Energy recovery and treatment of wine lees using a compact-portable anaerobic digester

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Energy recovery from organic wastes consist an interesting option for the agro-industrial sector. During the project "*Energy production and winery organic byproduct treatment*" funded by the General Secretary for Research and Technology (3NEW_b_2012), a 2 m^3 anaerobic digester was constructed and operated in a small/ medium winery. The digester was fed with diluted wine lees having an influent COD concentration of 25-35 kg/m^3. The anaerobic effluent was characterized by a COD concentration lower than 1 g/L, especially when the organic loading rate was maintained around 5 kg/m^3 d. Biogas with 75% methane content was produced, while no chemicals were added for pH control for the treatment of this wastewater type. The soluble fraction of the wine lees was highly degradable (up to an organic loading rate of 11 kg/m^3 d), while the solid fraction (consisting about 20-30% of the total organic) displayed lower degradability. The digester was designed in such a way to entrap and digest small and settlable particles originating from the wine lees. This first prototype was promising and further developments are currently undertaken to scale-up the proposed digester, while introducing it to the small/medium enterprises of the Southern European wine-market.