

# Job Specification

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## Aerodynamicist

<b>Responsible to:</b>	Technical Lead
<b>Grade of post:</b>	Senior Engineer
<b>Salary:</b>	To be agreed
<b>Hours of work:</b>	37 hours per week
<b>Work location:</b>	Oakley, Bedford

### Role Purpose:

The role is an exciting opportunity to drive the aerodynamic design of novel autonomous air vehicles including their innovative propulsion system.

### Key Responsibilities

- Aerodynamic design and performance modelling:
  - Build preliminary map of external vs. internal flows using a conceptual design tools (e.g. VSPAero, Xrotor, DFDC).
  - Build preliminary design and performance models (excel based) for the propulsion system (static and rotating parts) to understand the design trade space. This includes evaluate other open-source preliminary design tools for use in design trade space evaluation
  - Use the preliminary design and performance models to derive the requirements for detailed aerodynamic and mechanical design
  - Use the preliminary design and performance models to produce performance maps to support control system development
  - Identify the right toolset(s) for high-fidelity external & internal flow, and subsequently focusing on internal flow aerodynamic design to drive the development effort of the propulsion system (static and rotating parts) through SRR, PDR and CDR
- Support the mechanical design of rotating parts:
  - Help inform the mechanical design of the propulsion system using existing aerospace turbomachinery experience
  - Drive the detailed mechanical design activities for the propulsion system undertaken by the rest of the team by providing high level requirements and providing technical inputs as required
  - Review the mechanical design process by participating in the key design review gates - SRR, PDR, CDR

- Technical liaison with key academic partners:
  - Drive the detailed design and simulation activities at the academic partners related to the propulsor system
  - Drive the design of experiments related to static testing and wind tunnel testing of various sub-scale iterations of the propulsion system
  - Review the results from the experimental tests and use them to refine the performance models and drive further design iterations of the propulsion system
  
- Support the planning activities for the ground test program:
  - Contribute to the requirement capture for the test rig and the test setup
  - Support the down selection of sensors and measurement equipment
  - Support and provide technical input during on-going discussions with the test rig supplier
  - Develop the design of experiments for the ground test program
  - Lead the aerodynamic performance validation through the ground test program
  
- Support other projects at Blue Bear providing aerodynamics and propulsion expertise as required

### **Other Duties and Responsibilities**

- To actively participate in Blue Bear's Performance Management Scheme.
- To undertake such other duties and responsibilities as may be reasonably required within the grade and level of the post.
- You will be expected to perform different tasks as necessitated by your evolving role within the company and the overall business objectives of the company. Some travel within the UK may be required.

### **Equality and Diversity**

We are committed to the promotion of equality of opportunity in all of our activities and to encouraging access to our organisation from all groups irrespective of the equality strands. We are working to create an environment in which cultural diversity and individual difference are positively valued in an atmosphere free from harassment and discrimination. We take our legal and moral obligations with respect to equal opportunities seriously and welcome dialogue with individuals on ways in which our equal opportunities policies and practice can be enhanced.

### **Health and Safety**

The organisation together with the assistance of all employees are fully committed to developing a positive safety culture. We encourage and support employees becoming involved in and participating in health, safety and welfare matters. Our goal is to motivate and empower all employees to work safely and protect their long-term health, not simply to avoid accidents.

## PERSON SPECIFICATION

<b>Education/Qualifications</b>	<b>S/L</b>	<b>I</b>	<b>A</b>
<i>Essential:</i>			
<ul style="list-style-type: none"> <li>• BEng in Mechanical/ Aerospace Engineering</li> </ul>	<b>X</b>		
<b>Knowledge and Experience</b>			
<i>Essential:</i>			
<ul style="list-style-type: none"> <li>• Experience in gas turbine design, testing and performance</li> </ul>	<b>X</b>		
<ul style="list-style-type: none"> <li>• Experience in preliminary modelling of turbomachinery (fans, compressors), propellers, ducted fans (modelling of multi-stage systems is desirable)</li> </ul>	<b>X</b>		
<ul style="list-style-type: none"> <li>• Experience in detailed aerodynamic design of turbomachinery</li> </ul>	<b>X</b>		
<ul style="list-style-type: none"> <li>• Experience in working with university research labs</li> </ul>	<b>X</b>		
<ul style="list-style-type: none"> <li>• Experience in test rigs and test equipment for turbomachinery</li> </ul>	<b>X</b>		
<ul style="list-style-type: none"> <li>• Experience in following turbomachinery design principles in line with aerospace certification requirements</li> </ul>	<b>X</b>		
<i>Desirable:</i>			
<ul style="list-style-type: none"> <li>• Experience in UAVs, RC Modelling and 3D printing</li> </ul>	<b>X</b>		
<b>Personal/Behavioral Attributes</b>			
<i>Essential:</i>			
<ul style="list-style-type: none"> <li>• Good analytical and communication skills</li> </ul>	<b>X</b>	<b>X</b>	
<ul style="list-style-type: none"> <li>• Attention to detail balanced with high process overview/ improvements</li> </ul>		<b>X</b>	
<ul style="list-style-type: none"> <li>• Excellent verbal and written communication skills</li> </ul>		<b>X</b>	
<ul style="list-style-type: none"> <li>• Excellent problem-solving skills</li> </ul>	<b>X</b>	<b>X</b>	
<ul style="list-style-type: none"> <li>• Able to work cross functionally and collaboratively</li> </ul>	<b>X</b>	<b>X</b>	
<b>Other Requirements</b>			
<b>Safety Critical Role</b>			
<b>Subject to security vetting to a minimum SC level</b>	<b>X</b>		

**S/L = Short Listing      I= Interview      A=Assessment**