

**“Psst!..... Do you want to help design a Star Trek Warp Engine? (Well, not quite but getting there.....)”**

**Code:** 20/52

**Company:** NEUTRON STAR SYSTEMS UK Ltd

**Location:** UK – Work from Home

**Company Description:**

Neutron Star Systems UK is small start-up company that has been researching an exciting new electric propulsion system for spacecraft. Called: “Applied-Field Magnetoplasma dynamic propulsion” it holds out the promise of being a disruptive technology with key advantages that will enable it to supersede existing electric propulsion systems.

**Project Description:**

Electric propulsion (EP) is now in regular use in the space industry on satellites and spacecraft. However, the existing systems have many limitations. Applied Field Magnetoplasma dynamic (AF-MPD) propulsion promises a revolution in EP. The technology is scalable from small satellites with permanent magnets, to higher power using high temperature superconducting electromagnets to super high power potential upper stages of a sub-orbital launch vehicle.

We are looking for an electronic engineer or physicist with good electronics knowledge who is excited by the complex and challenging electrical power requirements that AF-MPD propulsion requires. Using Neutron Star Systems’ own literature database plus specialist material available on-line (e.g. European Space Agency), the applicant will research the complex power system requirements for AF-MPD electric propulsion.

The goal for the applicant is to establish the outline requirements for spacecraft Power Processing Units (PPU’s) required for the very wide ranges of electrical power required for the two quite different applications:

For small satellite thrusters, PPU’s could be based on existing flight-qualified units used for Hall Effect Thrusters. For the high power sub-orbital upper stage, some original thinking (e.g. pre-charged Supercapacitors) in combination with a literature search will be needed. This novel type of electric propulsion will require developing an understanding of how electrical power is currently supplied on board satellite/spacecraft and the supply characteristics a PPU may need to handle.

He/She will, with guidance, learn how to formulate space industry standard specifications that can be used as a design template for the development and manufacture of complex space technology.

The applicant will also develop an understanding of the physics and electrical /electronic challenges represented by this new technology and provide an initial basis for Neutron Star System UK Ltd. to begin the process of designing prototype PPU's.

**Applicant Specification:**

An enthusiastic engineer or physicist in Electronics/Electrical Engineering or Physics with Electronics

**Minimum Requirements:**

- Self-starter attitude and initiative; someone who recognises and is excited by involvement in a start-up space business and will readily adapt themselves to whatever challenges arise.
- Excellent Communications Skills both written and verbal.
- Team player
- Good skills with standard office software (eg Excel, Word, Powerpoint or equivalent).
- At ease with on-line meeting tools such as Skype, Zoom etc)
- Fluent in English, verbal and written
- Access to an on-line working environment and good internet connectivity

**Preferred Additional Requirements:**

We are looking for a person who shows enthusiasm, determination, a willingness to work hard and find ways of overcoming difficulties. Also, a friendly individual who enjoys being part of a team and is interested in space.

**Further details:**

8 weeks minimum fixed term contract to be agreed with successful candidate. Virtual Induction Event to be held on 15 July 2020. We expect the work to be done 100% from home (WFH) on the basis of 37.5 working hours per week, 5 days per week, excluding breaks and lunchtimes. The actual times of day for the applicant to be working, given that it is flexible working is up to the candidate although we would normally expect at least 2 hours per day to be done during the normal working day to facilitate regular discussions with the company. On this basis, the payment would be £325 per week, payable 4 weeks in arrears.

Depending on the COVID-19 situation, a site visit to the University of Stuttgart in Germany, to visit the propulsion test facilities, meet more of the team, and to see the prototype thruster firing!

**Closing Date for Applications: 5pm Monday 13 July**



Applications should be made through the online form attaching a CV, before the closing date. Please note that elements of the form left incomplete will be deemed to render the application ineligible. They will be checked for eligibility and forwarded to the employer.