



## **LeakGuard**

Integrated Conductive Waterproofing  
Membrane with Advanced Leak Detection



smart

advanced manufacturing

## ORGANISATION PROFILE

DIMING d.o.o. is a **Slovenian engineering and construction company** with **33** employees.

### Technical areas/services/products:

- **Construction engineering:** design and implementation of complex roofing, façade, and waterproofing systems.
- **Specialized waterproofing solutions:** development of modular and energy-efficient roof systems with enhanced leak detection and sustainability.
- **Innovative sensor-based technologies:** integration of IoT (Internet of Things) for real-time moisture detection and structural monitoring.
- **Custom engineering services:** tailored construction designs for complex architectural structures.



### Key R&D projects include:

- **DigiLEAK:** Development of an intelligent leak detection system for green roofs and industrial surfaces, enabling remote real-time monitoring and predictive maintenance.
- **RFID Moisture Control System:** Internal research project testing passive RFID sensors for accurate detection of moisture variations across roofing layers.
- **Modular Roof Development:** Ongoing self-funded R&D initiative aimed at creating an advanced modular roofing system with optimized sustainability and cost efficiency.



## ORGANISATION PROFILE

FRAGMAT TIM d.o.o. is a leading Slovenian manufacturer and developer of **thermal, hydro, and sound insulation systems** with more than **230 employees** and subsidiaries in **Croatia, Serbia, Bosnia and Herzegovina, Montenegro, and North Macedonia.**

### Technical areas/services/products:

- **Application solutions:** integrated systems for **flat and pitched roofs, terraces, balconies, floors, underfloor heating, façades, walls and ceilings, raft foundations, substructures, parking decks, and bridges.**
- **Waterproofing systems:** development of **bituminous and polymer membranes** for buildings and civil engineering applications.
- **Thermal insulation:** production of **EPS and XPS insulation boards** and **high-performance composite panels** for energy-efficient envelopes.
- **Radiant heating:** design and production of **underfloor and wall heating systems** enhancing indoor comfort and energy efficiency.
- **Packaging and technical products:** custom **EPS and EPP components** for the construction and automotive sectors.

### Key R&D projects include:

- **AIPAN** – AI-integrated intelligent building envelope system,
- **DOM+** – multifunctional climate-active façade,
- **RE-BITUMEN** – recycling and reuse of ecological bitumen,
- **HIFLO** – development of intelligent and healthy flooring systems.



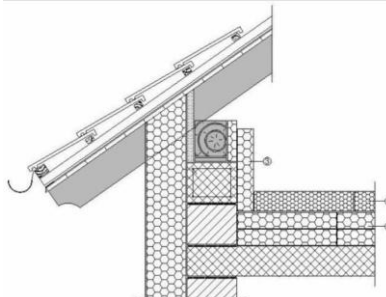
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# PROPOSAL INTRODUCTION (I)

**Vision:** The project aims to **develop an innovative, fully recyclable integrated conductive waterproofing membrane** (LeakGuard) with embedded High Voltage Electric Leak Detection (HV-ELD) technology, significantly reducing installation complexity, labour costs, and enabling precise early-stage leak detection. This solution will be adaptable for roofing, vertical, and underground applications, substantially mitigating structural damage risks and associated repair costs across the construction sector.

**Motivation:** The construction industry faces significant challenges in ensuring **effective waterproofing**, particularly due to frequent undetected leaks caused by improper installation or damage during construction, resulting in substantial structural deterioration and costly repairs. Current leak detection methods are either prohibitively expensive, labour-intensive, or limited in adaptability, especially for vertical and underground applications.

## PROPOSAL INTRODUCTION (II)

### Expected outcomes:

- **Integrated Conductive Waterproofing Membrane:** A novel single-layer membrane combining waterproofing and conductive functionalities, enabling simplified single-step installation and precise leak detection.
- **Embedded High Voltage Electric Leak Detection (HV-ELD):** Advanced integrated electrical inspection technology capable of detecting leaks as small as 1 mm, significantly surpassing current manual and sensor-based detection methods.
- **REBITUMEN Sustainable Membrane:** A recyclable bitumen-based waterproofing membrane incorporating recycled materials, substantially reducing environmental impact and carbon footprint compared to conventional membranes.
- **Automated Membrane Production Line:** Innovative manufacturing process integrating conductive layers directly into waterproofing membranes, ensuring cost-effective, scalable production with consistent quality control.
- **Versatile Application Technology:** Advanced membrane design enabling reliable leak detection and waterproofing performance across diverse construction scenarios, including vertical walls, foundations, and underground water reservoirs, addressing critical limitations of existing technologies.

### Impacts:

- **Reduced lifecycle costs:** Early leak detection prevents structural damage and cuts maintenance expenses.
- **Sustainable advantage:** Recyclable REBITUMEN membrane lowers carbon footprint and meets EU green standards.
- **Scalable market growth:** Automated production and easy installation enable broad adoption across construction segments.

**Schedule:** start date 1.1.2027; duration up to 36 Months

## PARTNERS

**Current Consortium:**

- Diming d.o.o.
- Fragmat TIM d.o.o.

**Partner search:** We are looking for SMEs, Industry and academic partners interested in the codevelopment or use of the proposed solution.



## CONTACT INFO

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