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# An E-Learning System for Education Industrial Technological Processes Managing Operators

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## Abstract

Our paper focuses on one of the non-classroom areas of education, which is very important in practice. This is the training of operators managing industrial technological processes. Its importance is obvious since insufficient training of these people can cause great financial losses to an enterprise due to their suboptimal decisions on process management. Since there are so many technological processes, the demand for managing operators is not large, and training these operators in universities is economically unprofitable. Enterprises must train them in-house, which requires a lot of time and expenses, and this must be done under conditions of an uncertain level of pedagogical data of the teacher operator. Therefore, our task was to create an e-Learning system for training and testing operators managing technological processes, which eliminates the listed difficulties, improves operational management, and reduces costs. The management learning system was designed based on fuzzy logic, also based on creating a relevant expert-targeted knowledge base. The e-Learning system has been implemented in a real plant with a lime burn kiln. The system was tested in plant with historical data, which showed its high level of reliability and management efficiency. Our approach can be used for the training of new operators due to the lack of appropriate training institutions, and also to train existing operators to improve their skills.

**Keywords**: Non-classroom training, enterprise, costs, economically unprofitable, fuzzy logic