



## **JOIN OUR TEAM, CREATE A FUTURE FOR EVERYONE**

Our team is the core of our mission to transform cancer treatment by expanding worldwide access to proton therapy – an advanced form of radiation therapy. We are always interested in hearing from anyone who shares our vision and believes that they can advance our mission.

### **Principal Mechanical Engineer**

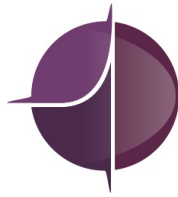
Regular, Full-Time  
Wakefield, MA

### **Summary**

ProTom's flagship product is the Radiance 330<sup>®</sup> Proton Therapy System ("Radiance 330"). This cutting-edge radiation therapy system uses a synchrotron to generate, transport, and steer high-energy protons to treat with sub-mm accuracy. Under the direction of the Director of Mechanical Engineering, the Principal Mechanical Engineer will be involved in, and lead aspects of, the design, analysis, fabrication, installation, verification, and certification of the Radiance 330. Areas of concentration include engineering project leadership, large articulating mechanism design, optimization and analysis, structural Finite Element Analysis (FEA) (static and dynamic), large gear drive systems, large bearing systems, thermal cooling calculations (heat transfer FEA and CFD), vacuum systems, and design for tight tolerance alignment of critical beamline components including large electromagnets.

### **Job Functions and Responsibilities**

1. Provide technical leadership in mechanical design, installation, verification and ongoing development of the system components as directed by the Director of Mechanical Engineering.
2. Lead the efforts in failure analysis of large mechanical systems, including accelerator and beam transport systems, rotating gantry structures, beam delivery, and robotic positioning subsystems that fall under ProTom's area of responsibility.
3. Responsible for leading teams for in-house development projects and for leading outside development subcontractor teams.



4. Work with the Engineering and Physics teams to refine the mechanical system, subsystem, and component-level technical architecture needed to meet user, regulatory, and system-level requirements and to ensure that the top-level requirements are properly flowed into each subsystem and component-level specification as required by the FDA and the ProTom Quality Management System (QMS).
5. Must be well versed in documenting requirements in such a way that they can be partitioned into a mechanical system architecture with direct downward and upward traceability to design requirements to ensure they meet the ProTom QMS requirements.
6. Responsible for working with the rest of the ProTom organization to produce a set of test plans, test protocols, and support tooling which demonstrate that ProTom products meet all requirements, specifications, and regulations.
7. Responsible for leading the team in execution of these test protocols and in documenting the test results in formal test reports.
8. Lead and mentor junior engineers.
9. Capable of leading a team of technical contributors through the development, analysis, documentation, fabrication, assembly, troubleshooting, testing, commissioning, and certification of a large complex piece of capital equipment.
10. Well-developed interpersonal and verbal communications skills for work with physicists, engineers, vendors, client administrators, etc.

## **Education and Experience**

1. Bachelor of Science degree in Mechanical Engineering; MSME preferred
2. Candidate will possess a minimum of 15 years mechanical engineering experience
3. Experience required in:
  - a. Use of Finite Element Analysis (FEA) on large complex capital equipment structures
  - b. Thermal analysis tools and cooling calculations and piping networks analysis
  - c. Solidworks
  - d. Use of MS Office for word processing, engineering calculations, data presentation
4. Experience preferred in:
  - a. FDA cleared medical device development (or other regulated industry)
  - b. Project management (use of project management software is a plus)
  - c. Development history with high energy physics components (vacuum, electromagnets, optical alignment systems, etc.)



## **Working Conditions**

1. Office environment for the majority of time.
2. Some work will be performed at proton therapy sites, which are typically installed underground with no natural light.
3. Occasional domestic and international travel to client, vendor, or training sites will likely be required; must be able to acquire all necessary travel documents.