Request for Proposal RFP_2018_3803: Improved Performance of Engineered Wood Panels

RFP Title
Improved Performance of Engineered Wood Panels

Due Date
10/19/2018

Opportunity
Licensing, product acquisition, contract research, proof of concept leading to scale-up to manufacturing, joint development, supplier agreement. Client will give preference to technology approaches that can offer an exclusive arrangement.

Current business need is for tens of millions of lineal feet of engineered wood products on an annual basis.

Timeline
Phase 1 – Proof of concept in 6-12 months
Phase 2 – Prototype development and field testing

Financials
All terms to be negotiated between RFP sponsor and Solution Provider(s), as warranted

RFP Description
NineSigma, representing a manufacturer of wood based composite construction panels used in North America, invites proposals for technologies to improve the performance characteristics and functionality in wood-based composites. The Client seeks novel materials, additives, and technology approaches to improve upon the performance of current composite panels, primarily water resistance and vapor permeability. Secondary properties of interest include advancements in surface properties, adhesion, texture, and weathering of the engineered composite.

Background
Composite, engineered wood panels are used in residential construction to provide structural stability and to protect the structure from air leakage and external elements such as moisture and UV exposure. During construction, the panels are fastened to the structure with penetrating fasteners (such as nails or screws) and left temporarily exposed to the elements (prior to external cladding application), often for up to 1 year. Technology advances in engineered wood products have resulted in features that reduce air leakage with improvement in water protection and vapor permeability.

Engineered composite panels typically are made of dried wood flakes mixed with wax and chemical agents to improve bonding properties and provide moisture resistance. NineSigma’s client has a portfolio of products that improve the functional properties of composite boards. They believe that there is the potential for new materials and process innovations to improve upon the properties of current composite wood products. The RFP sponsor is seeking advanced materials or technology solutions to further improve upon the durability and functionality of their construction panels.

Key Success Criteria
The successful technology will:

- Improve upon current state of the art technology for moisture resistance in composite wood panels to be used in residential construction
- The proposed improvement should address the primary issues of moisture sealing, air sealing, and water drainage
- Improvements upon other product characteristics would be considered favorably in addition to the main goal of this technology search: adhesion, surface properties, self-sealing around penetrating fasteners, etc.
- Ideally eliminate the need for paper overlays, house-wrap materials (such as Tyvek), or other materials that are applied to the surface of the panel as weather resistant barriers

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- Allow for a ‘breathable’ structure, or enable vapor permeability to reduce moisture, rot, mold, and mildew while maintaining resistance to “bulk” (liquid) water
- Be able to be used with all conventional construction practices and materials (sealants, tape, etc.)
- Be easily machinable with conventional tools used for home construction
- Be cost effective at commercial scale (i.e. no exotic materials or cost-prohibitive manufacturing steps)
- Be durable and resistant to damage during the construction process and in the construction environment, including UV resistance and other weathering factors
- Be stackable for transport to the supply channel and to the residential construction site
- Meet environmental, health, safety, and emission regulations related to manufacturing and end use
- Must be able to meet 1 year direct weathering (UV, rain, ice, wind, etc.) throughout all climate zones during the initial construction and then continue its performance for many years as part of a wall or roof assembly. This includes thermal stability (low and high temperature).

Area of Interest
Materials Science > Coatings > Hydrophobic coatings
Materials Science > Materials Manufacturing
Manufacturing > Wood, cork, straw and plaiting materials > Veneer sheets and wood-based panels
Materials Science > Coatings
Materials Science > Composite Materials
Manufacturing > Chemicals and chemical products > Mastics, waterproofing & roofing materials

Possible Approaches
Possible approaches might include, but are not limited to:
- Functional materials or agents that can be added during the manufacturing process
- Surface treatments for wood particles that impart the desired end properties of moisture resistance or vapor permeability of the finished panel
- Post-process sealing agents, coatings, or surface treatments to replace or improve a water-resistant overlay
- Self-healing coatings or materials innovations that create microchannels for water drainage
- Innovations from other industries such as textiles/sports performance, aerospace, food packaging, and advanced materials are of significant interest.

Approaches that may need further development to meet required criteria are of interest to this RFP.

Approaches not of Interest
The following approaches are not of interest:
- Approaches that are unable to be adapted to current manufacturing, storage, and transport conditions for composite boards for construction industry (Please note: proposed approaches may include secondary processing steps. Although the client prefers materials solutions or processes that can be incorporated into current manufacturing practices, after-market solutions and process modifications are also of interest.)
- Materials or solutions that are not compatible with environment-friendly processes or standards
- Any approach that does not allow for durability of the finished panel for up to 1 year in conditions described above

Preferred Collaboration Types
Contract Analysis and Testing
Contract Research
Joint Development  
Technology Licensing  
Supply Agreement  
Technology Acquisition  
Research Collaboration  
To Be Negotiated  

**Items to be Submitted**  
Your response should address the following:  
- **Non-confidential** description of proposed technology and working principle  
- Availability of technical data including water resistance performance, MSDS, manufacturability, permeability, durability, and strength.  
- Technical maturity of the approach (concept, reduced to practice, prototype, ready to commercialize, ready to implement, commercialized)  
- Pathway to commercial scale including timing, estimated budget, and capacity for manufacture  
- Estimated unit cost of technology  
- Position on intellectual property including patent references  
- Desired relationship with sponsor  
- Team description and related experience  

**Award Amount**  

**Attachments**  
No Files Selected  

**Request Number**  
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**Picture**