

# **Perancangan Dan Uji Kompatibilitas Alat *Monitoring* Sensor TDS (*Total Dissolved Solid*) Pada Limbah Industri Tahu Berbasis IoT (*Internet of Things*)**

## **ABSTRAK**

Limbah cair Tahu yang langsung dibuang ke sungai menimbulkan polusi lingkungan, sehingga perlu dibuatkannya Instalasi Pengolahan Air Limbah (IPAL) yang terintegrasi dengan pemantauan TDS (*Total Dissolved Solid*), EC (*Electrical Conductivity*), serta suhu yang berbasis *Internet of Thing* (IoT). Sistem IPAL limbah tahu terdiri dari beberapa tahap : *Pre-treatment*, sedimentasi, koagulasi, sedimentasi, filtrasi. Sensor yang digunakan yaitu sensor TDS/EC DFRobot SEN0244, sensor suhu DS18B20 dengan *microcontroller* NodeMCU ESP8266. Hasil penelitian menunjukkan pengujian persentase *error* TDS dan EC  $\leq 5\%$  di semua tahap, namun di tahap sedimentasi 8%, sedangkan suhu  $\leq 2\%$ . Pada pengujian kompatibilitas dari data sensor TDS, EC, dan Suhu dengan perhitungan validitas dan reliabilitas terdapat hasil yang valid serta reliabel diseluruh tahapan sistem IPAL. Pada pengujian ANOVA dan BNT TDS serta EC terdapat hasil *non-signifikan* dan tidak berbeda nyata, namun pada sensor TDS dan EC ditahap sedimentasi serta sensor suhu di keseluruhan tahap terdapat hasil yang signifikan dengan taraf kesalahan 5%. Hasil tersebut memperlihatkan bahwa rancangan peneliti dinyatakan layak, namun pada tahap sedimentasi perlu dipertimbangkan untuk digunakan pada sistem IPAL limbah tahu.

Kata kunci : Limbah Cair Tahu, IPAL, IoT, Sensor TDS, Uji Kompatibilitas

***Design and Compatibility Test of TDS (Total Dissolved Solid)  
Sensor Monitoring Tools on IoT-Based Tofu Industrial Waste  
(Internet of Things)***

**ABSTRACT**

*Tofu liquid waste that is directly discharged into the river causes environmental pollution, so it is necessary to create a Wastewater Treatment Plant (WWTP) which is integrated with TDS (Total Dissolved Solid), EC (Electrical Conductivity), and temperature monitoring based on the Internet of Thing (IoT). Tofu waste WWTP system consists of several stages: Pre-treatment, jointation, coagulation, jointmentation, filtration. The sensors used are TDS / EC DFRobot SEN0244 sensors, DS18B20 temperature sensors with NodeMCU microcontrollers ESP8266. The results showed testing the percentage of TDS and EC errors (5% at all stages, but at the sedimentation stage 8%, while temperature (2%). In testing the compatibility of TDS, EC, and Temperature sensor data with validity and reliability calculations, there are valid and reliable results at all stages of the WWTP system. In ANOVA and BNT TDS and EC tests there were non-significant results and no real difference, but in TDS and EC sensors in the sedimentation stage and temperature sensors at all stages there were significant results with an error rate of 5%. These results show that the researchers' design is declared feasible, but at the sedimentation stage it needs to be considered for use in the tofu waste WWTP system.*

*Keywords : Tofu Liquid Waste, WWTP, IoT, TDS Sensor, Compatibility Test*