

Installation Practices for Indoor/ Outdoor Smart Control Systems in Livestock Buildings

Smart control systems for livestock buildings offer a transformative solution for farmers seeking to improve the efficiency, welfare, and sustainability of their operations. Our work focuses on best practices for the installation of both indoor and outdoor systems that monitor and control vital elements such as temperature, humidity, lighting, and air quality in livestock environments.

By implementing these systems, farmers can reduce energy costs, enhance livestock welfare, and increase overall productivity. Automated controls allow for precise adjustments in real-time, ensuring optimal living conditions for livestock without requiring constant manual oversight. For example, the smart control system can automatically adjust ventilation based on humidity levels, reducing the risk of disease.

From a cost-benefit perspective, the initial investment in smart control systems is offset by long-term savings in energy consumption, reduced labor, and fewer losses due to health-related issues. Additionally, data generated from these systems helps farmers make informed decisions about resource allocation, animal health, and operational efficiency.

Farmers adopting these smart technologies are better equipped to meet industry demands, reduce costs, and improve the welfare of their livestock, leading to a more sustainable and profitable future.



Figure 1: Chart with environmental data

Smart control installation highlights in RES4LIVE

- 4 pilot farms (Belgium, Germany, Greece, Italy)
- 2 Swine farms, 1 Poultry farm, 1 Dairy farm
- Environmental sensors (Weather stations, Temperature, Humidity, CO₂, NH₃, H₂S, O₂, VOC)
- Energy consumption sensors
- Integration with various systems (Heat Pump, PVT, Ventilation, Anemometers, Biogas)
- Automation (Heat Pumps, Ventilation)
- Alerts through a notification system

