

# Request for Proposal RFP\_2018\_3918: Durable, High-Temperature Non-conductive Coating

<b>RFP Title</b>	Durable, High-Temperature Non-conductive Coating
<b>Due Date</b>	02/26/2019
<b>Opportunity</b>	Licensing, limited contract research, supplier agreement, negotiated as warranted Opportunity to supply coating for 2.5 million ft <sup>2</sup> annually
<b>Timeline</b>	Phase 1 – Proof of concept in 3-4 months Phase 2 – Engineering development in 6-12 months
<b>Financials</b>	Phase 1 – Proof of concept funding commensurate with proposed activity
<b>RFP Description</b>	NineSigma, representing <b>a global electric motor manufacturer</b> , invites proposals for a durable, high-temperature non-conductive coating for steel.
<b>Background</b>	<p>In the manufacture of electric motors, NineSigma's client makes a rotor that consists of a stack of thin, die-stamped steel sheets with a die-cast aluminum squirrel cage. It is important that the steel be electrically isolated from the aluminum. NineSigma's client needs a durable non-conductive coating to apply to the steel assembly prior to die-casting the aluminum. The coating must withstand temperatures associated with the die-casting process and with subsequent thermal cycling.</p> <p>Anticipated Project Phases or Project Plan</p> <p>Phase 1 – Proof of concept</p> <ul style="list-style-type: none"><li>• Evaluate coating performance and reliability in lab setting</li></ul> <p>Phase 2 – Engineering development</p> <ul style="list-style-type: none"><li>• Coat client products for detailed product evaluation and testing</li><li>• Develop small scale pilot scale coating application system for 100-1000 parts</li><li>• Perform design and reliability test in actual applications</li><li>• Supplier visit</li></ul> <p>Criteria for Moving from Phase 1 to Phase 2</p> <p>Client will consider for advancement an approach that meets performance criteria with acceptable economics and pathway to commercialization.</p>
<b>Key Success Criteria</b>	<p>The successful technology will:</p> <ul style="list-style-type: none"><li>• Produce a durable, electrically insulating coating film on steel that has the following properties:</li><li>• Surface insulation better than ASTM Type C-0 coating (greater than 1 ohm-cm<sup>2</sup>), even after thermal excursions noted below</li><li>• Dielectric strength of greater than 2000 volts per 0.001 inch, even after thermal excursions noted below</li><li>• Durability to withstand exposure to molten aluminum (T=1200 to 1450 °F) at pressures of 200 to 1000 atm for 3-4 seconds</li><li>• Durability to withstand thermal cycling to 1000 °F for a few seconds followed by cooling in a water quench</li></ul> <ul style="list-style-type: none"><li>• Meet the following application requirements:</li><li>• Use application methods and process with robust, repeatable parameters</li><li>• Be safe to use in a manufacturing environment</li></ul>

- Preferably, require minimal surface preparation for proper coverage and adhesion
- Preferably, cure to durable state in as little as a few seconds but not more than 60 minutes
- Properly coat all exterior surfaces of the stack of steel sheets

NineSigma's client prefers solutions with technology readiness suitable for incorporation into product applications but is also willing to consider solutions requiring minimal development.

**Area of Interest**

Materials Science > Coatings > Thermoresistant coatings  
 Materials Science > Coatings > Coatings-All disciplines  
 Manufacturing > Other fabricated metal products; metalworking service activities > Coating of metals  
 Materials Science > Coatings  
 Materials Science > Coatings > Heat resistant coatings  
 Materials Science > Coatings > Insulating coatings

**Possible Approaches**

Possible approaches might include, but are not limited to:

- Thermal spray coatings
- Electrostatically applied coatings
- Poured ceramic coating

**Approaches not of Interest**

**Preferred Collaboration Types**

Contract Research  
 Technology Licensing  
 Supply Agreement  
 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 temperature resistance, coating dielectric strength as a function of cured film thickness, surface preparation requirements, cure time, and surface insulation resistivity
- Technical maturity of the approach (reduced to practice, prototype, ready to implement, commercialized)
- Pathway to commercial scale including timing, estimated budget, and capacity for manufacture
- Estimated unit cost of coating/thickness (US\$/thickness unit)
- Position on intellectual property including patent references
- Desired relationship with sponsor
- Team description and related experience

Appropriate responses to this Request

Responses from companies (small to large), consultants, entrepreneurs, or inventors are welcome. For example:

- You represent a company or university that has demonstrated a proof of concept.
- You represent a company or university that has reduced method to practice at lab scale.
- You represent a company or university that has a prototype coating that is ready to adapt and scale.
- You represent a company or university that has demonstrated a coating that is ready for implementation at industrial scale.
- You represent a technology transfer agency that represents an inventor or technology holder who can demonstrate an approach to address the request.

**Award Amount**

**Attachments**

No Files Selected

**Request Number**

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**Picture**

