

DIRECT ACTIVATED SLUDGE CENTRIFUGE DEWATERING

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EXTENDED ABSTRACT

Due to the significant increase in wastewater treatment sludge production, as a result of extended sewerage, new work installations and upgrading of existing facilities, sludge management in an economically and environmentally acceptable manner has become one of the most critical issues facing modern society. Extensive research has been carried out on treatment and disposal of sludge for the past decades, and significant advances in technological and managerial aspects have been achieved. The selection of an appropriate technology for sludge management depends on the minimization of total capital and O&M cost but other important factors such as local geography, climate, land use, regulatory constraints as well as public acceptance of various practices, frequently play an equally significant role.

Sludge dewatering is a decisive step in the reduction of waste sludge volume, thus considerably affecting total sludge treatment and disposal costs. The construction of sludge dewatering facilities in small WwTPs though, is generally not cost effective. In this paper some experimental evidence is presented, that waste sludge dewatering in similar WwTPs of the activated sludge - extended aeration type, can be effectively achieved by a centrifuge type of equipment withdrawing sludge directly from the aeration tank; an economic evaluation of the possibility to employ a transportable type of similar equipment mounted on a truck, to serve a number of neighbouring WwTPs is also presented and discussed.

The conclusions reached were that **i)** direct dewatering of activated sludge mixed liquor by a decanter can be effectively performed to a solids content of over 25 %, provided that a suitable type of organic polyelectrolyte is selected and applied at the appropriate dose, **ii)** laboratory tests intended for selection of suitable polymers to be used in centrifuge dewatering, should be coupled with field trials in order to provide meaningful results and **iii)** the use of a transportable type of centrifuge dewatering equipment, may be an economically viable solution to small WwTPs waste sludge management problems, especially in the case of remote/isolated areas.

Key words: Activated sludge; centrifuge; dewatering; economic evaluation; extended aeration; mixed liquor; polymer