

Japanese SME is looking for licensing partners interested in photocatalytic technology with inorganic binder aimed to protect interior and exterior of building structures

Summary

Profile type

Technology offer

Company's country

Japan

POD reference

TOJP20230530008

Profile status

PUBLISHED

Type of partnership

Commercial agreement with technical assistance

Targeted countries

• World

Contact Person

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Term of validity

30 May 2023**29 May 2025**

Last update

6 Jun 2024

General Information

Short summary

A Japanese company is offering its photocatalyst with inorganic binder production technology that is based on 30 years of R&D and manufacturing. This coating technology is applied to interior and exterior of building structures to achieve an antifouling, antibacterial, and antiviral effect, and for the removal of volatile organic compounds.

The company is looking for EU partners to commercialise the manufacture and sale of this technology through a licensing or technical cooperation agreement.

Full description

A Japanese company wishes to transfer a photocatalyst with inorganic binder production technology that is based on 30 years of R&D and manufacturing.

Photocatalyst is a nanotechnology first invented in Japan, which breaks down microscopic organic matter into water and CO₂ through contact with a titanium dioxide (TiO₂) film when the film is exposed to light energy. The technology has a 100% TiO₂ surface film made up of various metal nanoparticles as a thin film on a substrate.

The main feature of their technology is the world's first practical application of peroxotitanic acid (PTA), a substance before TiO₂ is formed, which shows strong adhesion at the nano-level as a binder to photocatalysts. As TiO₂ does

not adhere on its own, this adhesive is essential.

The company has applied photocatalysts to more than 4000 buildings to date. They have many years of experience in providing a photocatalytic effect on the interior and exterior of various building structures to achieve an antifouling, antibacterial, and antiviral effect, and for the removal of volatile organic compounds (VOCs).

In addition to UV-responsive technology, this company has put visible light-responsive technology to practical use more than 10 years ago. Last year, it also put a ground-breaking technology for loading CU to practical use, which has antibacterial and antiviral effects even in the dark.

The company envisions that photocatalysts will be increasingly needed in the future to combat the contamination of buildings and other structures caused by worsening air pollution, bacteria, and viruses.

The company exported photocatalyst solvents to various countries in the past but have had difficulty overcoming problems such as country-specific price differences, transport costs and production volume adjustments. Therefore, they decided to propose a collaboration through the provision of the technology itself. They will also provide the results of their R&D.

The Japanese company is looking for business partners to commercialise the manufacture and sale of this technology through a license agreement or technical cooperation agreement.

The company has all of its own technical information in manual form and can teach manufacturing methods in detail. As a result, partner companies do not have to spend R&D costs and can start the photocatalyst business as a new sector regardless of their own business type. Partners should have the ability to also market the photocatalyst solution produced.

Advantages and innovations

The company offers a technology solution that results in a photocatalyst film for long-term use. Photocatalyst solutions can be divided into two main components: titanium dioxide TiO₂ (decomposing component), and the binder that adheres it to the substrate. The technology's TiO₂ is a highly transparent sol solution with a decomposition activation index that is officially recognized as the highest in the photocatalyst industry.

The photocatalyst industry is dominated by techniques that use organic binders, which result in the loss of their effectiveness in a short term as TiO₂ acts to degrade organic substances. The Japanese company's solution is a completely inorganic peroxotitanic acid (PTA) binder that improves the technology's longevity and has strong adhesion to nanomaterials. PTA can adhere a wide range of nanometallic particles (gold, platinum, zirconia, etc.) to various substrates by spraying a smooth, strong film of around 0.5 µm onto the substrate. The company believes it to be the most durable binder currently available.

Furthermore, through their two-layer technique of PTA and TiO₂, with a surface made entirely of TiO₂ can be formed by coating at room temperature.

Practical aspects of the technology:

a) On exterior walls and windows, the technology prevents staining and is cost-effective in terms of (window)cleaning. This keeps the building looking good long-term (on average more than 15 years). The technology is additionally used for salt damage prevention and mould moss prevention purposes.

b) On interior walls and fittings of a building, bacteria, etc. brought in from outside or discharged from the human body are decomposed when they come into contact with the coated surfaces. The same effect can be expected for indoor odours and VOCs (e.g., formaldehyde).

Technical specification or expertise sought

Stage of development

Already on the market

IPR Status

IPR granted

Sustainable Development goals

• **Goal 3: Good Health and Well-being**

Partner Sought

Expected role of the partner

The Japanese company can partner with companies from various types of industries. However, a partner with an interest in environmental issues is preferable as photocatalyst is an environment-related technology.

The Japanese company will require a certain percentage of the net sales as royalty in return for the technology

transfer, and/or equity depending on discussions. They do not participate in the management of business partners and do not invest in them.

Type of partnership

Commercial agreement with technical assistance

Type and size of the partner

- **SME <=10**
- **Big company**
- **SME 50 - 249**
- **SME 11-49**

Dissemination

Technology keywords

- **02002002 - Coatings**

Targeted countries

- **World**

Market keywords

- **08001007 - Coatings and adhesives manufactures**
- **08001021 - Other speciality chemicals**

Sector groups involved