

**Title** Grain drying in fixed bed with supervisory system of process aimed in energy save and quality of products

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### **Abstract**

Drying is an operation of great commercial importance in all industrial applications ranging through the food, agricultural, mining and manufacturing sectors. Modern society requires better product quality, improved safety practices and more environmentally benign operations, as well as higher productivity, better energy efficiency and reduced material wastage. As drying is certainly one of the most energy-intensive operations in industry, and as most dryers operate at low thermal efficiency, the development of supervisory control systems offers an opportunity to improve dryer operation and efficiency. This study focuses on the development of software SEC-I for monitoring of drying process, to control and supervise fixed bed drying of agricultural products, aimed at product quality and saving energy. The software SEC-I with Man-Machine Interface Graphic for supervision and control the processes, with Proportional, Integral and Derivative (PID) control, and setting automatically for better performance of the process, changing the temperature and flow of air. The data acquired are displayed in graphs on screen, which allows monitor, analyze and make decisions, and it is possible to configure the PI and Pill controls by users. Preliminary results show the effectiveness of this proposed monitoring to control the drying process in fixed bed on line.