Construction of Water Treatment Plant (IPA) with a Capacity of 50 liters / hour

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ABSTRACT

The study was conducted in the field to carry out the retrieval source of raw water to be tested against the tools that have been made to get the water and then tested in laboratory. After calculation, the water treatment plant with a capacity of 50 l / h obtained the following results Unit coagulation with contact time of 40 seconds, the volume of 0.00056 m3 tub, and the water level above the threshold v notch 0.096 cm. Flocculation unit system Buffel vertical channels with 6 stage flocculation, damp maximum height 0.437 m, the total contact time of 45 minutes, a maximum flow rate 0.1357 m/s. Sedimentation unit with a contact time of 0.88 hours, bebab external surface (so) 0.45 m3 / m2 / h, the Tilt Plate Settler (θ) 60o, number plate settler 51 pieces, Having conducted experiments on the tool by taking raw water is water river turbidity values obtained an average decline reached 96.26%. And reached 94.69% decrease in color.

KEY WORDS: *Water, Installation, Flocculation, Coagulation, Sedimentation.*

1.0 INTRODUCTION

Water is a vital necessity in human life. The higher level of a person's life affects the higher level of demand for water. On the other hand, the availability of sufficient clean water for the community is needed to create a society that is healthy, intelligent and productive. At this time, the community needs for clean water is increasing, this is not just due as a result of population growth with all its activities, but also with the increasing advancement of science and technology, also the increasing level of social and economic. Unfortunately, the condition of the water is unfit for use in day- to-day. To overcome this, there is a needed for a water supply system. Through the provision of clean water in some areas, is expected to minimize the spread of infectious disease through the air. Air is one of the media among the diseases that come from feces for up to humans. So that the water that goes into someone's body does not carry germs. One way to reduce the incidence of the disease is to improve the management of drinking water quality. Drinking water quality monitoring includes observation for every parameter - parameter must meet the quality requirements that have been established good physical quality, bacteriological, chemical, or radioactive

2.0 RESEARCH METHOD

Research under the title "Construction of Water Treatment Plant (IPA) with a capacity of 50 Liter / Hour" is done in Unisia Banjarmasin South Kalimantan with the sample that has been taken from some rivers that the water is used in the production process as well as laboratory taps for testing water samples before and after process. The study was done by several methods: Field Study: This study was conducted in the field to carry out the retrieval source of raw water to be tested against the tools that have been made to get the water and then tested in lab. Methods FAQ This method is done by doing a question and answer field with someone or those who have known the data needed for the study.
Research methods
Methods the study was done by several methods:
 Field Study
This study was conducted in the field to carry out the retrieval source of raw water to be tested against the tools that have been made to get the water and then tested in laboratory.

Study of literature
Literature studies, studies of the books and written related.
Methods FAQ
This method is done by doing a question and answer field with someone or those who have known the data needed for the study.
Tool
Equipment used in making the Water Treatment Plant are as follows:
1.Meter
2.Ruler
3.protractor
4.hand grinding machine
5.The hand drill machine
6.The knife cut
7.Markers
8.Scissors
9.Saws
10.Welding Power

Material
The materials used are as:
1.mica plate with a thickness of 3mm
2.Pipe
3.Ball
4.Valve
5.Knife
6.Tee
7. Rubber packing
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3. 0 RESULT ANALYSIS

When performing Testing, several steps are used, Take the example of raw water, test jar to determine the optimum dosage, dissolve the PAC with water with a concentration in accordance with the optimum dose, processing the raw water flowing into the coagulation bath with a discharge capacity and affix the PAC solution and Observe the process of formation of flock whether already established or not, Data Analysis Experiment Results On the test results the pureness of high value affixing the optimum dose of coagulant is also high.
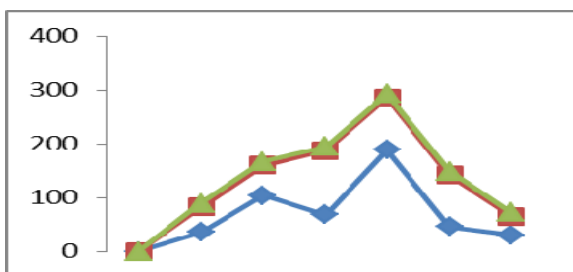

Figure 1. Relation between Turbidity with Optimum Dose

From figure 1 can be seen in the test No. 6 with 30 NTU turbidity in getting the optimum dose of 60 ppm, while in the test No. 4

with 188 NTU turbidity optimum dose hanya50 ppm. And to decrease the turbidity reached an average of 96.26%.
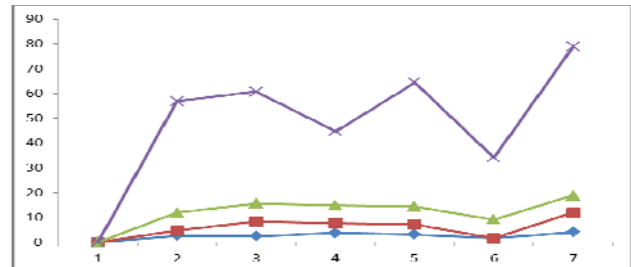

Figure 2. Changes in Value between Raw Water Color and Water

In the graph above can be found in each test is always impaired color. Even at No. 5 test value can be 0 and the average decline reached94.69%. As for the pH decrease and increase in levels, but still at the threshold in the set opal government.
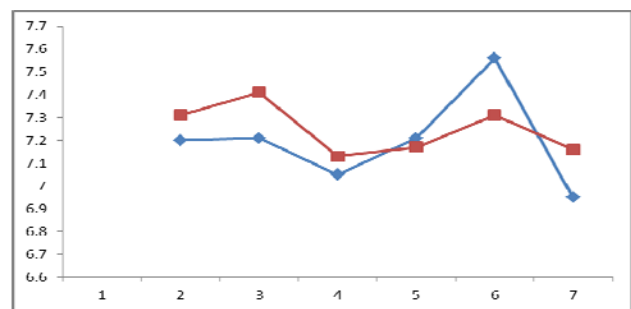

Figure 3. Changes Between pH Value of Raw Water and Clean Water

In the graph 3 in test No. 4 and No. 5 shows the increase in pH levels, while others decreased.

Results Analysis of Experiments

In the experiment water treatment plant unit, the author took some point in the river from Banjar district and Banjarmasin.
A. Steps When performing Testing
1. Take the example of raw water
2. Test jar to determine the optimum dosage
3. Dissolve the PAC with water with a concentration in accordance with the optimum dose
4. Processing the raw water flowing into the coagulation bath with a discharge capacity and affix the PAC solution
5. Observe the process of formation of flock whether already established or not,

4.0 CONCLUSION
The conclusions that can be drawn from this study are as follows:
1) Coagulation unit with a contact time of 40 seconds, the volume of 0.00056 m3 tub, and the water level above the threshold v notch 0.096cm.

2) Flocculation unit system Buffel vertical channels with 6 stage flocculation, damp maximum height 0.437 m, the total contact time of 45 minutes, a maximum flow rate 0.1357m/s.

3) Sedimentation unit with a contact time of 0.88 hours, external surface (so) 0.45 m3 / m2 / h, the Tilt Plate Settler (θ) 60o, number plate settler 51 pieces, Reynold number is 0.670..

4) Unit rapid sand filter filtration system 1 bath with filtering speed of 1.5 m / hour, a total of 250 mm thick sand media, Lama Back Wash 10.89 minutes, period between two washes 24 hours.

5) After a trial of the tool by taking raw water is river water turbidity values obtained decrease in average reached 96.26%. And reached 94.69% decrease in color

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