

## **JD -Hardware Design Engineer**

### **A. Knowledge required**

1. Having knowledge of power electronics topologies, AC-DC converter, DC to AC Inverter, single phase to three phase converter, Battery charger etc.
2. Simulation power circuits, PSPICE or any other simulation SW
3. Tools-ORCAD, ALLEGRO, ALTIUM, PADS
4. Knowledge of Power Components like Diodes, Thyristors, IGBT, SiC etc.
5. Knowledge of PCB schematics, PCB layout
6. Control hardware design & firmware understanding.
7. Knowledge of system testing.
8. Knowledge of design of magnetics ie – power inductors, Transformers, high frequency inductors etc.
9. Knowledge of all kinds of instruments used in Power electronics design.
10. Knowledge of various communication used in rolling stock
11. Knowledge of various standards like IEC, EN etc
12. Knowledge of EMI/EMC
13. Knowledge of testing of PCBs

### **B. Hands-on experience required**

1. Power electronics Design in High power for Railway rolling stock
2. Experience of testing of PCBs & debugging
3. Experience of Control schematic design & firmware understanding
4. Design experience of Inverter, converter, chargers etc
5. Thermal management in electronic design
6. Knowledge of BOM, SLD etc

### **C. Experience required:**

5-10 years of experience in power electronics with a minimum of 4 years in Rolling stock