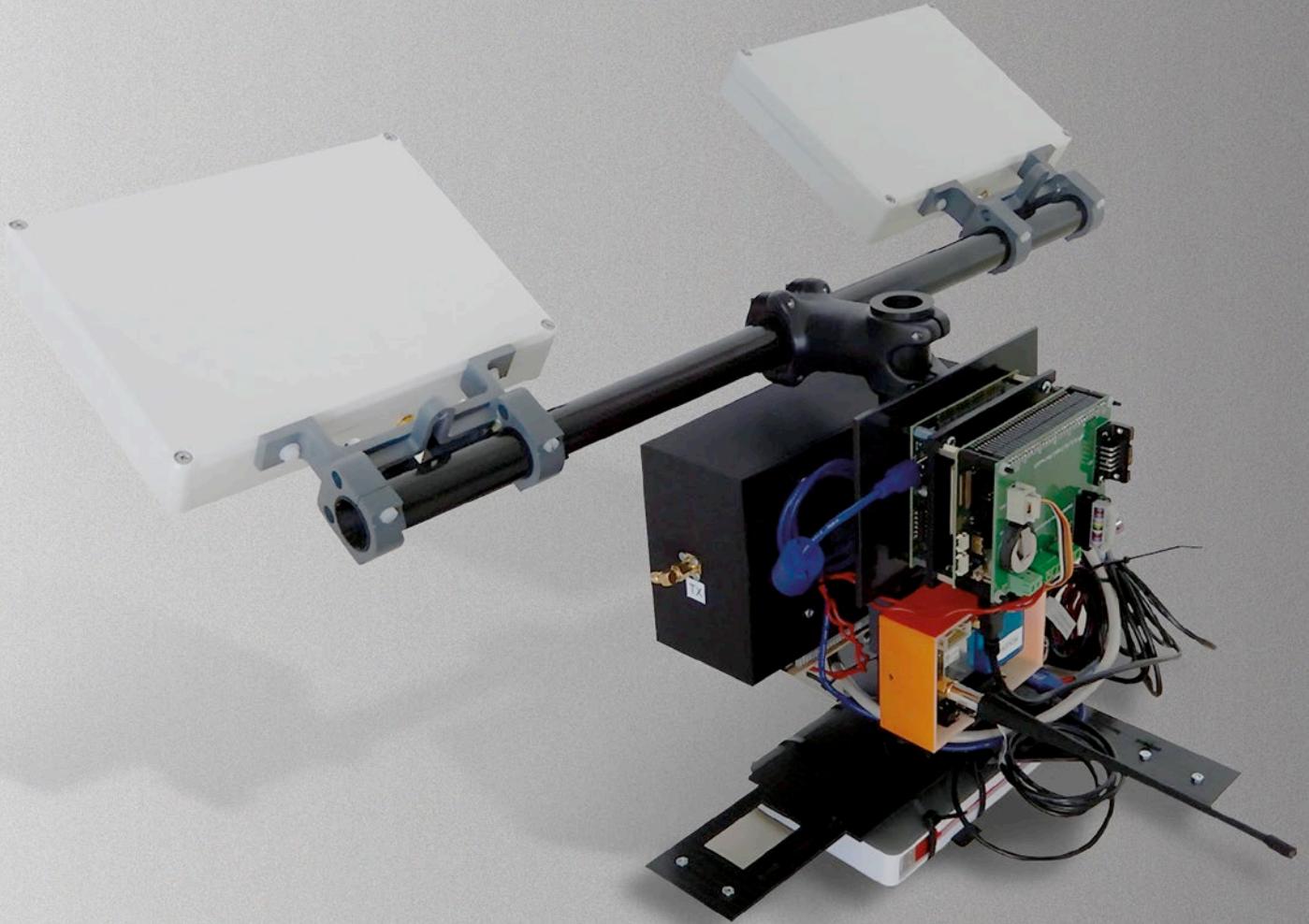


# MikroSil

Microwave-based silage monitoring system



### Brief description

The German agricultural sector contributes significantly to national and international **food security** as well as **supply of energy raw materials**. As the third-largest agricultural exporter in the world, the German farming industry has a keen interest in **quality assurance of its primary (animal feed) and processed products**.

The **MikroSil** system is designed for wide-area monitoring of storage processes in silos via a **contactless, microwave-based, short-range sensing method**. This allows assessing the level of compaction and the moisture content of the silage by interaction of microwaves with organic material and residual water in the silage. The **optimal density for storage and fermentation** can be determined as a result. If silage is not stored at the right density, the quality of the feed is degraded (lower nutrient content, poor taste). This reduces the food intake of the animals, resulting in less meat and lower milk production. Similarly, incorrectly ensilaged substrates in biogas plants lead to reduced energy production.

MikroSil is designed to establish the **optimum density and moisture content for silage**, ensuring **high-quality animal feed** or ensilaged **substrates for biogas plants**. MikroSil is an ongoing innovation project at DLR.

### Facts and figures

- Smart Farming
- Annual value of goods produced by German farmers: 50 billion €
- **Steady increase** in silage production
- Estimated sales volume:  
**~130,000 MikroSil devices**
- **Microwave-based technique** allows contactless, wide area and rapidly reproducible measurements of silage to **determine optimum density and moisture content of substrate**
- MikroSil can be utilised **on the silo or a separate platform**

### Uses and prospects

- Microwave-based technology for silage monitoring to increase quality of animal feed and energy substrates
- Advantage – contactless, wide-area, reproducible, rapid measurements that can be conducted across the entire body of the silage; cost savings and reduced losses thanks to optimised ensilage
- Target groups – customers in the agricultural sector and in the renewable energy industry

### Parties involved

DLR Microwaves and Radar Institute, Reconnaissance and Security Department, Oberpfaffenhofen; DLR Technology Marketing

2 ZERO HUNGER



7 AFFORDABLE AND CLEAN ENERGY



12 RESPONSIBLE CONSUMPTION AND PRODUCTION

