Life from cosmos

We are Finapp

We use cosmic rays to measure water

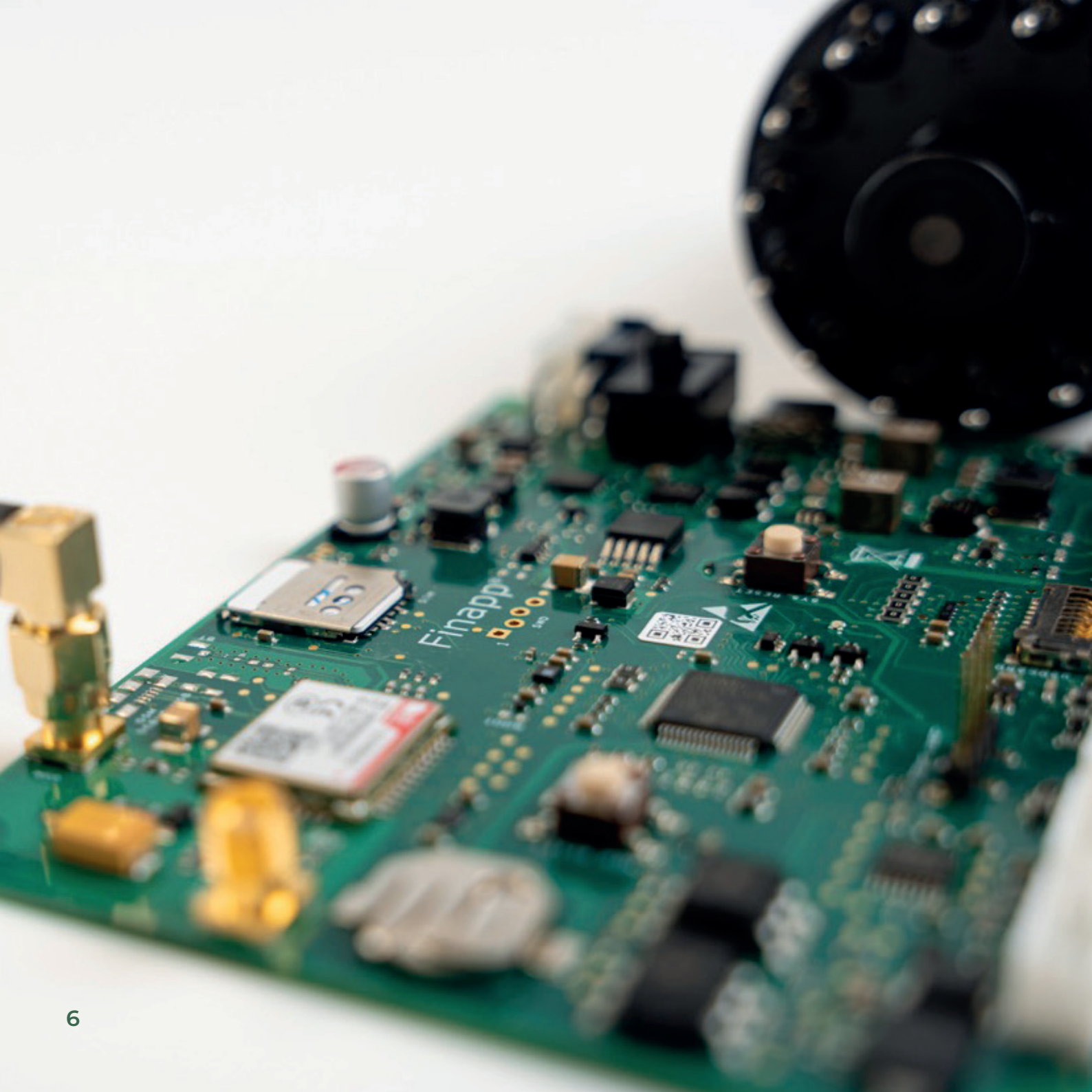
Finapp is the world leader in water monitoring solutions, with measurements based on Cosmic Ray technology (CRNS).

The innovative device, based on neutron physics, and with the use of advanced software including ML/AI, is designed taking into account practicality and ease of use, to guarantee rapid configuration and continuous use of data and information. Starting from reliable data, Finapp offer services and answers to **environmental monitoring**, **smart agriculture**, **prelocation of water losses**, **mitigation of hydrogeological instability**, **wildfire** and **climate risk**.

Our story

Finapp invented a new way to measure water, a new scale, something that simply didn't exist before.
The original idea of using the neutron detector to measure water content dates back to Autumn 2016.
From the laboratories of the Department of Nuclear Physics at the University of Padua (Italy), the first prototype was born in 2018.
Since then, step by step, the idea has taken shape, becoming first a project, then a prototype and, finally, a company.
Our products are designed to bring science to everyday use.
Our team of experts, bring with them a wealth of relevant scientific and industrial knowledge, ensuring that the products are able to solve real-world problems.
Finapp currently operates two production units in Italy and plans two openings abroad in the coming months.


Finapp
THE NEW WAY
TO MEASURE
WATER



From Physics of Particles to Tech

CRNS stands for Cosmic Ray Neutron Sensing.
Cosmic rays come from deep space and come into contact with the Earth's atmosphere, generating a cascade of particles, including **"fast neutrons"**. These have the particularity of **interacting mainly with water molecules**.
When fast neutrons come into contact with ground water or snow, a part of them is absorbed and a part is reflected in the air, losing part of their initial energy: thus **"slow neutrons"** are created.
A large difference between the number of fast and slow neutrons implies a large amount of water and vice versa.
Since fast neutrons have enough energy to penetrate many cm into the ground (meters into snow), the information provided is representative at depth, and since slow neutrons are distributed over large distances it is possible to monitor water content on a large scale, approximately 5 hectares at sea level, up to 30 hectares at altitude.
Finapp has innovated the way these physical effects known for decades are used, now allowing access to this technology with the use of simple, affordable, small and light and high performance tools.

This is Finapp, this is "Life from Cosmos".

The vision

Finapp has set itself an ambitious vision: to make its contribution to **safeguarding life on Earth by preserving water**, an element synonymous with birth and prosperity.
Climate change is the greatest environmental challenge, affecting the global **water cycle** and exacerbating competition for an increasingly limited supply of freshwater resources.
Droughts, floods and changing rainfall patterns affect water and food security, livelihoods, ecosystem health and biodiversity, disproportionately affecting the most vulnerable communities. To achieve the agreed climate targets on time, **we need mature and readily deployable solutions**.
Finapp is committed to improving water monitoring and assessment, promoting innovative strategies and solutions for integrated water resources management.
By using state-of-the-art technologies, making them accessible and usable in any environment and for any user, improving monitoring and data sharing, we can reduce waste and losses, and mitigate risks from floods, droughts, fires, landslides, and thus ensure equitable access to this vital resource. To transform this vision Finapp strives every day to make innovative CRNS technology available to all: knowing how much water you have is the first step towards conscious, targeted and efficient management of water resources.

Finapp embraces the **UN 2030 Agenda for Sustainable Development and the Action Plan for People, Planet and Prosperity**, primarily by offering concrete solutions to five Sustainable Development Goals.

We have the ideal solution

Finapp devices are designed to operate completely autonomously even in critical environments or to be easily combined with existing monitoring systems.
Whether it is a hydrogeological monitoring site or agricultural land, a remote glacier or a floodplain, a landslide mountain or an ecologically sensitive area, a forest or a city street, **we have the ideal solution**.
All electronic components, from the sensitive part to the housings, are designed and manufactured internally, with certified processes, bringing the best of innovation and production quality to the world.


finapp
THE NEW WAY TO MEASURE WATER

Unique product

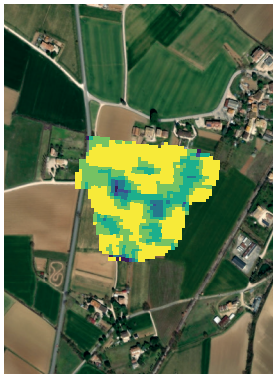
The Finapp solution is able to provide a measurement of **Soil Moisture** (SM) and **Snow Water Content** (SWE):

- **Contactless,**
- **On a large scale (1-20 hectares),**
- **In depth (50 cm in soil, meters in snow),**
- **With on-site validation,**
- **Continuous,**
- **In fully autonomous mode or operating as a sensor.**

All this is possible with a single probe installed above the ground or under the snow, which does not interfere with normal activities. When put into motion, the sensor can create maps of water content under roads or in the ground.

Furthermore, starting from data measured on the ground with great consistency, thanks to Finapp's CRNS technology, in combination with information on triggering events, such as meteorological ones, historical data and geological information, **monitoring information on risks is obtained**, allowing the distribution of right maintenance resources or in reducing climate change and its impact on safety.

ISO 9001:2015



Applications

Agricolture Soil Moisture

Finapp supports precision agriculture by providing unique knowledge of **soil moisture for better irrigation strategy** so as to achieve the Sustainable Development Goals (SDGs) on efficient water use and hunger eradication.
Doing the right thing at the right time. From this Soil Moisture unique knowledge comes better choices that enable optimized irrigation, higher quality crops, in greater quantity, without wasting a single drop of water.
When there is too little water in agricultural land, that is, when Soil Moisture drops below the wilting point, plants struggle to survive. Likewise, too much water can be equally fatal.
Environmental sustainability and farm profitability for the first time go hand in hand. Finapp provides specific services for precision agriculture:

- Water dynamic in the soil by measuring Soil Moisture,
- Detailed Soil Moisture Maps,
- Irrigation Decision Support Advice.

Data provided are always easy to interpret and retrieve, just any PC or smartphone connected to the internet is enough to see soil moisture data, maps and irrigation advice at the click of a button, without having to install any software.

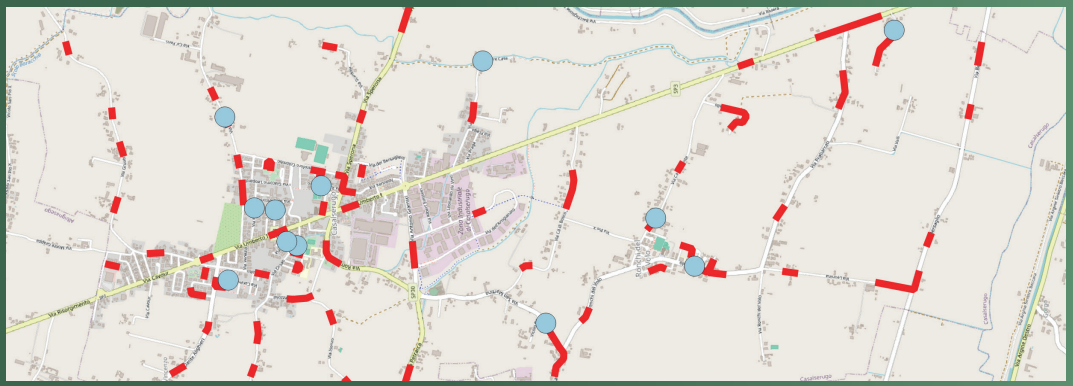
Food and Agriculture Organization of the United Nations

"FAO and IAEA scale up collaboration on peaceful nuclear technologies for agrifood systems".

Applications

Water Leaks pre-location

Thanks to CRNS technology and innovative Finapp probes, it is possible to **pre-locate leaks in the water network**, monitoring up to 150 km per day, quickly and easily. The non-contact, non-destructive and automatic measurement means that no intervention is required, no manholes need to be opened, no devices need to be installed, no maintenance is needed, it can be installed on technical or public vehicles and does not require a qualified operator.
Finapp probes, positioned on a dedicated vehicle, as they travel along the roads above the pipes, detect increased moisture in the soil, a sign of a potential leak. Finapp then provides the network operator with a **georeferenced pre-location map of water leaks** along the pipelines.



Applications

Environmental Monitoring

Landslides, Floods and **Wildfires** are a common serious risk to many parts of the World. Finapp probes help to mitigate the negative impact of these agents on people, natural habitats, transportation and the economy.
The knowledge of Soil Moisture provided by Finapp probes, allows a different approach to the pre-warning. Surface landslides and flooding are closely linked to a high level of soil saturation, at the opposite very dry soils are a prerequisite for Wildfire development.
The ability to have representative large-scale, deep, real-time data significantly improves knowledge of the state of the land and thus risk assessment.
By integrating forecasted weather data and an artificial intelligence approach reconstructing past catastrophic events, with the measurement of water saturation in the soil, the national relevant bodies and Finapp are able to project the level of risk into the future.
Pre-warning provided by Finapp is an evolution from current bulletins, bringing numerous advantages:
- **Multihazard:** pre-warning available for surface landslides, floods, fires.
- **Site Specific:** based on data measured by the probe and the history of that location, for an entire area or region.

Applications

Water Resource

Rising temperatures due to climate change will likely reduce snow cover, which will have a large impact on water resources.
The importance of quantifying the **water resource stored in the snow cover** is strategic for its management for agricultural, industrial, domestic purposes and for the production of hydroelectric energy.
The Finapp probe evaluates the available water resource by determining the **Snow Water Equivalent**, i.e. the volume of water contained in the snow.
By also measuring **Muons**, the probe is able to provide a reference measurement of the SWE, reaching a **saturation limit greater than 10,000 mm**, a unique feature, thanks to a patented innovation.
Make the **automatic collection of SWE measurement** data easier and more efficient than before, with widespread monitoring sensors in mountain areas, it will be possible to monitor daily snow values to see in detail how snowfall is changing.
Furthermore, when the snow has completely melted in summer, the probe will detect the soil humidity in the area, thus becoming a multifunctional tool.


“ **Finapp creates solutions that have an impact where it really matters,**
helping to address the challenges of our time such as climate change, hydrogeological risk,
making the water cycle more efficient, and hydroelectric production.
We are global leaders in environmental and meteorological measurements,
working together with customers and partners to rapidly digitize innovative technologies that
keep our land, water and environment safe. ”

Life from cosmos

Contact us for more information on how our innovative water monitoring solutions can be useful for your monitoring and environmental sustainability needs.

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Finapp s.r.l.
Via del Commercio, 27
35036, Montegrotto Terme (PD), Italy
P: +39 0490991301
info@finapptech.com

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