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基于物联网的保育猪舍环境监控系统

Environmental control system based on IOT for nursery pig house

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中文摘要:

保育猪舍内部小气候环境对确保仔猪的正常生长关系重大,该文基于物联网技术开发了保育舍环境可视化调控系统。采用Zigbee无线技术将舍内各保育床及周围设备组成无线网络系统,以ARM-LINUX嵌入式服务器为现场控制中心。系统依据分布于各保育床内的传感器获得的环境参数,精确调节各保育床内的小气候环境。通过WIFI无线技术将服务器与INTERNET无缝连接,使用户端延伸并扩展到猪舍及室内设备,实现环境与设备之间,环境与人之间进行信息交换。采用B/S(浏览器/服务器)模式,实现通过浏览器远程实时监控猪舍。试验结果表明,该系统性能稳定,信息无线采集、环境自动调控及远程可视化调控均达到实际需求,适合保育猪舍环境智能化精准管理,可应用于自动化、智能化的牲畜养殖中。

英文摘要:

The microclimate environment in nursery pig house is important. In this thesis, an environmental control system based on internet of things (IOT) for nursery pig house was designed. In order to adjust the local microclimate environment in precise, wireless network of equipments like sensors and electronic hot plates were constructed. The network was based on ZigBee protocol. ARM embedded web server was used as control center. Management operation could extend from remote user into the nursery pig houses to realize the exchange of information between the environment and devices, as well as between the environment and remote user. B/S (Browser/Server) structure was used in the system, which could greatly simplify the client computer load and reduce system maintenance. The experimental results showed that the performance of the system was quite stable and the system satisfies the design requirements in real-time data acquisition wirelessly, environmental automatic control and environmental visualization control remotely. The monitoring system is suitable for precision environmental management for nursery pig house and has a good application prospect in automatic and intelligent livestock breeding industry.

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