NINESIGMA

Request for Proposal

NineSigma – Connecting technology seekers with solution providers around the globe

REQUEST # 66708

Novel Power Generation for Remote Sensors

RESPONSE DUE DATE: **February 4, 2011**

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SOLUTION PROVIDER HELP DESK

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Opportunity

Contract research, joint development, licensing, product acquisition, proof of concept leading to scale-up to manufacturing, supplier agreement

Timeline

Phase 1 – Proof of concept (12-18 months)
Phase 2 – Prototype development (18-24 months)
Phase 3 – System integration (1-2 years and beyond)

Financials

Phase 1 – Substantial funding is available for technology development, amounts are negotiable depending on nature and scope of work proposed

DOWNLOAD PROPOSAL TEMPLATE

SUBMIT A PROPOSAL ONLINE

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FREQUENTLY ASKED QUESTIONS

(click buttons above)

REQUEST FOR PROPOSAL DESCRIPTION

NineSigma, representing **an Oil and Gas Company**, invites proposals for novel methods to generate power for remote sensors in harsh environments, like those encountered in down hole applications. The goal is to identify **early stage** opportunities for further development. Conceptual approaches are of interest, but they must have a clear path to practical application.

The successful technology will:

- Remain operational for at least 10 years, without service intervention
- Not obstruct or interfere with the flow of materials
- Be functional at **extreme** conditions, including:
  - Minimum temperatures of 210°F
  - Minimum pressures of 10,000psi
  - Potential erosion due to high through flow

Two different scenarios are of interest with differing power density requirements:

- Low power draw applications over the entire lifetime of the system (could be as low as 24 watts for 5 minutes each 24 hour period, with a sleep time between)
- Higher levels of power draw (24 watts over a 24 hour period) applied intermittently throughout the lifetime of the system, typically once a month or less.

BACKGROUND

Providing long-term power to remote systems is an issue faced in many industries, including mining, space, and deep sea applications. Short-term power requirements are easily addressed by conventional battery technologies. However, providing reliable power in a harsh environment and over a long service lifetime is more challenging.

NineSigma's client seeks to identify and develop innovative power generation technologies that can operate reliably over the service life of a system, under conditions of high pressure and temperature. Of particular interest are approaches which can harness the environmental conditions themselves and keep batteries recharged through the long lifetime.

Solutions do not need to address both the low and high power applications, but preferred solutions will.

Related to this challenge is the need to provide new communication systems for the remote powered sensors See also a separate request: RFP 66711 "Novel Wireless Communication Systems for Down Hole Applications".

POSSIBLE APPROACHES

Possible approaches might include, but are not limited to:

- Energy harvesting techniques:
  - Temperature
  - Pressure
  - Kinetic flow
- Nanotechnologies
- Isotopic decay
- Piezoelectric
- Magnetic flux
- Novel battery technologies, including new charging/recharging approaches

APPROACHES NOT OF INTEREST

The following approaches are not of interest:

- Conventional battery technology

ANTICIPATED PROJECT PHASES OR PROJECT PLAN

Phase 1 – Proof of concept: demonstration of power generation to operate a sensor in a client-specified setting, initial service life estimate and power generation profile

Phase 2 – Prototype development: development of working prototype, evaluation of system robustness

Phase 3 – System integration: refinement of technology, integration with client's systems, field testing, scale-up to commercialization

CRITERIA FOR MOVING FROM PHASE 1 TO PHASE 2

Successful demonstration of power generation under client specified conditions.

APPROPRIATE RESPONSES TO THIS REQUEST

Responses from companies (small to large), academic researchers, other research institutes, consultants, venture capitalists, entrepreneurs, or inventors are welcome.

Appropriate responses will use the proposal template and address the following:

- Technical maturity of approach
- Discussion of power generation mechanism
- Supporting data or scientific rationale for conceptual approaches
- Intellectual property status
- Expertise of responder

Examples of appropriate responses include the following:

I am an **academic researcher** with early stage research on a breakthrough power generation technique which has potential for these harsh environments.

I am a **power generation system company** and can modify existing technologies for this application.

I am a **small company** with expertise in energy harvesting.

RESPONDING TO THIS REQUEST

NON-CONFIDENTIAL DISCLOSURE

By submitting a Response you represent that the Response does not and will not be deemed to contain any confidential information of any kind whatsoever.

Your Response should be an executive summary (about 3 pages). The Response should briefly describe the technical approach and provide information on technology performance, background, and description of the responding team and their related experience.

By submitting a Response, you acknowledge that NineSigma's client reserves the sole and absolute right and discretion to select for award all, some, or none of the Responses received for this announcement. NineSigma's client also may choose to select only specific tasks within a proposal for award. NineSigma's client has the sole and absolute discretion to determine all award amounts.

RESPONSE EVALUATION

NineSigma's client will evaluate the **Response** using the following criteria:

- Overall scientific and technical merit of the proposed approach
- Approach to proof of concept or performance
- Potential for proprietary position (i.e., is the technology novel or protectable)
- Economic potential of concept
- Respondent's capabilities and related experience
- Realism of the proposed plan and cost estimates

The client will contact respondents with highly responsive proposals for next steps.