विज्ञान एवं प्रौद्योगिकी विभाग
DEPARTMENT OF
SCIENCE & TECHNOLOGY

VINNOVA
Sweden's Innovation Agency

प्रौद्योगिकी विकास बोर्ड
TECHNOLOGY DEVELOPMENT BOARD
DEPARTMENT OF SCIENCE AND TECHNOLOGY

Expression of Interest

India – Sweden Collaborative Industrial Research & Development Programme 2025

Company Information

1. Company Name: **SMARTWAY ELECTRONICS PVT. LTD**
2. Company Description: We are an Electronics & Semiconductor R&D Startup company working in the field of Nano technology, Nanoelectronics, Medical Electronics, Internet of Things (IOT) based Research & Development, product prototyping and Design servicing.
3. Country (India/Sweden): **INDIA**
4. Sector and subsector: Nanotechnology & Nanoelectronics based new nanomaterial development for Cement Industry, Steel Industry, Medical Electronics Devices, Pholuminiscent device
5. Year Established: 2020
6. Company Website: https://smartwayelectronics.in/

Contact Information

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- Proposed Area of Project/ Proposal: Implementation of Titanium Dioxide Nanomaterials in cement and steel industry to reduce carbon emission

Summary of the Proposed Project/Proposal:

Titanium Dioxide, TiO_2 nanomaterial has extremely small particle size (10- 40 nm) and high reactivity, therefore, even a small dosage can significantly improve the cement's strength, packing density, and hydration rate. This means the same or higher strength can be achieved with less clinker or lower-temperature processing, which directly reduces fuel consumption and CO_2 released from both calcination and kiln heating. Additionally, it improves the durability, reduces pore size, and can even provide self-cleaning or photocatalytic benefits, allowing manufacturers to design high-performance, low-carbon cements that use fewer raw materials and less energy. Therefore, titanium dioxide (Nano-TiO_2) can be used as a performance-enhancing additive in the manufacturing/production process of the Cement.

In the case of the steel industry, Titanium Dioxide can't be used directly in the manufacturing process but it can be used as Anti-Corrosion Coatings for Steel Structures. It can improve the corrosion resistance of steel bridges, pipelines, storage tanks and automative steel panels. The photocatalytic coating on steel surfaces can be used for self-cleaning, stainless-steel façades and industrial equipment. Nano-TiO_2 coatings prevent fouling and reduce pollution deposition on steel buildings.
Therefore, these properties of Titanium Dioxide, Tio_2 nanomaterial have potential to revolutionize the Cement and Steel Industry.

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

We are looking for the Swedish associates to join hands with us for R&D, Prototyping and testing of the proposed nanomaterial to address the challenges of decarbonizing the cement and steel industries.

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