

A lighter footprint in flight How BioTwine™ supports sustainability in upper-air soundings

Upper-air soundings provide crucial atmospheric data for weather forecasting. Meteorologists and research institutions launch radiosondes every day from land and sea, and some cannot be recovered.

From radiosonde manufacturing through end of life, Vaisala takes a holistic approach to reducing the device's environmental impact and takes into account both the materials and the energy used through all phases.

Vaisala BioTwine is the latest innovation to support end-to-end sustainability. Designed specifically for the Vaisala RS41 Radiosonde, BioTwine is a remarkable cellulose-based string that is biodegradable, with no microplastics and uncompromising quality.

Here is a quick guide to key considerations for sustainability throughout the radiosonde's life cycle and how BioTwine supports them.

1 Design and manufacturing



The life cycle of a radiosonde starts from its design and manufacturing. BioTwine is produced in a closed manufacturing process where 99% of organic solvents are recovered and reused.

Designed specifically for the RS41 Radiosonde, BioTwine contributes to environmental friendliness through all phases of the radiosonde life cycle.

Keys to sustainability

- Materials: Types, how efficiently they are used, energy used in sourcing
- Manufacturing: Energy consumed in assembly and production
- Logistics and packaging: Weight and size of equipment used, amount of carbon dioxide emissions during shipment

2 Use

BioTwine is made from biodegradable and bio-based materials. The bio-based material is created from cellulose — a natural source — but not all bio-based products are also fully biodegradable. This is a distinct advantage for using BioTwine instead of polypropylene string.

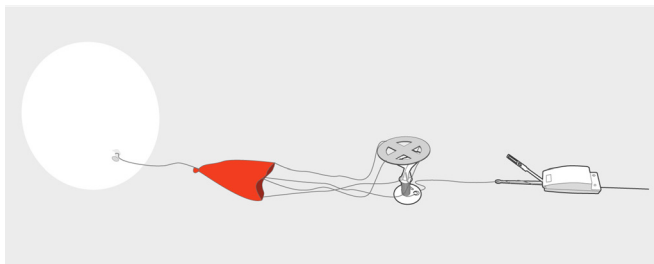
It is important to use high-quality radiosondes to avoid wasting material. Even using smaller balloons for lower altitude flights makes a difference.

Keys to sustainability

- Radiosonde reliability and data quality are key to avoiding unnecessary launches
- Choosing the right balloon size and type according to measuring altitude is important
- The amount of all materials affects environmental impact: Gas used, balloon size, and even how much you need to travel to launch the radiosonde all count



3 Disposal



Microplastics, plastic particles under 5 mm long, are a major problem for sustainability. Rather than biodegrading in the environment, microplastics continue to break down into smaller pieces. BioTwine is fully biodegradable and does not leave behind any post-degradation microplastics.

In addition to avoiding microplastics, material disposal processes can help even more.

Keys to sustainability

- Selecting the best available materials for the whole flight train is key
- Includes how packaging waste is treated and how many radiosondes are recovered

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