Spanish SME offers autonomous flying robots for digitalization of underground infrastructure in EU research projects

Summary

Profile type
Technology offer

Company's country
Spain

POD reference
TOES20250226017

Profile status
PUBLISHED

Type of partnership
Research and development cooperation agreement

Targeted countries
• World

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Term of validity
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General Information

Short summary

A Spanish SME has developed cutting-edge autonomous flying robots for digitalizing and inspecting challenging indoor and underground environments. These robots operate without GPS or pilots in adverse conditions.
The company seeks research partners for EU projects to further develop and/or apply this technology in infrastructure inspection, environmental monitoring, and disaster response.

Full description

A Spanish SME specializing in autonomous aerial robotics has developed innovative flying robots designed for digitalizing and inspecting challenging indoor and underground environments. These robots excel in environments where traditional methods struggle, such as wastewater collectors, hydropower penstocks, mining facilities, and abandoned tunnels.

Key features of the technology:
1. Autonomous operation without GPS, radio communication, or pilots
2. Ability to function in extreme conditions (darkness, high humidity, toxic gases)
3. Generation of high-resolution georeferenced point clouds and panoramic images
4. Creation of 3D models and detailed pathology reports compliant with European standards (UNE-EN 13508-2)
5. User-friendly cloud platforms for data access and analysis

The company is seeking research partners for EU-funded projects (e.g., Horizon Europe, EIT) to further develop and apply this technology in areas such as:
1. Advanced infrastructure inspection and maintenance
2. Environmental monitoring in hard-to-reach areas
3. Disaster response and search-and-rescue operations
4. Underground mapping and exploration

Potential research areas include:
• Enhancing autonomous navigation capabilities
• Improving sensor fusion and data processing algorithms
• Developing AI-powered defect detection and analysis
• Integrating with other robotic systems for collaborative missions
• Adapting the technology for new applications (e.g., extraterrestrial exploration)

The company's expertise in autonomous robotics, computer vision, and data processing makes them an ideal partner for multidisciplinary research projects. They offer a unique testbed for developing and validating new technologies in challenging environments.

Advantages and innovations

1. Unparalleled autonomy: Operates without GPS or external control in GPS-denied environments, enabling exploration of previously inaccessible areas.
2. Extreme environment resilience: Functions in darkness, high humidity, and presence of toxic gases, ensuring reliable operation in harsh conditions.
3. High-precision 3D mapping: Generates accurate, georeferenced point clouds and panoramic images, enabling detailed infrastructure analysis.
4. Compliance with European standards: Produces pathology reports in line with UNE-EN 13508-2, facilitating integration with existing infrastructure management systems.
5. Versatile application potential: Adaptable to various scenarios beyond initial use cases, opening new research avenues in environmental monitoring and disaster response.
6. Efficient data processing: Cloud-based platforms allow for quick data access and analysis, streamlining the inspection process.
7. Cost-effective solution: Pay-per-use model reduces capital expenditure for potential industrial partners.
8. Proven track record: Successfully deployed in real-world scenarios, demonstrating technology readiness for further research and development.
9. Multidisciplinary research potential: Combines robotics, AI, computer vision, and data analytics, offering rich opportunities for cross-domain collaboration.

Technical specification or expertise sought

Stage of development

Already on the market

Sustainable Development goals

- **Goal 13: Climate Action**
- **Goal 11: Sustainable Cities and Communities**
- **Goal 9: Industry, Innovation and Infrastructure**
- **Goal 3: Good Health and Well-being**
- **Goal 6: Clean Water and Sanitation**
- **Goal 17: Partnerships to achieve the Goal**

IPR Status

IPR granted

IPR Notes

Partner Sought

Expected role of the partner

The company seeks research institutions, universities, and innovative SMEs or large enterprises for joint EU project proposals. While open to various collaboration opportunities, the company is particularly interested in partners who:
1. Have identified relevant funding calls (Horizon Europe, EIT among others) aligned with the company's technology.
2. Are developing project proposals and seeking technological partners to strengthen their consortium.
3. Have ongoing projects where this technology could add significant value.

Ideal partners should have expertise in:
1. Advanced robotics and autonomous systems
2. Artificial intelligence and machine learning
3. Sensor technology and data fusion
4. Infrastructure management and inspection
5. Environmental monitoring or disaster response

Partners are expected to contribute to project proposal development, research activities, and potential technology integration or adaptation for specific use cases. The company is equally open to joining existing consortia or co-developing new project ideas from scratch.

Type of partnership

Research and development cooperation agreement

Type and size of the partner

- **University**
- **R&D Institution**
- **SME 11-49**
- **SME 50 - 249**
- **Big company**

Dissemination

Technology keywords

- **01003020 - Building Automation Software**
- **02008001 - Air Transport**
- **01001001 - Automation, Robotics Control Systems**
- **02009011 - Air pollution control for cars and transport**
- **01001002 - Digital Systems, Digital Representation**

Market keywords

- **08002007 - Other industrial automation**
- **08004001 - Air filters and air purification and monitoring equipment**
- **08002004 - Robotics**
- **01004007 - Network test, monitoring and support equipment**

Targeted countries

- **World**

Sector groups involved