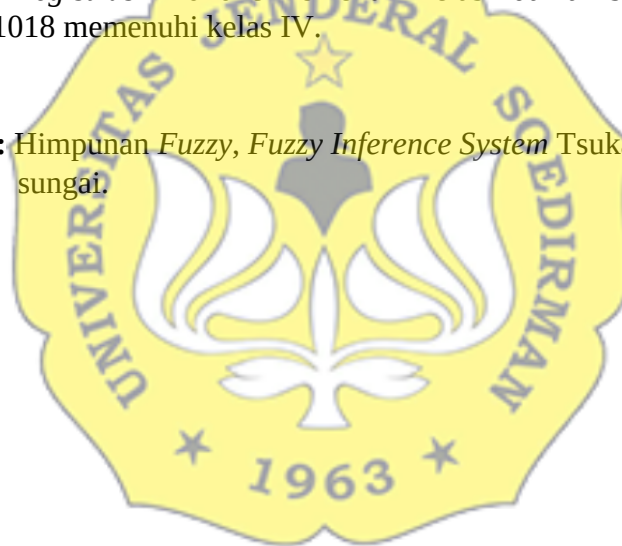


ABSTRAK

Fuzzy Inference System (FIS) Tsukamoto merupakan sistem penalaran yang didasarkan pada teknik implikasi *fuzzy*. FIS Tsukamoto diaplikasikan untuk menilai kualitas air sungai di Kabupaten Banjarnegara pada bulan Januari 2018 berdasarkan enam variabel *input* yaitu kadar DO, COD, BOD, pH, TSS, dan TDS. Tahapan FIS Tsukamoto meliputi fuzzifikasi, pemberian aturan dasar *fuzzy*, dan proses defuzzifikasi. Fuzzifikasi dilakukan dengan mengubah variabel *input* yang bernilai tegas ke dalam himpunan *fuzzy*. Pada variabel *input* yang telah bernilai *fuzzy* diberikan aturan dasar *fuzzy* yang berbentuk implikasi *fuzzy*. *Output* yang bernilai *fuzzy* lalu didefuzzifikasi dengan menggunakan rumus rata-rata terbobot agar diperoleh *output* yang bernilai tegas. Proses perhitungan FIS Tsukamoto dibuat program menggunakan *software* Matlab R2015a. Hasil pengujian kualitas air sungai di Kabupaten Banjarnegara pada bulan Januari 2018 diperoleh air sungai dengan nomor registrasi 1202018 memenuhi kelas I dan air sungai dengan nomor registrasi 201018 memenuhi kelas IV.

Kata Kunci : Himpunan *Fuzzy*, *Fuzzy Inference System* Tsukamoto, kualitas air sungai.



ABSTRACT

Fuzzy Inference System (FIS) Tsukamoto is the reasoning system based on fuzzy implications technique. FIS Tsukamoto can be applied to value the quality of river water in Kabupaten Banjarnegara on January 2018 based on six input variable are DO, COD, BOD, pH, TSS, and TDS. The phase of FIS Tsukamoto include fuzzification, basic rules of fuzzy, and defuzzification process. Fuzzification can be done by change the input variable which is has crisp to the fuzzy sets. On the input variable has a fuzzy value, given basic rules of fuzzy applied with fuzzy implications. The output has a fuzzy value then defuzzification with using weighted averaged formula to get output which is has crisp. Calculation process of FIS Tsukamoto made by program using Matlab R2015a software. The results testing the quality of river water in Kabupaten Banjarnegara on January 2018 is the river water with the registration number of 1202018 qualified the I class and the river water with the registration number of 201018 qualified the IV class.

Keyword : Fuzzy set, Fuzzy Inference System, river water quality

