

# Non-invasive patented CRNS technology for real-time, large-scale soil moisture and snow-water equivalent measurement.

## Summary

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Profile type

**Technology offer**

Company's country

**Italy**

POD reference

**TOIT20260505015**

Profile status

**PUBLISHED**

Type of partnership

**Commercial agreement with  
technical assistance**

Targeted countries

**• All countries**

Contact Person

**[Myrthe BONGERS](#)**

Term of validity

**5 May 2026****5 May 2027**

Last update

**5 May 2026**

## General Information

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### Short summary

An Italian innovative SME offers a commercially available, patented sensing solution based on Cosmic Ray Neutron Sensing (CRNS) for real time, non invasive measurement of water content in soil and snow.

It enables large scale, continuous and in depth monitoring, providing reliable environmental data for operational and decision support purposes.

The SME is seeking commercial partners interested in distribution, market uptake, service provision or integrated environmental monitoring solutions.

#### Full description

The business offer concerns an advanced environmental monitoring solution based on Cosmic Ray Neutron Sensing (CRNS), a technology that exploits naturally occurring cosmic rays to quantify water content in soil and snow.

The system provides:

- Soil moisture measurements representative of areas of 5-10 hectares (125 m radius)
- Snow Water Equivalent (SWE) measurements with 10,000 mm/eq saturation threshold and a 20 m radius.
- In depth (up to ~50 cm in soil),
- Continuous, real time measurements, without physical contact with the ground.

The probe is compact (40 x 30 x 20 cm), lightweight (5 kg) and consumes low energy (0.5 Wh), enabling deployment in remote or hard to access locations.

The probe fills the critical gap between point-source sensors and satellite data, providing soil moisture and SWE data in large scale, in depth and in real time, ideal for precision agriculture and Early Warning System (flood, landslides and wildfire).

The technology is already commercially deployable and suitable for integration into environmental services, monitoring platforms and decision support systems.

#### Advantages and innovations

Major advantages include:

- large scale representativeness with a single sensing unit;
- non invasive operation, reducing installation and maintenance costs;
- real time validated data, suitable for operational monitoring;
- autonomous functioning, minimizing infrastructure requirements;
- high reliability and durability, no moving or consumable parts;
- compact (40 x 30 x 20 cm) and lightweight (5 kg), easing logistics and deployment;
- patented detector technology.

Moreover, business benefits include:

- lower total cost of ownership compared to dense sensor networks,
- scalable deployment for service providers and operators,
- added value for environmental monitoring and risk management services.

#### Technical specification or expertise sought

#### Stage of development

**Already on the market**

#### Sustainable Development goals

- **Goal 9: Industry, Innovation and Infrastructure**
- **Goal 15: Life on Land**
- **Goal 2: Zero Hunger**
- **Goal 13: Climate Action**
- **Goal 6: Clean Water and Sanitation**
- **Goal 12: Responsible Consumption and Production**
- **Goal 11: Sustainable Cities and Communities**

#### IPR Status

**IPR granted**

#### IPR Notes

## Partner Sought

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#### Expected role of the partner

The SME is looking for partners active in:

- Environmental monitoring services
- Water resource management solutions
- Climate and environmental consultancy
- Agriculture and hydrology services
- Data driven decision support platforms
- Equipment distribution and integrated solutions

Partners may act as:

- Distributors or resellers
- Service providers using the technology
- System integrators
- Commercial representatives in specific markets or regions

#### Type of partnership

**Commercial agreement with technical assistance**

#### Type and size of the partner

- **SME <=10**

## Dissemination

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#### Technology keywords

- **07002001 - Forest technology**
- **10004011 - Flood Management**
- **09001009 - Sensor Technology related to measurements**
- **07001007 - Precision agriculture**

#### Targeted countries

- **All countries**

#### Market keywords

- **08002002 - Industrial measurement and sensing equipment**
- **03007002 - Other measuring devices**
- **09005 - Agriculture, Forestry, Fishing, Animal Husbandry & Related Products**

#### Sector groups involved

- **Agri-Food**

## Media

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#### Images



[EEN 1.jpg](#)



[EEN 2.jpg](#)



[EEN 3.jpg](#)