Alternative Fuel Production from Sewage Sludge and Waste Material

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The processing of sludge, the solid component of wastewater treatment, in combination with other recoverable wastes, is one possible source of alternative fuels to replace fossil fuels.

The energy recovery of sewage sludge is a solution to the disposal of this type of waste, especially in terms of the content of a number of residual substances (e.g. from pharmaceuticals), which prevents further possibilities for the use of sludge as, for example, a component of substrates used in agriculture.

Sewage sludge can be used as a feedstock for pellet production after water separation (sludge dryers and various types of sludge dryers). Sewage sludge can be effectively combined with other types of waste biomass or suitable waste types.

The paper focuses on the assessment of the possibilities of production of combined fuels - pellets - from sewage sludge and other types of waste biomass. The mixed fuels produced in this way are a possible substitute for conventional fuels, especially coal, and can be burned in fluidised bed boilers.

The paper presents the results of research on the use of sewage sludge in combination with other wastes as a substitute for fossil fuels. The paper focuses on the energy and emission characteristics of the mixed fuels as well as on the economic efficiency (competitiveness) of the fuels produced in this way. For the economic evaluation, the opportunity cost methodology is used, where the economic efficiency of such produced fuels is assessed in relation to substituted fuels with respect to the development of energy markets.

The developed evaluation methodology is demonstrated on the conditions of the Czech Republic, which currently produces about 180 thousand tonnes of sewage sludge (in dry matter).