

HARPER INTERNATIONAL

POSITION DESCRIPTION

The Position Description is the tool used by Harper International to communicate and clarify the essential job functions, establish the basis for performance expectations, and identify training needs for each position.

Part I - Reporting Structure

Date of last revision: December 2014 **Department:** Technology
Job Title: Project Engineer, Process Technology
Reports To: Director of Technology
Completed By: Director of Technology **Status:** Exempt

Part II – Position Objective

Develop new technology and improve our capabilities in providing thermochemical solutions to our customers

Provide innovative process and technological solutions to support the sale, design and manufacturability of custom capital thermochemical processing equipment and systems.

- ⇒ Translate customer requests into practical, cost effective solutions.
- ⇒ Work with internal engineering resources to develop technical solutions.
- ⇒ Develop technical solutions using Harper's pilot facility as a development platform.
- ⇒ Partner with customers to: 1) enhance existing processes and 2) develop new applications that require high temperature processing.

The specific focus of this position is to develop and apply computer based CFD, FEA, stress analysis and other similar simulations. These simulations will be critical to developing new, better and more effective processing equipment for customers of Harper International.

Part III – Job Responsibilities

Primary Duties

1. Develop a deep understanding of the thermochemical processing equipment manufactured by Harper Intl.
2. Conceptualize designs and develop innovative solutions to enhance existing in-house technology and designs.
3. Utilize available software based tools for modeling, thermodynamic and thermo-mechanical analysis. Perform CFD, FEA and other simulations to aid in equipment design and advancement.
4. Develop new analytical and simulation methods by applying or extending software based tools.
5. Perform heat and material balance calculations as appropriate.
6. Perform experimental work, as needed, to obtain data required for design and equipment enhancement

7. Obtain field data where appropriate to verify and enhance the quality of simulation and analysis
8. Collaborate with Sales, Engineering and other groups by providing help and expertise as appropriate.
9. Interact with Sales to understand & evaluate client specifications/requirements.
10. Coordinate with Sales to prepare proposals inclusive of all necessary specifications.
11. Present the work performed to colleagues, corporate management, customers and peers in the technical field as needed

Collateral Duties

1. Create and adjust drawings as needed to ensure conformity with intended scopes of supply.
2. Support PFD and P&ID requirements for systems based projects.
3. Provide sales with the necessary support to secure contracts
4. Interact with clients on a professional level to ensure customer specifications are met.
5. Interact with Harper Technology Center to expand upon existing capabilities in order to meet emerging market demands.
6. Interface with sales, engineering, and manufacturing to ensure that design concepts and sales contracts coincide with organizational capabilities.
7. Travel both domestically & internationally as required

IV – Knowledge, Skills, Education Requirements

1. Bachelor's Degree in Chemical or Mechanical engineering required; Master's degree and in some cases a Doctoral degree preferred
2. **Process modeling background – excellent capabilities in CFD /FEA and similar techniques for analysis (academic specialization or concentration in this area)**
3. **Excellent solid modeling capabilities – preferably in Autodesk Inventor**
4. Good understanding of mass & heat balance, heat transfer, high temperature materials, and equipment sizing principles.
5. Knowledge of PFD and P&ID principles.
6. High degree of technical depth and creativity
7. Good written and verbal presentation skills.
8. Ability to work well under time constraints in order to meet deadlines and client expectations.

V - Physical Demands

The physical demands described here are representative of those that must be met by an employee to successfully perform the essential functions of this job. Reasonable accommodations may be made to enable individuals with disabilities to perform the essential functions.

While performing the duties of this job, the employee is regularly required to walk. The employee is frequently required to sit, use hands, reach with hands and arms, talk and hear. The employee is occasionally required to stand, stoop, kneel, crouch or crawl.