

***Abstract: A Study on Analysis Method for Finding Gas Leak Location using a Neural Network Model and Fuzzy Logic***

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**Abstract**

Industry complex include various facilities. Pipelines out of facilities are very important because they carry out source materials. Especially, a gas leak of pipeline manages carefully owing to spread other situation such as fire and explosion. Although various researches have been studied in the convergence between computer science and chemical engineering, they need a number of input variables and professional knowledge. These kinds of method are insufficient for progressing quickly to reliable situation.

This paper aims to propose method for finding a gas leak location with intelligence theory. Firstly we describe the proposed method by deciding a zone, four sectors, thirteen points to target pipeline, generating  $6 \times 10 \times 7$  multi-layer perceptron model, calculating residuals between actual data and the estimated data of model and analyzing a gas leak location with fuzzy logic. Furthermore, we validate the accuracy of proposed model. The accuracy of the model is under 0.2% error rate by evaluating maximum and average error using 1575 training data sets. The accuracy of the proposed method is over 88% similarity as compared with results of experts. As a result, the proposed method is able to use for finding a gas leak location of pipeline. This object of this paper will support the framework of smart service infrastructure for autonomic safe management on. Energy plants

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