

## **ABSTRACT**

*Furfural is organic chemical material that most commonly consume as solvent in several industries. Furfural has chemical formula  $C_5H_4O_2$  dan more recognize as furfuraldehyd or furfural, sometimes it called with fural. Furfural is furan aldehid with CHO group in second position. Furfural is a liquid that has boiling point  $161,7^{\circ}C$  and molecular weight 96,08. Sulfuric acid ( $H_2SO_4$ ) is use to get furfural from corn cobs as catalystr. Corn cobs has a relatively high pentosan content are hydrolyzed to pentoses, which, in turn, split out water to form furfural. This reaction has operate in five batch revolving tanks with pressure 3,09 atm and temperature  $137^{\circ}C$ . Ratio of corn cobs and water is 3 : 1.*

*This plant is design with capacity 60.000 tons/year. The needed of raw material 52744,0084 kg/hour of corn cobs, 7753,3693 kg/hour of sulfuric acid, 13186,0021 kg/hour of water and 140650,1950 kg/hour of steam. This plant works 24 hours/day and operate for 330 days/year. This plant will be built in Gresik, East Java with labours many as 168 people.*

*Based on economic evaluation, Fixed Capital Investment is Rp 372.884.073.632, Capital Investment is Rp 661.579.902.479, profit before taxes is Rp 164.560.175.703, profit after taxes is Rp 82.280.087.851, ROI before taxes 44,13 %, ROI after taxes 22,07 %, POT before taxes 1,85 years, POT after taxes 3,12 years, Break Even Point (BEP) 40,09 %, dan Shut Down Point (SDP) 22,44 %. So this furfural plant interest for further study.*