SENIOR ELECTRONICS ENGINEER - MEDICAL DEVICE UNIT
West Glasgow ACH

Job Reference: 0000046880G
Closing Date: 05 May 2017
Dear applicant,

Thank you for your interest in this post and for taking the time to read this information pack. We hope this exciting and rewarding role catches your imagination and that you are encouraged to apply.

As the largest Health Board in Scotland, NHS Greater Glasgow and Clyde plays a vital role in the education and training of doctors, nurses and other health professionals, working closely with local universities and colleges. It also provides the full range of community hospital services. The Board has an annual turnover of £3.2 billion per year. It serves a population of 1.2 million people and employs 39,000 staff.

Along with many NHS providers, the Board must respond vigorously to operational, quality and financial challenges in order to continue to improve outcomes for, and the experience of, our patients and the communities we serve. The Board is a large organisation operating in an increasingly tough environment. Building enduring relationships with our partners is vital to continue to drive the changes we are making. Effective communication and productive dialogue is challenged by the spread of the organisation’s sites and stakeholders over a wide geographical area, as well as the variety and large number of partners we work with. The Board is managing these challenges and has developed a positive platform to continue to improve towards excellence.

To drive forward these improvements the Board must have the ability to make tough decisions at a time of change. The next step in the Board’s journey is essential: to build and deliver a strategy that will engage the workforce and public in changing for the future to provide sustainable healthcare services, further embed a culture of innovation and meet the demands and exceed the expectations of our patients.

The following is included in this information pack to help you with your application:

- Job description
- Person specification
- A summary of the terms and conditions for the post
- The application process
- Guidance for completing your application form
- Working for NHS Greater Glasgow and Clyde

If you have a disability or long-term health problem, the Board is committed to offering reasonable adjustments throughout the recruitment process and employment. If you require further information or support, please contact Recruitment Services.

We very much look forward to receiving your application.

Recruitment Services
South Glasgow Division

JOB DESCRIPTION

1. Job Identification

<table>
<thead>
<tr>
<th>Job Title</th>
<th>Senior Electronics Engineer</th>
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<tbody>
<tr>
<td>Responsible to</td>
<td>Head of Electronic Engineering, Medical Devices Unit</td>
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<tr>
<td>Department(s)</td>
<td>Department of Clinical Physics &amp; Bioengineering</td>
</tr>
<tr>
<td>Directorate</td>
<td>Diagnostics</td>
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2. Job Purpose

To provide Medical Electronic Design and Development Services to NHS Greater Glasgow and Clyde, in the design, development and production of innovative medical devices. Providing technical expertise to scientific and medical staff in research, development and clinical trials of new medical techniques.

3. Dimensions

1. The post holder is a member of a team of scientific and technical staff which provides specialist instrumentation services to NHS Greater Glasgow and Clyde by the design, development and construction of innovative medical instrumentation used within many medical disciplines. The team provides technical expertise to scientific and medical staff in research, development and clinical trials of new medical techniques. In this capacity the holder reports to the Head of Electronic Engineering, Medical Devices Unit.

2. The staff in this group report to the Head of Electronic Engineering and comprise the Senior Electronics Engineer [1] (this post) and two Electronics Engineers [2].

3. The post holder deputises for the Head of Electronic Engineering.

4. Organisational Position
Electronics Engineer
Calibration/MDU

Electronics Engineer
5. **Role of Department**

The Department of Clinical Physics and Bioengineering (DCPB) is based in Glasgow, Scotland, and serves the scientific and technical needs of NHS Greater Glasgow and Clyde. It is one of the largest of its kind in Europe. Its influence covers a large area of the west of Scotland. DCPB is organised around the five services of radiotherapy, imaging, clinical engineering, medical equipment management and core services.

This job is based in the Medical Devices Unit (MDU). The MDU sits within the DCPB clinical engineering service but also provides some core services. It is a multi-disciplinary unit composed of scientists; software, electronic and mechanical engineers; bioengineers and technical staff. MDU staff support innovation projects from inception to completion, including project planning, design, verification, validation and adoption of new medical devices and test equipment to improve patient treatment and care. MDU staff also provide equipment repair, maintenance and calibration services.

6. **Key Result Area**

**Management**

1. To be available for consultation by other specialist staff as required.

2. To assist in the planning and development of the service provided by the section or specialist area as led by the demands of the directorates supported.

3. To specialise in the evaluation of new equipment for clinical use, commissioning, technical performance and specialised user training.

**Professional Responsibilities**

4. To have advanced specialist electronics responsibilities for the Medical Devices Unit that encompass highly complex instrumentation.

5. Design and development is a major job function.

6. To develop, manufacture and test prototype specialised medical electronic equipment to international standards (EN60601) of performance and safety.

7. To utilise a range of specialised techniques including complex electronic hardware design, the use of embedded control devices (microcontrollers) and the use of both low level and high level programming languages to achieve an appropriate and safe solution to a clinical instrumentation problem.

8. Analysis, judgement, interpretation and comparison of highly complex range of options in the planning and design phases of instrumentation development.

9. To use specialist Computer Aided Design (CAD) and engineering software in the design and layout of printed circuit boards for medical devices.
10 To accurately record results and to maintain complex documentation to the standards necessary for CE marking, if appropriate.

11 Regularly to repair and/or modify complex clinical equipment at the users’ request using specialist analysis and fault diagnosis techniques.

12 Communicate complex technical equipment related information and advice to staff, colleagues and suppliers.

13 Regularly to calibrate medical test and diagnostic equipment in a quality system which is accredited and audited to the BS EN ISO 9001:2000 standard.

14 Generating comprehensive technical documentation to enable commercial duplication of products.

Clinical
15 Development and manufacture of patient diagnostic, therapeutic and medical test equipment.

16 To advise clinical staff on all matters relating to the use of the specialised medical electronic instruments developed within the section. This may require working on one’s own with lead clinicians.

17 To interface with clinical staff on matters relating to specialist medical electronic instruments, to record accurate information.

Educational
18 Training at this level is normally delivered on a one to one basis or in small groups and is informal. As a senior electronics engineer, the post holder will be required to give more formal training or presentations in the clinical area especially in relation to evaluation of new equipment.

19 To advise and train clinical staff in the use of specialist medical devices developed within the section, as required or requested by clinical staff.

20 To advise and train student or supervised staff attached to the section for training purposes, as assigned by the Head of Electronic Engineering.

21 Take personal responsibility for continuing personal development activities.

7a Equipment and Machinery

1 A full range of computer hardware and peripheral devices used in software and hardware development and testing of precision equipment.

2 Electronic test equipment used in the design of medical instrumentation.
3 Construction and manipulation tools used with a high degree of precision in the manufacture of small components.

4 Electro-mechanical tools in the design and construction of transducers and other devices used in physiological measurement.

5 High speed milling and production equipment for the manufacture of prototype PCB’s (Printed Circuit Boards).

6 Manual fine pitch soldering equipment and reflow soldering equipment.

7 Specialist highly accurate electronic equipment used to calibrate medical test instruments and other devices.

7b Systems

There is a frequent requirement to use computer systems.

1 High and low level language software development packages for the design of computer controlled instruments.

2 The analysis, judgement, interpretation and comparison of highly complex range of options during the comparison of hardware/software versus clinical requirements.

3 Analysis and diagnosis of faults in complex patient critical equipment.

4 Engineering Design packages for the design and layout of circuit diagrams.

5 CAD packages for the design and manufacture of PCB (Printed Circuit Boards).

6 Reflow oven control for fine pitch/ball grid array devices.

7 FPGA development environments for simulation, synthesis and analysis of HDL designs, system on a chip development and high-level synthesis including an Integrated Design Environment for creating embedded applications on any SoC or soft processor core.

8 Quality Management System database software used to produce Calibration reports and Certificates for BS9001:2000 quality system and ensure best practice.

9 Use of word-processing, database and spreadsheets as user interfaces in system equipment design and development requiring a commercial software front end.

10 Spreadsheet analysis and confirmation of analytical data during instrument test and development phases.
11 Word-processing in the production of technical information and operator manuals.

12 Networked PC system, Division intranet.

13 Maintenance of local computer network.

14 Access to e-mail for internal communication and external communication with suppliers and manufacturers of medical equipment and parts.

15 Access to the internet for the acquisition of medical equipment technical data and documentation from suppliers and manufacturers of medical equipment.

8. Assignment and Review of Work

1 The post holder is expected to support the management of the group in compliance with the operational policies and procedures. As a Senior Electronics Engineer, the post holder reports to the Head of Electronic Engineering on individual issues or matters of importance to the service.

2 The post holder is expected to contribute to the development and improvement of the service of the section by proposing changes to operational policy as observed.

3 Scheduled work is usually assigned and reviewed by the Head of Electronic Engineering but the post holder is expected to take independent action and be self-motivated regarding their daily duties and responsibilities, especially when dealing with unscheduled requests from clinical areas.

4 The post holder has supervisory responsibilities for any Electronics Engineer or other staff attached to the section.

5 The Head of Electronic Engineering undertakes annual PDP reviews.

9. Decisions and Judgements

1 The post holder will be able to diagnose faults in highly complex medical devices.

2 The post holder is expected to use initiative in deciding priorities and actions regarding assigned work.

3 The post holder is expected to comment on proposed changes to department policies and procedures which impact on user equipment and devices.

4 The post holder is responsible for the installation, repair and maintenance of department assets.
5 The post holder will be required to exercise judgement when dealing with technical, clinical and user problems with specialised medical and other electronic equipment by:
   a. The analysis, interpretation and comparison of a range of options.
   b. Analysing and diagnosing faults in complex patient critical equipment.
   c. Following relevant medical and quality International Standards.
   d. Providing technical information and advice to scientific and medical staff.
   e. Deciding by component specification which suppliers to select when specialist parts are required.

10. **Most Challenging/Difficult Parts of the Job**

1 To respond to a wide variety of demand-led situations and deal with them in an assured and tactful way to achieve a positive outcome.

2 To improve continually on the expected performance standards set out in the Department operational procedures whilst responding to demand-led situations.

3 Providing practical solutions to clinical instrumentation and patient connected equipment problems which can be implemented using reasonable resources within a reasonable time scale. These medical devices can improve the provision of health care.

11. **Communications and Relationships**

The post holder will:

1 Work with the Head of Electronic Engineering to establish the best practice and to provide an efficient service.

2 Communicate complex technical equipment-related information and advice to staff, colleagues, and suppliers.

3 Train staff in the use of equipment.

4 Communicate with scientific and clinical staff to finalise specifications and clinical requirements for the function and use of highly complex specialist instrumentation.

5 Participate in regular staff meetings to disseminate work flow status and problems.

6 Participate in regular group staff review meetings as part of the British Standards Quality system.

7 Compile reports for the Head of Electronic Engineering.

8 Be assigned specific duties within Quality Management System.
9. Take part in internal and external audits of the operational policies as per the Quality Management System

12. Physical, Mental, Emotional and Environmental Demands of the Job

Physical Skills
1. High level of dexterity and proficiency required in using and manufacturing of small and sensitive components.

2. High level of accuracy and precision required during manufacturing processes.

3. Dexterity, co-ordination and sensory skills for use with precision tools, production of components, assembly and disassembly of machinery.

Physical Demands
4. Frequent moving, lifting and handling all types of clinical and laboratory medical equipment.

5. Frequent use of magnification when working with extremely small and delicate components.

6. Physical necessity to make field visits to wards, theatres and clinics sometimes carrying medical or test equipment.

7. Working with CAD systems or database work requires some of the working day to be spent sitting in a restricted position.

Mental Demands
8. Frequent requirement for high levels of prolonged concentration during software programming and PCB production.

Working conditions
9. Frequent exposure to dust, noise, vibration and fumes during PCB manufacture.

10. Unavoidable exposure to electrical hazards.

11. Occasional lifting of heavy equipment.

12. Occasional restricted access to medical equipment.

13. **Knowledge Training and Experience required to do the Job**

**Qualifications**

**Essential**

1. MSc in Electrical and Electronic Engineering or other appropriate discipline. Or have a BSc/HNC/HND with profile of knowledge and training equivalent to MSc. Membership of relevant professional body.

**Desirable**

2. Chartered Engineer (CEng) professional registration.

**Knowledge and Training Experience**

3. Six (6) years relevant post-qualification experience is required with at least a minimum of 2 years’ experience as a Senior Electronics Engineer. Relevant experience includes:

   a. Practical experience of modern analogue electronics.
   b. Practical experience of microcontrollers and microprocessors.
   c. Practical experience of software programming languages.
   d. Practical experience with medical Analogue Front End (AFE) devices.
   e. Practical experience of FPGA’s.
   f. Practical experience of HDL languages.
   g. Practical experience of FPGA SoC’s.
   h. Practical experience of prototyping with modern electronics. i.e. Soldering, debugging, testing.
   i. Working knowledge of Quality Management Systems.
   k. Experience acquired by working in close relationship with lead clinicians/practitioners in specialist areas.
   l. Practical in-depth experience on a broad range of complex medical equipment.
   m. Workplace practice and techniques including Health and Safety regulations.
   n. Application of technology to medical equipment in healthcare.
   o. Training of clinical, nursing or other technical staff.
   p. Working knowledge of relevant legislation, national standards, professional and other guidelines.

4. Participation in a PDP (Personal Development Program) appropriate to this level.
Summary of terms and conditions

The terms and conditions of service are those approved and amended from time to time by the National Agenda for Change Terms and Conditions Agreement.

Job title: Senior Electronics Engineer - Medical Device Unit
Job reference number: 0000046880G
Closing date: 05 May 2017
Vacancy enquiries to: For information specific to the role, contact: Stephen Dacombe, 0141 201 0251
Agenda for Change band: Band 7
Salary: £32,013 to £42,205 per annum (pro rata where applicable). Please note candidates new to the NHS should expect to start at the entry point of the payscale shown.
Hours: 37.50 hours per week
Base: West Glasgow ACH
Contract type: Permanent
Annual leave: The basic annual leave entitlement in a full year commencing 1st April to 31st March is 27 Days on appointment, rising to 29 days after five years and 33 days after 10 years. Leave entitlement is pro rata where applicable.
Superannuation: All employees are automatically enrolled in the Scottish Public Pensions Agency.
Healthcare Support Workers: All NHS Scotland postholders that are not governed by a regulatory or professional body are considered to be healthcare support workers. On appointment, you will be expected to comply with the NHS Scotland Mandatory Induction Standards and Code of Conduct for Healthcare Support Workers.
Healthcare Support Workers are expected at all times to practice competencies that demonstrate insight, understanding and mutual respect of patients, their families, carers and work colleagues. Whether in a clinical or non-clinical role the post holder is expected at all times to be an exemplar of person centred care, embracing their Code of Conduct to a high standard as part of an integrated health professional team.
Smokefree policy: NHS Greater Glasgow and Clyde operates a smokefree policy on all premises and grounds.
Equal opportunities: NHS Greater Glasgow and Clyde is as an equal opportunities employer.
The Application Process

Please ensure you read the Job Description and Person Specification along with the guidance notes on completing your application form. The hiring manager will shortlist an application for interview based on its content, therefore it is in your best interests to ensure you submit a fully and appropriately completed application.

You will receive confirmation that your application submission has been received when you submit your online application form. When we begin to process your application, you will receive an email from NHS Greater Glasgow and Clyde confirming receipt. If you have not received a confirmation email within 3 days working days from the closing date, please email nhsggcrcruitment@nhs.net.

Unfortunately, due to the volume of applications NHS Greater Glasgow and Clyde receive, we are unable to write to applicants who are not successfully shortlisted for interview. Accordingly, if you have not received an invitation for interview within six weeks of the closing date please assume on this occasion you have been unsuccessful. We hope this will not deter you from applying again.

We will use several methods of communication to advise you of each stage of the recruitment process this includes: email, letter, SMS text, or telephone. It is essential that you regularly check your email and your phone to see if we have been in contact with you to update you on the progress of your application. Please ensure your email account does not treat NHS Greater Glasgow and Clyde email as spam or junk by adjusting the necessary settings.

Please ensure you retain a copy of the job description and person specification for the post you are applying for – you will need this to help you prepare if you are selected for interview.

Please retain details of the job reference number – you will need this if contacting NHS Greater Glasgow and Clyde Recruitment Services.

Should you require further information or assistance in relation to your application please visit www.nhsggc.org.uk/recruitment or email your enquiry to nhsggcrcruitment@nhs.net. Please ensure you have the job reference number to hand.

For details on what happens once you have submitted your application, please visit the NHS Greater Glasgow and Clyde – recruitment guidance for applicants.
Guidance for completing your application form

Completion of the application form is the first stage in the recruitment process, and if you are successful, will form the basis of your employment record. Complete and accurate information is essential. Please note: If you knowingly withhold or provide false or misleading information, this may result in your application being rejected, or if appointed, may result in dismissal from your post.

Your application form plays a vital role in the recruitment and selection process. The information you provide us with in your application form will be used to decide whether you are shortlisted to attend an interview. Only those applicants who can clearly demonstrate in their application form how they meet the minimum essential requirements for the post as specified in the job description and person specification will be considered for interview selection.

Applicants should read the candidate information pack and job description for the post prior to completing the online application form.

When completing the online application form applicants should read the instructions in each section and note the following:
- the application form has an automatic time out mechanisms, therefore you should click on the "save" button as you go through the application form or copy and paste from another document, to avoid losing content.
- please do not use any special characters (i.e. £, #, &, %) when completing your application. You are permitted to use the '@' symbol.

It is recommended that you complete all relevant sections of the application form. It does not matter how long ago your last employment was, if you have an employment history please list it.

If you have not previously been employed, please use the “Present or Most Recent Post” section to detail what you have been doing (i.e. full time student / parent / carer).
Please note that you can list unpaid work including work placements and volunteer work in your employment history.

NHS Greater Glasgow and Clyde do not accept Curriculum Vitaees (CV), unless a CV has been specifically requested as part of the recruitment process.

By completing and submitting an application for this post you give your consent for NHS Greater Glasgow and Clyde to commence pre-employment checks, including reference checks, once your formal conditional offer of employment is made to you. Click Here for more information. For details on NHS Greater Glasgow and Clyde’s pre-employment check procedures, please visit the NHS Greater Glasgow and Clyde – recruitment guidance for applicants.
Part A (Personal information), Part B (Declarations), Part C (Application Details)
The job description provides information about the main duties and responsibilities of the post being advertised. It also describes the purpose of the post. Please ensure that your application form clearly demonstrates how your skills / knowledge / experience can be utilised in the role.
The job description and person specification also specify the requirements or criteria (knowledge, skills, experience, abilities and qualifications) that are essential or desirable to perform the duties outlined. Please ensure in your application that you demonstrate how you meet the minimum essential criteria and where applicable, the desirable criteria for the role.

Certain posts in NHS Scotland are exempt from the 1974 Rehabilitation of Offenders Act (Exclusions & Exceptions) (Scotland) Order 2003. Click Here for more information. If the advertisement for this position has declared that we require a Disclosure Scotland PVG Scheme Membership / Disclosure Scotland Check, you must declare any previous convictions, classed as either “spent” or “unspent”, including criminal convictions received outside the United Kingdom.

The Asylum and Immigration Act 1996 states that it is a criminal offence to employ a person who is not entitled to work in the United Kingdom (UK). Consequently, before NHS Greater Glasgow and Clyde offers employment, the prospective employee must provide evidence, that he/she is entitled to work in the UK. All applicants regardless of nationality will be asked to provide evidence of eligibility to live and work in the UK.

As a Disability Confident Employer, NHS Greater Glasgow and Clyde operates a Guarantee Interview Scheme for disabled applicants. Candidates who have declared a disability and who meet the minimum essential criteria outlined within the job description / person specification will be guaranteed an interview.

You must provide full and complete employment references including a work email address (personal email address for employment references may not be acceptable) covering a minimum period of the last three years. Employment referees should be listed in chronological order – that is the most recent first. If you have had more than two employers in the last three years we will require additional references. Character referees should only be used in the event that you cannot provide two employer references covering the last three years.

Any gaps in employment history must be detailed within your supporting statement and will be explored carefully with you at the interview stage.

If you have an employment history of less than three years, you should provide full details of an academic referee or other person who is not a friend, is not related to you or involved in any financial arrangement with you to provide a personal reference.
If you have had no previous employment or have been self-employed you should provide details of two personal referees as outlined above and where applicable evidence to confirm your status (i.e. letter from Jobcentre Plus, academic record or evidence from HM Revenue & Customs) if you are shortlisted for interview.

Your application form provides you with an opportunity to provide a supporting statement. This section is one of the most important in the application form as the information that is provided here will be evaluated and used to decide if you are invited to attend interview. This section gives you the opportunity to describe and demonstrate the particular qualifications, skills, abilities, knowledge, relevant experience and other qualities that make you a good candidate for the post.

Part D (Equal Opportunities)
This part of the form is optional and the information you provide in this section exercises no part of the selection process. It is treated in confidence and only the Recruitment Service or Human Resources staff can access this information for the purpose of recording and compliance monitoring, to ensure our workforce is balanced and represents the best candidates from all parts of society regardless of age, disability, gender reassignment, marriage or civil partnership, pregnancy or maternity status, race, religion or belief, sex, sexual orientation and/or socio-economic status.

Data Protection Act 1998
The information you provide on your application will be treated in confidence. Only those NHS Greater Glasgow and Clyde staff involved in the selection process and processing your application will see your application form. If you are the successful applicant your application form will be retained and used to create your employee record file. Your application form will be held for 12 months, from the date of your application, within the NHS Greater Glasgow and Clyde recruitment system, after which period it will be deleted from the system.
Working for NHS Greater Glasgow and Clyde

About us
NHS Greater Glasgow and Clyde is the largest health board and provider of healthcare in Scotland and one of the largest health care providers in the UK.

NHS Greater Glasgow and Clyde’s purpose is to:

“Deliver effective and high quality health services, to act to improve the health of our population and to do everything we can to address the wider social determinants of health which cause health inequalities.”

The Board works in close partnership with other NHS organisations, local authorities and other agencies including the third sector to ensure that social work, education, housing, employment and environmental services unite effectively and efficiently with the NHS in tackling inequalities and underlying health problems in local communities.

The future shape of health and social care provision is changing following the move to establish new statutory Partnerships between NHS and Local Authorities, responsible for the planning and delivery of Health and Social care for local populations. This requires the development of very different relationships between primary care, mental health services, community and acute services.

NHS GGC serves a population of 1.2 million (over 1/5 of the population of Scotland) with services provided by 39,000 staff.

The geographical area covered includes: Glasgow City, West Dunbartonshire, Inverclyde, Renfrewshire, East Renfrewshire, East Dunbartonshire and North Glasgow (Stepps-Moodiesburn corridor).

Our services
NHS Greater Glasgow and Clyde provides a full range of Secondary and Tertiary Clinical services, Primary Care, Mental Health and Community services included in which are a number of world-class specialist services.

Find out more about NHS Greater Glasgow and Clyde at www.nhsggc.org.uk.

If you want to know more about the NHS Scotland, visit www.show.scot.nhs.uk.

If you are successful in your application to join us, you will be working within one of our Acute, Primary and Community Care Services. These services are in turn supported by a range of Corporate Service functions including Administration, eHealth, Finance, Human Resources, Public Health, Corporate Planning, Facilities and Estates.
• Click Here to find out more about our Community Services
• Click Here to find out more about our Mental Health Services
• Click here to find out more about the services in your area
**Employee benefits**
We offer all our staff excellent benefits including:
- NHS Superannuation pension scheme,
- Child Care Vouchers,
- Bursaries to support education and training,
- Interest free loans to purchase Zonecards for trains, buses, underground and some ferries
- Cycle to work interest-free loans to purchase bicycles and equipment

For more information on the benefits available to NHS Greater Glasgow and Clyde staff, visit [www.healthservicediscounts.com](http://www.healthservicediscounts.com).

**Further information**
For further information on any aspect of the recruitment process or for further details on working within NHS Greater Glasgow and Clyde contact:

NHS Greater Glasgow and Clyde
**Recruitment Services**
West Glasgow Ambulatory Care Hospital
Dalnair Street
Glasgow
G3 8SJ

Tel: +44 (0)141 278 2700
Email: nhsggcrecruitment@nhs.net