Expression of Interest

India – Sweden Collaborative Industrial Research & Development Programme 2025

Company Information

1. Company Name: Prayogik

2. Company Description: We **PRAYOGIK** working towards remote power management solutions including, Thermoelectric technology, Fuel Cell Generator, Battery Management Systems, Automation, and Biodegradable waste to energy in cooling and utilizing heat applications including power management solutions.

3. Country (India/Sweden): India

4. Sector and subsector: Cleantech & Energy

5. Year Established: 2019

6. Company Website: www.prayogik.in

Contact Information

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Proposed Area of Project/ Proposal: Thermoelectric Module Static generator DC Power (TMSG-DC)

Summary of the Proposed Project/Proposal:

Thermoelectric Module Static generator DC Power TMSG-DC is a highly reliable remote power supply unit working with natural gas or propane. TMSG-DC generates electrical power converting directly heat energy into electricity. It does not contain moving parts, has an extremely long lifetime and requires minimal service. Ignition starts working automatically as soon as fuel pressure appears in fuel pipe connection. TMSG-DC is meant for use as an electric direct current (DC) power and heat source as part of an autonomous power supply source (APSS). As the core part of TMSG-DC medium temperature thermoelectric module is applied. Best efficiency and reliability, based on modern technologies and know-how provide ultimate parameters. TMSG runs unattended within one year in different climatic zones at an air temperature from -50℃ to +60℃ and relative air humidity up to 98%.

TMSG-DC is a thermo electric based static power generator consisting of a metal heat receiver attached to a heat source and a heat sink bolted together with a TGM Mars between them.

Technology/Process

TGM is a thermoelectric generating module that works on **Seebeck** effect i.e. if there is a sufficient temperature difference between the materials (PN Junction diode) EMF would be generated across the terminals. Using six modules in series of each having voltage 6V DC and 65watt power we are able to generate electricity 200-300 Watt @27V DC without any moving parts use to charge batteries and other applications

Main characteristics and specific technological expertise of potential partner you are looking for:

We are seeking a Swedish partner with advanced capabilities in clean energy engineering, industrial power systems, and thermoelectric or high-temperature technologies to accelerate the European deployment of TMSG-DC. The ideal partner should have strong competencies in material science, thermal engineering, fuel systems, and industrial certification, enabling joint development, scaling, and commercialization of solid-state power generation for harsh environments.

The partner must possess deep expertise in high-temperature materials, heat exchangers, gas-burner systems, and ruggedized industrial enclosures, ideally with experience in offshore, Arctic, and cold-climate operations—aligning with Sweden's leadership in robust engineering and sustainability. Strong capabilities in power electronics, including DC-DC conversion, MPPT, and battery integration, are essential to refine system efficiency and prepare for large-scale manufacturing.

We also seek partners skilled in AI-assisted industrial automation, predictive maintenance algorithms, remote condition monitoring, and IoT communication technologies (LoRaWAN, 5G, industrial telemetry). This will enable advanced real-time monitoring and intelligent energy management for remote and unmanned installations. A strong track record in industrial certification—ATEX, IECEx, marine-grade, and other EU regulatory pathways—is critical. Swedish companies with established understanding of safety compliance for Oil & Gas platforms, offshore wind, mining, and heavy industries can significantly accelerate market access.

From a business standpoint, the ideal partner should have:

- Manufacturing or prototyping capacity for small batch production
- Strong R&D infrastructure in clean energy or advanced materials
- Access to European industrial networks
- Commitment to sustainability and carbon-neutral technologies
- Experience in commercializing deep-tech hardware products

Overall, we seek a technology-driven, innovation-focused Swedish partner capable of co-developing and scaling TMSG-DC solutions for Europe through a combination of engineering excellence, industrial certification expertise, and a shared mission toward clean, autonomous, and maintenance-free power generation.

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