

# Radicos' TWIN Greenhouse & Livestock Housing Monitoring System



# Name of the Organisations Involved

RADICOS TECHNOLOGIES GmbH, Austria

### **Challenges Identified**

Monitoring greenhouses and livestock housing involves tackling a multitude of challenges given the intricate nature of these agricultural environments. The dynamics of both greenhouses and livestock housing demand a comprehensive approach to ensure the optimal conditions necessary for plant growth and animal well-being. In navigating these complexities, several interconnected challenges emerge.

One primary challenge lies in the variability of environmental conditions. Greenhouses and livestock housing are subject to constant fluctuations in temperature, humidity, and air quality. The effectiveness of monitoring systems relies on the deployment of adaptable sensor technologies capable of withstanding diverse and often harsh conditions.

Precision agriculture practices, prevalent in greenhouse settings, require accurate and real-time monitoring. Achieving precision involves deploying sophisticated sensors that capture nuanced data on soil moisture, nutrient levels, and crop health. Similarly, precision monitoring in livestock housing is essential for understanding animal behaviour, health, and feeding patterns.

Energy efficiency is another concern, especially in greenhouses with energy-intensive operations for heating, cooling, and lighting. Balancing the need for an optimal environment with energy efficiency is challenging, and monitoring must include tracking energy consumption patterns to identify opportunities for sustainable practices and cost savings.

Addressing these challenges requires a holistic approach that combines technological innovation, data science, and sustainable practices. Continuous advancements in sensor technologies, connectivity solutions, and analytics tools are essential for overcoming these challenges and optimizing the productivity of greenhouse and livestock operations.

### **Goals and Solution**

Radicos aims to tackle these challenges and revolutionize greenhouse and livestock housing monitoring through its TWIN Greenhouse & Livestock Housing Monitoring System. This tailored climate monitoring solution elevates smart farming by deploying an extensive network of hundreds of sensors at an affordable price. The high-level goal of Radicos is to provide a comprehensive and informative system that masters the complex task of establishing and maintaining the perfect climate for plants and livestock.

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# Short description of the technology and the beneficiaries

Radicos' *TWIN Greenhouse & Livestock Housing Monitoring System* represents an advanced climate monitoring solution tailored for smart farming. Unlike traditional systems with limited sensors, TWIN offers an extensive network of hundreds of sensors at an affordable price, ensuring complete and accurate information crucial for the well-being, health, and quality of plants and livestock. The TWIN system offers complete information on temperature, humidity, CO2, NH3, and H2S, with plans for integrating additional sensors. Not only does TWIN contribute to the welfare and health of plants and livestock, but it also focuses on cost efficiency, enabling significant savings in energy through informed control measures. The system is designed for easy installation in diverse environments, including dusty atmospheres and high humidity levels, ensuring reliability. The TWIN Dashboard provides visualization with high-resolution heat and humidity maps, configurable graphs, and alarms, empowering users with real-time insights for proactive decision-making. Radicos' overarching mission is to enhance efficiency, sustainability, and the overall well-being of agricultural operations.



#### Actions Taken

The *TWIN Greenhouse & Livestock Housing Monitoring System* creates significant value by revolutionizing climate monitoring in agriculture. Its extensive network of sensors delivers complete and accurate information, empowering farmers, livestock owners, and greenhouse operators to optimize conditions for plant growth and animal health. The system's affordability, energy efficiency, and compatibility with existing technologies result in cost savings, making sustainable farming practices more accessible. TWIN's impact extends to consumers, ensuring the production of safer and higher-quality food products. Overall, the technology enhances efficiency, sustainability, and productivity across the agricultural sector.

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#### **Benefits and Impact**

- Farmers benefit from the TWIN system by gaining access to comprehensive climate data, allowing for informed decision-making to optimize conditions for plant growth and livestock health.
- Owners and managers of livestock operations benefit from TWIN's ability to monitor parameters like temperature, humidity, and gas levels, ensuring a healthier and more comfortable environment for animals.
- Greenhouse operators benefit from the TWIN system's precise monitoring capabilities, helping create and maintain an ideal climate for crop cultivation, resulting in higher yields and improved crop quality.
- The TWIN system promotes sustainable and environmentally friendly practices by facilitating more efficient resource usage through targeted monitoring, aligning with the goals of environmental conservation.

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Application Area   Image: Second Seco
Digital Technology in the Value Chain Agromonic Services
Digital Technologies   ⊠ Sensors ⊠ Artificial Intelligence

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