and require less downstream processing. **Microgen Bioproducts Ltd** approached us to production engineer their prototype to meet a competitive price target, reduce operating noise, provide an attractive styling for the product and incorporate microprocessor control. A significant reduction in operating noise was achieved by sealing the sample within the unit while processing. Further improvements were achieved through a novel crank-arm design that both minimised modes of vibration and enabled the size of the unit to be reduced. The Pulsifier is now in production and has been accepted for use in laboratories around the world.



### InstaQuant™: A hand held reader for immunostrip test devices

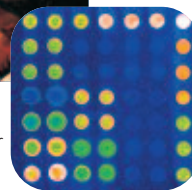
InstaQuant™ was the first development Chelsea Technologies Group completed for **Provalis Diagnostics**. When they approached us they had already developed a visual 'one-step' test device for the monitoring of osteoporosis.



The challenge Provalis set us was to develop a simple, low-cost, hand-held photometer that could provide a more objective quantitative result. Using rapid prototyping techniques a fully functional prototype, virtually identical in appearance to the final product, was produced within 4 months and the final instrument was ready for volume production in less than 10 months. We have investigated & assessed a range of options for analysing strip tests and this 'know how' is available for future developments.

### Prototype fluorescence reader for microarrays

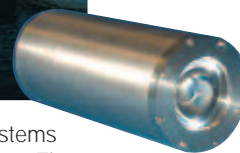
In collaboration with **Imperial College** and **MicroTest Matrices**, Chelsea Technologies Group has developed a robust, competitively priced fluorescence reader for microarrays that will enable this exciting technology to move out of the research laboratory into commercial diagnostics markets.



We have designed a small electro-optics module that illuminates each microarray spot in turn and also collects the fluorescence generated to produce a single integrated signal value. This significantly reduces the amount of data generated and also the processing power required to analyse conventional scanned images. It is possible to produce results that are comparable to commercial scanning systems but at a fraction of the cost. We are currently integrating the technology into a robust portable assay processing system for the rapid detection of infectious agents that can be deployed in the event of unexplained clusters of acute febrile illness/fatality or a potential terrorist incident.

### Water Quality Monitoring: broad spectrum toxicity sensors & systems

Chelsea Technologies Group is working with **UK and US Government agencies** on developing novel sensor systems for environmental monitoring and protection. The systems are specifically designed to measure a wide range of physical, chemical & biological parameters in rivers, reservoirs and abstraction points. Fast Repetition Rate Fluorimeter (FAST<sup>track</sup> II) technology is a prime candidate for this, as studies have shown that the ability of waterborne algae to photosynthesis and hence fluorescence, is significantly affected by toxic chemicals.

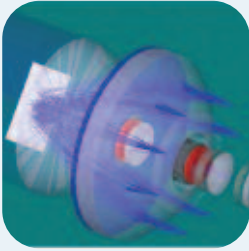


### Quo-Test™: Rapid point of care test for A1C

**Quotient Diagnostics Ltd** has developed a point of care system to monitor glycated haemoglobin, an indicator of a diabetic's condition. It represents a new standard in testing for A1C, combining advanced chemistry, innovative product design and state of the art instrumentation, optics and electronics. Chelsea Technologies Group worked closely with Quotient to supply five prototype systems capable of demonstrating the feasibility of a combined fluorescence and absorbance measurement for the test.



# Areas of Expertise



Novel design for optical sensors



Graphical User Interface



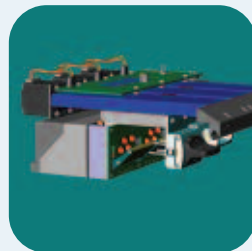
3D CAD Design

Chelsea Technologies Group is a scientifically orientated product development company with expertise in the following areas:

- Science/Technology
- Analogue and Digital Electronics
- Software/Firmware
- Optical Measurement
- Sensors/Bio-sensors
- Fluid Handling
- Temperature Control and Measurement
- Product Design
- Acoustics
- 3D Modelling
- Market Awareness
- Industrial and Mechanical Design
- Concept Development and Validation
- Innovation
- Value Engineering
- Problem Solving
- Scientific Feasibility
- Design Control
- Rapid Prototyping
- Pilot Production
- Manufacturing
- Supplier Management
- Project Management
- Regulatory Submission
- Quality Systems



Prototype Instrumentation



Mechanical Design



Consumable Design

Chelsea Technologies Group Ltd  
55 Central Avenue  
West Molesey  
Surrey KT8 2QZ  
United Kingdom

Tel: +44 (0)20 8481 9000  
Fax: +44 (0)20 8941 9319  
sales@chelsea.co.uk  
www.chelsea.co.uk

In view of our continual improvement, the designs and specifications of our products may vary from those described.



Registration No: 00832429  
Registered at the above address