

Special Issue

The Role of Analog Electronics: From Energy Systems to Food Production

Message from the Guest Editor

Analog electronics have historically been at the foundation of agricultural mechanization and continue to play a transformative role in modern agri-food systems. From fundamental sensing devices that measure soil moisture, nutrient content, and pH levels to precision analog signal conditioning circuits enabling accurate monitoring of crop growth parameters, the applications of analog technologies are both extensive and indispensable. The Special Issue will explore how innovations in analog design contribute to enhancing agricultural productivity, resource efficiency, and sustainability. Topics of particular interest include, but are not limited to, the following:

- Analog front-end circuits for agricultural and food-related sensors;
- Low-power analog designs for remote and field-deployed monitoring systems;
- Mixed-signal approaches in precision agriculture instrumentation;
- Analog interfaces for biosensors detecting plant health, soil nutrients, and food quality;
- Power management circuits for energy harvesting in agricultural devices;
- Integration of renewable energy systems into the food production ecosystem;
- Case studies of analog-based systems in food production, processing, and storage.

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