Digester Gas Boosting
Anaerobic Digestion

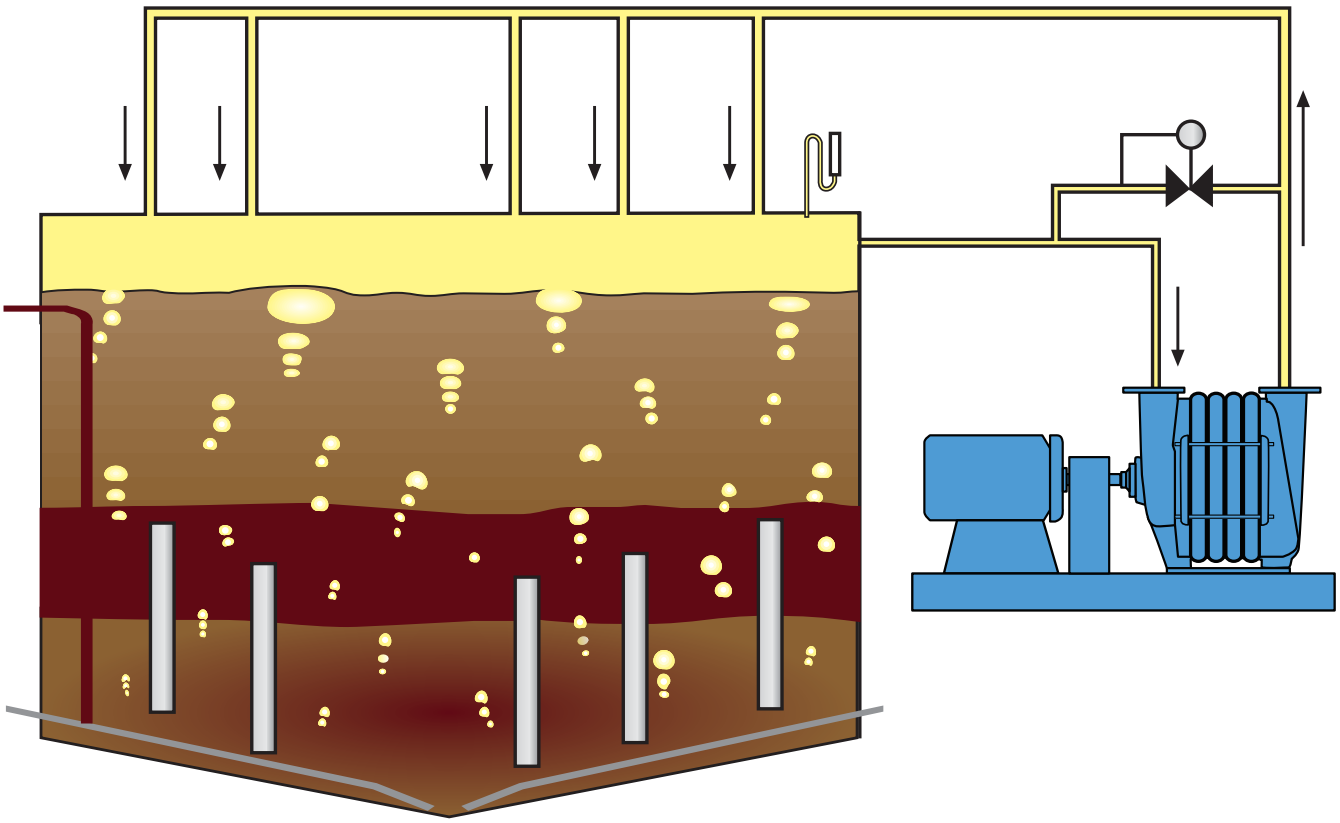
Anaerobic digestion further digests the concentrated sludge after the aerobic process. In this process, sludge is converted to methane and carbon dioxide. An airtight reactor is used and the process can take 30 to 60 days.

The key to the process is various groups of organisms that work together to break down the sludge. One group hydrolyzes organic polymers and lipids into monosaccharides and amino acids. A second group ferments the sludge to organic acids, mostly acetic acid. A third group breaks down the hydrogen and acetic acid that has formed into methane gas and carbon dioxide.

A typical anaerobic digestion tank is cylindrical concrete or steel with a diameter from 25 to 125 feet and height of 25 to 45 feet. Some newer designs from Europe are egg shaped, which prevents sludge from building up in the corners.

A typical wastewater treatment plant using the anaerobic process produces large quantities of methane gas which is useable to operate dual fuel engines to produce electricity and to heat buildings. Hot water from the engine jackets and heating boilers may be used for sludge heating. This gas is generally 65 to 70% methane and 25 to 30% carbon dioxide and it produces roughly 600 BTU/ft . This compares to natural gas with 1000 BTU/ft3. Analyzing the gas determines when the process is complete. The gas must be stored without contact with oxygen. It can be stored at low pressure or high pressure if a compressor is used. Unused gas is flared.

Multistage centrifugal blowers are frequently used to mix the contents of the digestor or to move the gas from one place to another. They can be used to boost the gas to a compressor for storage, directly to flare or to a boiler.



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