

## **ADVANCED INSTRUMENTATION AND AUTOMATION FOR FILLING AND PACKAGING OF BEVERAGES**

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### **ABSTRACT**

Increasing competitive pressures, more stringent legal regulations, rising costs of commodities and energy and consumers with rapidly changing preferences force the beverage companies to increase their flexibility and operate with maximum efficiency at the same time. The safer and easier path to optimization leads through integrated automation. Addressing the filling and packaging line of beverages with the aim of optimization and cost effective automation undoubtedly requires keen attention for the advanced instrumentation. For the competitive solutions, various sensors and control systems must be carefully selected and efficiently implemented.

This paper presents the overview of the filling and packaging line of the beverage industry. Important issues related to the automation of such lines are overviewed and the real time example of one such successful implementation is discussed. The system components are clearly defined and important considerations are discussed with reference to actual implementation of the system. Qualitative comparison of controller is presented to facilitate the selection process for cost effective optimization. Control valve operating mechanism, electric drives and significance of PLCs are also discussed. An innovative HMI approach implemented in a specific industry is discussed as a real time example. This paper is aimed to provide firsthand quality information to the beginners with reference to filling and packaging line in the beverage industries.

**KEYWORDS:** Filling, Packaging, Proximity Sensors, Automation, SIMATIC Controller, Drives