

# FAULT DETECTION IN A MULTIVARIATE PROCESS WITH A BAYESIAN NETWORK

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**Abstract:** *The purpose of this article is to present a new method for the fault detection of a multivariate process. This method is based on the utilization of a bayesian network in order to monitor the process evolution. The class node of the network corresponds to the state of the process (in control or out of control) in probability term. The other nodes correspond to the process values for different instants. A threshold is fixed with simulation so as to respect a given average run length. This threshold permits to conclude of the process state. The method is evaluated with simulations in order to analyze and compare his performances to other multivariate chart  $T^2$  of Hotelling and MEWMA.*

**Keywords:** *SPC, multivariate, detection, bayesian network,  $T^2$ , MEWMA.*