Gradients of pressure in anaerobic digesters

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Gradients of pressure in anaerobic digesters

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Abstract:
Anaerobic digestion is a state-of-the-art technology for organic carbon removal from waste water. Among other advantages are the high loading capacity, low sludge production, and biogas generation. Compact bioreactor designs are used to reduce the needs of surface. The bioreactors are tall cylinders up to 30 meters high. The column of water produces differences in hydrostatic pressure along the height of the bioreactor. Here we model the effect of pressure on (i) gas solubility along the reactor, (ii) reaction thermodynamics, and (iii) gas-liquid mass transfer.