High-Solids Centrifuge Is A Boon And A Curse For Managing Anaerobically Digested Biosolids


ABSTRACT
High-solids centrifugation can reduce the cost of managing or disposing anaerobically digested biosolids. High-solids centrifuges can increase relative cake solids by as much as 5% DS compared to other dewatering devices such as belt filter press, with a resulting 15-20% reduction in overall mass of hauled biosolids. Cost reductions can be similar (15-20%) or more, depending on the type of disposal or management involved. For example, the additional removal of water from the cake increases the energy content in the biosolids, thereby facilitating incineration or heat drying processes. For land application, the benefits are more mixed. As explained in this paper, increases in biosolids odours associated with high-solids centrifuges may increase digestion requirements and may compel producers to transport biosolids to more remote, distant sites, potentially increasing transportation costs. High-solids centrifuges shear anaerobically digested biosolids. The shear results in a net increase in labile protein, an odour precursor. Additionally, high-solids centrifugation also results in the inhibition of methanogenesis, a major mechanism for degradation of organosulfur odours. Therefore, the risks and benefits should both be weighed when considering high-solids centrifuges for land application of anaerobically digested biosolids.