Research Engineer

Overview of Position

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<th>Role Details:</th>
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<tr>
<td>Incumbent:</td>
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<td>Department: Fraunhofer Innovation Platform</td>
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<td>Unit/Department Leader: Vanja Ugresic</td>
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<td>Date: June 2023</td>
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<td>Position Number (if applicable): 00003316</td>
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Purpose of Position (2 or 3 sentences about why this role exists and how it contributes to the mission and goals of the unit)

The Research Engineer will be responsible for planning, executing and evaluating manufacturing trials in the field of compression and injection moulding composite materials, as well as carrying out projects. The role will apply their expertise and knowledge to the design, development, modification and manufacturing of equipment, tools or other parts as required to support projects. The Research Engineer will be responsible for leading projects, under supervision, ensuring projects remain within their budget, and for communicating with industrial clients and scientific institutes regarding budgets. The role will provide support and guidance to staff and students regarding project design, as well as approaches to utilizing required equipment and tools to ensure timely, innovative project outcomes are achieved.

Unit Overview

Unit's Mission (2 or 3 sentences about the overall purpose or role of the unit):

The Fraunhofer Innovation Platform for Composites Research (FIP) at Western University is a joint venture between Western University, London, Ontario, Canada and the Fraunhofer Institute for Chemical Technology, Pfinztal, Germany. The FIP-Composites@Western facility is located in London, Ontario. FIP-Composites@Western is a not-for-profit research institute that focuses on applied research in full industrial scale in the field of fiber reinforced composites.

The mission of the FIP-Composites@Western is to provide applied research service for private sector partners which bridges the gap between fundamental research on campus and industrial research and development needs. The focus of FIP-Composites@Western’s activities is on development of material formulations and processing technology of fiber reinforced composites in high medium to high volumes.

Key Goals of the Unit:

The key goal of the FIP-Composites@Western is to increase the use of fiber reinforced composites in industry. The main focus is on the processes Compression Moulding, Direct Compounding of Long Fiber Reinforced Thermoplastics (LFT-D), Sheet Moulding Compound (SMC), High Pressure Resin Transfer Moulding (HP RTM), Injection Moulding and
Thermoplastic Pultrusion: These manufacturing technologies are suitable for high volume applications in the following sectors: automotive, building and construction, transportation and defense.

**Key Accountabilities**
(a) Summarize, in point-form, the work to be performed. (b) As applicable, indicate with whom the role collaborates to perform the work, and to whom the work is provided. (c) Indicate relevant metrics to indicate the scope of the work e.g. size of budget managed, payroll administered, or research funding administered, number of direct reports, number of students served by role, square footage of facilities managed by role, etc.

- Plans, executes, and evaluates manufacturing trials in full industrial scale in the field of compression or injection moulded fibre reinforced composites and tests procedures.
- Increases the technical capability within their group through the provision of guidance and expertise.
- Participates in the design of equipment, tools and other products to be manufactured based on the project outcomes to be achieved.
- Creates project ideas and assists in writing project proposals in order to obtain grant funding and for industrial clients.
- Provides technical expertise regarding projects, and the equipment associated with the research.
- Ensures that work is performed in full compliance with Standard Operating Procedures and health and safety standards.
- Collaborates to ensure that project resources are tracked and within budget, reviews are completed, and project outcomes are achieved.
- Conducts data collection and analysis, writes technical reports and presents results to clients at technical conferences, shows and meetings.
  - Liaises and networks with clients as well as with the academic cluster of the International Composites Research Centre (ICRC).
- Maintains an up-to-date knowledge on all current methods, techniques, tools, instruments and equipment related to their area of specialty in order to increase effectiveness.

**Outcomes the role is to Achieve**

**Advising and Guidance**
- New issues and the approaches for resolution are identified and documented.

**Client Services**
- Strong client relationships are developed based on trust and credibility through positive and timely client interactions.

**Problem Solving**
- Sound decisions based on a mixture of analysis, wisdom, experience and judgment.

**Project Management**
• Project plans are well-developed with clearly identified tasks, milestones, and resource requirements

Research

• Increased research contracts are supported from the establishment of new client contacts from the private sector
• Increased success rate of grant applications are supported and award funding from public funded agencies
• New applications are developed, existing applications are adapted for processing technologies (for alternative raw materials) at FIP-Composites@Western and for different sectors
• New processing technologies and material formulations are developed, and technical capabilities of colleagues and students are increased

Safety

• Compliance with all relevant policies, practices and procedures is achieved

Problem Solving & Authority for Decision
(List a few examples of complex or challenging issues regularly encountered in this role where it requires the incumbent to identify or recommend a solution e.g. issues with respect to service delivery, planning, human resources, students, facilities, or other areas. For each example, indicate who is affected by the solution e.g. clients, colleagues, Department, Faculty, University)
a) Examples of issues that the incumbent is expected to resolve independently and who is affected

Client Services

• Communicating information in response to inquiries regarding projects, policies or procedures with clients and colleagues

Problem Solving

• Analyzing and resolving issues utilizing judgment and professional knowledge

Project Management

• Developing project plan and budget for approval

Other Independent Decisions

• Providing guidance regarding equipment, research protocols and technical processes
• Planning, executing, evaluating and reporting of trials, and identifying and recommending new processes to increase efficiencies
• Purchasing materials, supplies, equipment, or other products within approved budgetary limits for projects
• Recommending technical approaches for projects, suggesting project ideas and supports
drafting project proposals for grants and external clients

b) Examples of issues where the incumbent requires approval and/or consultation with supervisor or others to resolve and who is affected:

Finance and Budgeting

- Commitment of significant financial resources for major purchases
- Acquisition of new projects with a value higher than $20,000 CAD

Leadership

- Prioritizing initiatives and projects

Management

- Introducing changes in established priorities and processes
- Safety issues that arise

Project Management

- Changing a project’s direction or timeline

Other Decisions Requiring Collaboration/Approval

- Technical problems beyond the incumbents area of expertise
- Planning of trips for multiple days to meet with clients

c) Pre-established Guidelines for Decisions (e.g. List key University policies, Western collective agreement articles, Legislation, professional or other standards that specify the way the role must perform certain tasks or make certain decisions)

University Wide

- Manual of Administrative Policies and Procedures

External Agency and Professional Guidelines

- External funding agency guidelines and regulations

Statute

- Occupational Health and Safety Act and Regulations
- Workplace Hazardous Materials Information System (WHMIS)

Other Pre-established Guidelines for Decisions

- Western Policies and Guidelines for Research
Support and Resources

a. Leadership: Who provides the incumbent with work expectations, coaching, development support, formal performance feedback and evaluation?

The Research Engineer will work with the Manager, Operations to establish priorities and work assignments. The Manager Operations will provide performance feedback and coaching regularly, and formal reviews annually through the PDG process to collaboratively design and oversee their professional development plan. Fraunhofer ICT, Germany (partner of the joint venture, FIP-Composites@Western), provides technical support as needed. The Research Engineer may be asked to stay 6-8 weeks at Fraunhofer ICT, Germany, for orientation purposes, to learn the manufacturing technologies.

b. Colleagues and Key Resource People: With whom does the incumbent regularly collaborate to receive or share information and engage in problem-solving relevant to their role?

- Directors
- Operations, Manager
- Senior Business Development Officer
- Research team at FPC—Research Engineers, Technicians, Students
- ICRC staff team
- Undergraduate and Graduate students, and Postdoctoral Fellows
- Staff and faculty related to the facility or projects
- External suppliers/equipment manufacturers
- Industrial Clients/Partners

Other: List any specialized training, equipment, resources, or other supports required for success in this role (e.g. PeopleSoft training, lab safety, mobile devices, private space, protective equipment, etc.).

- Private Office Space at FPC (located at Western's Advanced Manufacturing Park at Veteran's Memorial Parkway and Bradley Avenue in South London, Ontario)
- Facility Equipment
- Required Safety Training
- Laptop
- Personal Protective Equipment
- System access to databases and information relevant to the accountabilities of the role

Work Context

*ATTACH an organization chart that shows to whom the role reports, key peer relationships and whom the role supervises if applicable.
**Requirements to Perform Successfully**

*a. Education*

**Minimum Required:**
- Bachelor of Engineering Science in Mechanical Engineering, Materials Engineering or Related Program

**Preferred:**
- Master’s Degree
- Project Management Professional certification preferred

*b. Experience*

**Minimum Required:**
- 2 years

**Experience:**
- Experience in a research environment planning, preparing and executing experiments and managing projects
- Experience with fiber reinforced plastic composite materials

**Preferred:**
- Experience in manufacturing processes for fiber reinforced plastics composites, compression moulding of long fiber reinforced thermoplastic, sheet moulding compound, and resin transfer moulding
- Interest in automotive applications as well as the transportation sector

**Knowledge, Skills, Abilities and Attributes**
- Knowledge of techniques for planning, managing and coordinating multiple projects, with competing priorities that involve a variety of stakeholders
- Knowledge of manufacturing technology, blueprints and technical drawings
- Familiarity with University research policies and practices
- Project management skills to manage multiple projects simultaneously from conception to completion within tightly prescribed timelines
- Ability to collaborate across internal and external boundaries to meet common objectives, improve outcomes and support work beyond one's own unit
- Demonstrated ability to research/investigate issues and resolve problems
- Communication skills to describe technical concepts effectively to both novice and sophisticated users
- Ability to write clear, concise and accurate procedural documentation
- Ability to work in a manner that models best practices in confidentiality standards
- Ability to provide solutions and ideas for improvement by using imaginative approaches where constructive thinking and innovation are required
- Ability to understand customer needs and expectations and provide excellent customer service to directly and indirectly satisfy expectations
- Ability to handle details with a high degree of accuracy and to organize and prioritize a high volume of work to meet deadlines
- Ability and willingness to stay abreast of technological developments with a commitment to ongoing professional development and with a desire to take on new challenges
- Ability to work within a flexible schedule to accommodate FIP-Composites@Western's events and activities
- Excellent troubleshooting ability along with hands-on expertise in technical support
- Ability to search within and outside the formal boundaries of the organization for innovative ways to improve work
- Intermediate computer skills in Microsoft Office Suite (Outlook, Word, Excel, PowerPoint, Project) and other applications or equipment used to support the facility or projects
- Proven ability and natural inclination to develop relationships by interacting with people in a professional, respectful and diplomatic manner
- Ability to work independently and effectively as a member of the team to achieve department goals
- Must have own transportation with ability to travel between Western Engineering and FIP-Composites@Western facility; Valid Class G driver's license required
- Willingness and ability to travel (Germany, USA); must have a valid passport in respect of all visa requirements

**Background Checks Required**
- Education Verification
- Driver Abstract
- Police Criminal Record Check
- Police Information Check
- Credential Verification
- Credit Inquiry
- Police Vulnerable Sector Check
- Other:

**Working Conditions**

Physical Effort:
- Computer workstation
- Extensive walking
- Lifting/pushing heavy objects
- Squatting/awkward positions
- Climbing
Highly repetitive movements

Other Physical Effort:
- Physical effort employed when completing manufacturing trials as required

Physical Environment:
- Normal administrative office environment
- Driving on behalf of employer
- High noise level
- Exposure to welding equipment and fumes
- Extremes of temperatures
- High dust concentrations
- Potential exposure to hazardous substances
- Exposure to contagious illnesses
- Exposure to chemical or biological agents
- Exposure to occupational injuries

Other Physical Environment:
- Drives between campus and to FPC on occasion for meetings

Sensory Attention:
- Prolonged periods of listening/reading/watching/observing
- Smelling, tasting, touching
- Monitoring video displays
- Auditing
- Technical troubleshooting

Other Sensory Attention:

Mental Demands:
- On-call responsibilities outside of normal schedule
- Odd and irregular schedule of hours
- Requirement to travel out of town
- Unpredictable workload
- Isolation or boredom
- Ongoing interruptions
- Multiple/simultaneous deadlines
- Exposure to the suffering of others

Other Mental Demands:
- Travel out of town to meet with clients with regards to projects, to deliver presentations at conferences, etc., within Canada and USA (post-pandemic)
- The Research Engineer might be asked to stay 6-8 weeks at the Fraunhofer ICT, Germany for an orientation and to learn the manufacturing technologies present at the FFIP-Composites@Western (post-pandemic)