

## Role Profile: FPGA Engineer (Full or Part Time)

### **A bit about us...**

Amiosec is an exciting and growing UK technology company with innovation, agility, and state of the art technology at its core. We work in partnerships with UK government customers and commercial providers to deliver research, technology, products, and services in the communications security sector.

Our Engineering team is expanding, and we are looking for experienced FPGA engineers to come and join our physical products team. We provide a stimulating working environment, with an opportunity to be involved in various projects from early-stage proof-of-concepts using emerging technologies, tools, and languages right through to full lifecycle product development. We run self-managing agile teams using a mixture of Scrum and Kanban techniques so that engineers get a great sense of ownership of their work and can directly see how their efforts contribute to the bigger picture and help our customers achieve their goals.

We actively encourage personal development and have a structured career framework based on industry standard SFIA grades. We provide training tailored to your needs and learning methods and encourage our engineers to develop their skills – both technical and non-technical alike.

Collaboration and team spirit are key – we actively seek to share knowledge and ideas. Our monthly Engineering Forum provides an ideal vehicle for sharing tips, tricks, and techniques between projects / teams. We organise regular social activities and gatherings such as coffee and cake mornings, virtual beer / wine tasting sessions and activity days – something we feel is important to support our hybrid working scheme and maintain a comfortable social atmosphere.

We are passionate and committed to growing new talent and as such run a Graduate Scheme and have an active STEM outreach program – collaborating with schools, universities, and the NCSC CyberFirst program. If you are interested, we would love you to get involved and help in these areas.

Our Engineering team is key to our success as a business and this not only includes what we do, but how we do it. Like any engineering organisation we have standardised processes and ways of working, but these are owned by the Engineering team, and we work to ensure that they are relevant, helpful, and as efficient as possible so that we can focus on what we are good at – the engineering. We actively encourage our engineers to contribute to improvements in our working practices and environment and try out innovative ideas with a view to rolling things out that work well for us.



## FPGA Engineer Vacancies

As an experienced FPGA engineer, you will need at least 3 years of experience. The role will have a focus on the development of highperformance FPGA functionality (primarily written in VHDL), with an emphasis on high-speed network communications, cyber security, and cryptography. Responsibilities will include conception, design, development, integration, testing and debugging of complex FPGA solutions integrated into wider embedded systems-of-interest.

We are looking for FPGA Engineers at Engineer, Advanced Engineer, Senior Engineer, and Principal Engineer grades. The sections below outline typical activities, along with technical and core competencies. The list is a wide-ranging superset – you should be able to demonstrate ability in some of the technical competencies (depending on your grade/experience) and the core competencies, but you are not expected to have experience in everything.

Work life balance is important, and we offer several options to support our engineers. We have an optional 9-day fortnight scheme, which gives the opportunity to compress a fortnights hours over 9 days to allow every other Friday to be taken off. We have a hybrid working policy, where we ask for a split of 3 days onsite and 2 days remote (this is subject to individual project needs). In addition, this position can be either **full or part time**. For part time roles we are open to considering hours that work for you as a candidate.

**NOTE:** - Due to the nature of our work, all candidates will be required to obtain and maintain an appropriate UK security clearance.

## Typical Activities

Subject Area	Activities
<b>FPGA Design &amp; Development</b>	<ul style="list-style-type: none"> <li>• Design and development of FPGA solutions, implementing networking protocols, cryptographic primitives, etc</li> <li>• Simulation and verification of developed solutions using appropriate and efficient techniques</li> <li>• Integration, build, deployment, debug, and testing of solutions within larger embedded systems</li> </ul>
<b>Technology Research</b>	<ul style="list-style-type: none"> <li>• Evaluating latest technologies (e.g., future FPGA devices and platforms, languages, etc</li> </ul>
<b>Tool Evaluation</b>	<ul style="list-style-type: none"> <li>• Investigation of emerging FPGA toolchains and workflows (e.g., accelerated development, simulation, test, verification, automation, etc</li> </ul>
<b>Planning and Estimation</b>	<ul style="list-style-type: none"> <li>• Task breakdown, sizing, progress reporting</li> <li>• Development/contribution to technical proposals</li> </ul>
<b>Technical Authorship</b>	<ul style="list-style-type: none"> <li>• Authorship of formal documentation</li> <li>• Review and scrutinise other technical documentation e.g., requirements documentation, design, and architecture documents</li> </ul>

<b>Team Activities</b>	<ul style="list-style-type: none"> <li>Participation in team planning and progress activities such as daily stand-ups, planning and design meetings</li> </ul>
<b>Continuous Improvement</b>	<ul style="list-style-type: none"> <li>Review and recommend enhancements for processes and workflows including but not limited to development tools used with projects</li> </ul>

## Technical Competencies

Subject Area	Competency
<b>Language / Workflow Experience</b>	<ul style="list-style-type: none"> <li>VHDL for synthesis and simulation (knowledge of Verilog may be useful but not essential)</li> <li>High-performance FPGA design (use of high-speed serial transceivers, high-throughput data processing and manipulation, etc.)</li> <li>Integration of 3rd party IP cores</li> <li>Design of AXI/Avalon Masters and Slaves</li> <li>Verification of complex FPGA designs using appropriate techniques (self-checking testbenches, BFM, UVM/OVM etc.)</li> <li>Physical design (timing closure, floor-planning, etc.) for FPGAs</li> </ul>
<b>Tools &amp; Build Systems</b>	<ul style="list-style-type: none"> <li>FPGA vendor toolchains (Intel Quartus / Xilinx Vivado)</li> <li>Modelsim/Quarta simulator</li> <li>Build, deployment, and testing via continuous integration systems</li> </ul>
<b>Development Targets</b>	<ul style="list-style-type: none"> <li>Xilinx / Intel FPGA and SoC devices within bespoke embedded platforms</li> <li>Off-the-shelf FPGA development and evaluation platforms</li> </ul>
<b>Integration, Test &amp; Debug</b>	<ul style="list-style-type: none"> <li>Hands-on integration of FPGA sub-systems within complex wider systems of-interest</li> <li>Sub-system and system level testing and debug</li> <li>Familiarity with appropriate tools and techniques (lab test equipment, Xilinx ILA/VIO/ SignalTap, etc.)</li> </ul>
<b>Networks and Protocols</b>	<ul style="list-style-type: none"> <li>Network communications protocols (Ethernet, IP, TCP, UDP, ARP, etc.)</li> <li>Network analysis and debugging tools (e.g., traffic generation and manipulation)</li> </ul>
<b>Development Tools/Lifecycle</b>	<ul style="list-style-type: none"> <li>Requirements management</li> <li>Design capture (UML)</li> <li>Source control (including workflows – Git and GitLab)</li> </ul>

## Core Competencies

Subject Area	Competency
<b>Approach</b>	<ul style="list-style-type: none"> <li>Enthusiasm for technology and desire to understand and utilise it to develop innovative solutions</li> <li>Ability to quickly learn innovative technologies as needed</li> <li>Ability to apply a systematic and methodical approach to debugging/resolving technical issues</li> </ul>
<b>Working Style</b>	<ul style="list-style-type: none"> <li>Ability to work individually or as a member of a multi-discipline team</li> </ul>

Subject Area	Competency
	<ul style="list-style-type: none"><li>• Self-motivated</li><li>• Ability to capture and articulate design ideas</li><li>• Willingness to be flexible and embrace new technologies/techniques</li><li>• Good time management skills</li><li>• Ownership of own deliverables</li><li>• Tenacious problem-solving skills</li></ul>
<b>Innovation</b>	<ul style="list-style-type: none"><li>• Ability to foster and develop innovative ideas</li><li>• Willingness to lead and/or contribute to improvements in products and ways of working</li></ul>