Abstract

Against the background of intelligent transformation and high-quality development of the building materials industry, traditional fiber cement board production is facing bottlenecks such as low automation level, unstable process control, strong dependence on manual experience, and difficulty in data traceability. Based on years of technological research and engineering applications, Wuhan Building Materials Industrial Design & Research Institute has built a full-process intelligent manufacturing system covering raw material preparation, forming, pressing, handling, palletizing, quality inspection and production management. This paper systematically introduces a series of core technologies including automatic pulp refining control system, board forming expert system, intelligent station machine, automatic board loosening and palletizing system, and MES intelligent operation and maintenance platform. The application results show that the digital and intelligent scheme can significantly improve production efficiency, reduce manual intervention, enhance product consistency, realize full-process data visualization and traceable management, and provide a solid technical path for the industry to upgrade to informationalized, intelligent and smart production.