RFID-Based Tracing for Wine Supply Chain

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ABSTRACT

Component tracing plays an important role in the wine industry in order to know the product quality during wine supply chain (i.e., from grape to glass). It is one of the main applications of radio frequency identification, which is a key technology due to its ever increasing demands. To adopt the feature of component traceability with the wine industry, it is necessary to design a wireless infrastructure along with this technology. In this paper, we design a wireless network infrastructure for such industry with the objective to trace the components (e.g., pallet, container and beverage bottle) during the wine supply chain process. Firstly, we design a wireless mesh network for both indoor and outdoor scenarios. Then, we incorporate the radio frequency identification technology with the network infrastructure for tracing the components. Finally, the performance of the network is analysed by means of numerical simulations. The simulation results reveal the effectiveness of the proposal.