

Analysis of Production Process Quality Improvement at PT. XYZ Using the Fuzzy FMEA Method

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Abstract

Quality control is a corrective and evaluation action to prevent and minimize defective products from production. PT. XYZ is a company engaged in the bakery food industry whose manufacturing process uses human and machine power. PT. XYZ produces several breads, namely COK2, CKPJ, KW, and SMSJ. During the production process at PT. XYZ found a rejected product that needs to be repaired. The analytical method used is FMEA with a fuzzy approach. The FMEA method can identify potential failures, but has a weakness, namely the RPN value can produce identical values. These weaknesses can be proposed with a fuzzy approach. The fuzzy approach used is the fuzzy inference system (FIS) which uses the Mamdani concept based on linguistic rules through the stages of fuzzification, if-then rules, and defuzzification which produces fuzzy RPN (FRPN) values. FRPN calculation with the help of MATLAB software can determine the priority of improvement in bakery products. The priority for repairs to be carried out is ranked 1-5. The implementation of the improvements carried out was training for mixing and oven operators, maintenance of forming machines and ovens, repairing uneven roads leading to the oven machines, and resting the forming machines for 1 hour every production change. In addition, other proposed improvements include checking forming machines and ovens once a week and using a checklist form to make it easier for maintenance employees to check and repair if problems are found on the machines at PT. XYZ. The results of the implementation can reduce product defects by up to 1%.

Keywords: FMEA, Fuzzy, FRPN, Fuzzy Inference System, Defect