VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELGAUM, KARNATAKA

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BASAVESHWAR ENGINEERING COLLEGE, BAGALKOT

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DEPARTMENT OF MECHANICAL ENGINEERING

A Project Report On

"ENERGY CONSERVATION IN WASTE WATER RECYCLING"

(KSCST Approved)

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ABSTRACT

The major part of energy is consumed in waste water treatment plant in the process of aeration. The energy consumption can be reduced by using DO based VFD control system. Due to fluctuating load i.e wastewater flow & inconsistent BOD / COD the requirement of oxygen in aeration is dynamic. But since the plant is designed based on the peak loads the power installed & consumed is very high. The minimum residual oxygen requirement by the CENTRAL POLLUTION CONTROLL BOARD is 1.5 – 2 ppm.

We have tried to design a control system which monitors the residual dissolved oxygen level in the aeration. If the waste water load is less, the residual dissolved oxygen (RDO) will go high; if the flow of air is controlled by controlling rpm of the motor a huge amount of power can be saved. The dissolved oxygen meter sends 4-20 mA signals to the variable frequency drive. The variable frequency drive (VFD) has the set points corresponding to the dissolved oxygen levels of 1.5 – 2 ppm. Any higher or lower values of RDO will corresponding signals to the VFD.VFD in turn will regulate the speed of the motor correspondingly to increase or decrease the speed, there by increasing the flow of air or decreasing the flow of the air into aeration. Due to this dynamic monitoring & controlling of the air flow electronically reduces the power as well as keeps system running without manual errors.