

COULD STBR BE APPLIED FOR BEACH WRACK?

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Abstract

The Baltic Sea is struggling with eutrophication problem. Beach wrack is one of factors deepens this process. It constitute high nutrient material, washed ashore, which decomposes and releasing nutrients back into water. Beach wrack is problematic due to irregular occurrence in various amounts as well as variable composition. CONTRA project- "Baltic beach wrack- Conversion of a nuisance to a resource and asset" is looking for ways of sustainable management of this material.

Beach wrack shows similar properties to sewage sludge, therefore it seems interesting to test sludge treatment reed bed system for processing marine organic waste. Dewatering and stabilization are processes used in STBR, which run similarly like in natural wetlands ecosystems. They allow for significant reduction in volume of delivered to deposit material, through draining and evapotranspiration and also decrease of organic matter which contributes to reduce rot and release of unpleasant odors. Moreover this solution is environmental friendly and do not required additional chemicals which improve efficiency of processes. It is also characterized by simple construction resulting in low construction and exploitation costs.

The reed bed system pilot facility for beach wrack processing was built in WWTP in Swarzewo (Poland). Material for testing is collected from coastal waters of Rzucewo's beach (Poland). RBS uses two cubes. Each is divided in four parts- quarters with filtration filling constitute by aggregate, gravel and sand. On the top layer (sand) was planted cuttings of *Phragmites australis*. From the bottom of each quarter is lead out drain pipe, responsible for outflow of reject water. Ventilation chimneys installed in each ¼ of deposit guaranteeing constant air supply. Fresh material - different form of algae or algae mixed with compost is delivered monthly to different quarters.

Beach wrack processing in RBS is an innovative method in test phase, however preliminary observations are promising.

Keywords: beach wrack, sewage sludge, reed bed system, dewatering, stabilization