

This study proposes an automatic apple sorting and quality inspection system, which is based on real-time processing. Golden and Starking Delicious, and Granny Smith apple cultivars are sorted into different classes by their colour, size and weight. It also detects apples affected by scab, stain and rot. The proposed system consists of a roller, transporter and class conveyors combined with an enclosed cabin with machine vision, load cell and control panel units. The roller and transporter conveyors have two channels. In order to analyze the visual properties of apples, two identical industrial colour cameras are set on the roller conveyor. Four images of any apple rolling on the conveyor can be captured and processed using image processing software in 0.52 s. As a result, the proposed machine can sorted averagely 15 apples in per second using two channels, in real time. In the experimental studies, the system design was tested using three different conveyor band velocities and three apple cultivars to sort and inspect 183 samples with an average sorting accuracy rate of 73–96%.