Term	Definition
Activated Carbon	Charcoal that has been heated or otherwise treated to increase its adsorptive power
Ambient	Outside air temperature.
Amine Scrubber	Amine gas treating, also known as gas sweetening and acid gas removal, refers to a group of processes that use aqueous solutions of various aklylamines to remove hydrogen sulfide and carbon dioxide from gases.
Ammoniacal Nitrogen (N-Nh4/N-Nh3)	A value expressing the concentration of a sample in ammoniacal nitrogen in its aqueous form (N-NH4) or its gaseous form (N-NH3). The analysis of ammoniacal nitrogen is essential in process monitoring and to know the value of the input. Ammonia being toxic exceeded a certain level in digesters, it is important to monitor it closely. Ammonia originates primarily from the digestion of proteins and its initial presence in the input. It is however essential to distinguish the toxicity rate applicable to free ammonia and not necessarily to ammoniacal nitrogen. It is therefore necessary to calculate the free ammonia content as a function of pH and temperature.
Anaerobic	In the absence of oxygen microbes breakdown organic material
Anaerobic Bacteria	Microbes whose metabolisms require the absence of oxygen to survive. Also known as methanogens
Anaerobic Digester Gas	The gas produced after-which microorganisms break down biodegradable material in the absence of oxygen.
Anaerobic Digestion	The breakdown of organic material in the absence of oxygen, (methane producing bacteria are most active in two temperature ranges, 95 to 105°F and 130 to 135°F. This is a living system and must be treated as such. The organic material is decomposed by acid formers into fatty acids and then into biogas by methane formers or methanogens.
Anaerobic Lagoon/Manure Lagoon	Man-made outdoor earthen basin filled with animal waste that undergoes anaerobic respiration as part of a system designed to manage and treat refuse created by Concentrated Animal Feeding Operations.

Term	Definition
Biochemical Methane Potential (BMP)	Maximal potential production of biogas by a substrate (m^3 biogas/tons of VS). Also, a common test done to a feedstock to estimate the amount of biogas a certain feedstock or mix of feedstocks might produce.
Biofibers	The solid material separated from the effluent stream after treatment by an anaerobic digester. This is the solid material that could not be volatilized into biogas.
Biofiltration	A pollution control technique using living material to capture and biologically degrade process pollutants. Common uses include processing waste water, capturing harmful chemicals or silt from surface runoff, and microbiotic oxidation of contaminants in air.
Biogas	A gas produced by the fermentation of organic matter in the absence of oxygen. Crude biogas refers to the gaseous effluent discharged from an anaerobic digester or biomethanizer. Biogas consists of 60 to 80% methane (CH4), 30 to 40% carbon dioxide (CO2) and other trace gases, such as hydrogen sulfide (H2S), ammonia (NH3), and hydrogen (H).
Biogas Purification (Upgrading)	A process that reduces the concentration of contaminants in biogas, such as water, carbon dioxide, hydrogen sulfide, ammonia, etc. Primary purification refers to the process that reduces the concentration of hydrogen sulfide and water in the biogas. Secondary purification refers to the process that reduces the concentration of carbon dioxide in biogas resulting in biomethane (conditioning, treatment, purification).
Biomethane	Biogas-derived, high-BTU gas that is predominately methane after the biogas is upgraded to remove most of the contaminants and a majority of the carbon dioxide (CO2) and nitrogen (N2) found in biogas. Upgraded biomethane can be injected into the natural gas grid, or used as a fuel replacement.

Term	Definition
Biomethanizer (Digester)	A sealed container or tank, where the biological anaerobic digestion of animal manure or organic matter occurs and from which results the production of biogas.
Biosolid	Sludge refers to the residual, semi-solid material left from industrial wastewater, or sewage treatment processes. It can also refer to the settled suspension obtained from conventional drinking water treatment, and numerous other industrial processes.
BOD (Biochemical Oxygen Demand)	A qualitative measurement indicating how fast biological organisms use up oxygen in a water body. It is an indication of the availability of nutrients and food in the water and used as a measure of the degree of pollution in waterways.
BTU	Unit of energy. British Thermal Unit
Buffer Capacity	Indicates the ability of the environment to be influenced by bases or acids. Used to characterize inputs and to monitor digesters' health. A too low buffer capacity means that the organic matter is poor and poorly buffered, resulting in faster digestibility. A buffer capacity that is too high can indicate the presence of organic acids or buffered compounds, such as proteins.
C/N Ratio (Carbon/Nitrogen)	The C/N ratio represents the carbon portion of the organic material on the total nitrogen portion. It is usually calculated for inputs and digestate
Carbon & Degradability Profile	The degradability is calculated by a carbon balance: Carbon input (Feed MO) – Carbon present in the digestate = Degraded carbon. This balance will be broken down by a calculation of the carbon balance produced by the carbon of CH4, the carbon of the CO2 and the metabolites produced.
Certified Digestate	Digestate that has been certified to meet the health and safety criteria of the American Biogas Council's Digestate Standard Testing and Certification Program at www.Digestate.org

Term	Definition
Complete Mix Digester	A tank designed above or below ground as part of a manure management system to handle manure containing 2-10 percent solids. The digester is heated and mixed mechanically or with gas-mixing systems to keep the solids suspended. This maximizes biological activity for destruction of volatile solids, methane production, and odor reduction.
Composting	The biological decomposition and stabilization of organic matter under conditions which allow the development of elevated temperatures as the result of biologically produced heat. When complete, the final product is sufficiently stable for storage and application to land without adverse environmental effects.
Conditioned Biogas	Medium-BTU biogas that is stripped of some trace contaminants and water, but maintains the relative mix of carbon dioxide (CO2) and methane (CH4).
Contaminant	Non-biodegradable material present in SSO and which does not contribute to its methanogenic potential.
Covered Lagoon Digester	An anaerobic lagoon is commonly used when manure has less than 2 percent solids. Decomposition of the manure occurs, methane is produced, and effluent odor is reduced. The lagoon is covered with a gas-tight cover to capture the biogas.
Diesel Gallon Equivalent (DGE)	DGE is a way to measure the required volume of an alternative source of energy in order to be comparable to the energy potential of diesel. Thus, DGE is a way to evaluate the CNG vehicle storage required.
Digestate	The material remaining after the anaerobic digestion of a biodegradable feedstock. Anaerobic digestion produces two main products: digestate and biogas. It is produced both by acidogenesis and methanogenesis and each has different characteristics. See also Certified Digestate.
Digester	A sealed container or tank, where the biological digestion can occur of animal manure and biogas formed.

Term	Definition
Digester Gas	Another name for the biogas produced by the anaerobic digester system
Dry Digester	The anaerobic digestion system in which most bio-solid organic material is placed for anaerobic digestion
Dry Materials (DM)	Dry materials (DM) is what is obtained when water is removed from a product.
Dryer	A machine or device used to remove the humidity from a raw biogas substance to assist in the transformation of biogas to biomethane
Effluent	Organic liquid and solid material (slurry) leaving a digester
Feedstock	Liquid and/or solid material fed to the digester, also known as influent
Fertilizing Residual Materials (FRM)	Organic residual materials used as fertilizers in agricultural, horticultural and forestry applications or for the rehabilitation of degraded sites.
Fixed Film Digester	A tank designed as part of a manure management system to handle manure up to 3 percent solids. The digester is temperature controlled and a media is placed inside the digester. This design allows the microbial populations to attach to the media and grow as a biofilm (fixed film), thus preventing the microbes from being removed with the effluent.
Greenhouse Gas (GHG)	An atmospheric gas, which is transparent to incoming solar radiation but absorbs the infrared radiation emitted by the Earth's surface. The main greenhouse gases are carbon dioxide, methane, and CFCs.
High Strength	A term that is usually applied to industrial wastewater to indicate that it contains a higher than normal percentage of solids or other soluble or suspended material
Holding Tank	A large container in which liquids are temporarily held
Hydraulic Retention Time (Hrt)	The average length of time the liquid influent remains in the digester for treatment. HRT may go up to 50 days.
Hydrolysis	Stage during which the macromolecules (proteins, lipids, carbohydrates) are hydrolyzed to monomers.

Term	Definition
Hygienization	Stage of conditioning the inputs or the digestate which consists in heating them during a given time, to reduce their content in pathogens (pasteurization).
Induction Generator/asynchronous generator	Is a type of AC electrical generator that uses the principles of induction motors to produce power. Induction generators operate by mechanically turning their rotor faster than a synchronous speed, giving negative slip. This type of generator operates in parallel with the utility for its phase, frequency and voltage and cannot operate in isolation (stand alone) – i.e., it cannot operate without the power company.
Industrial Wastewater	Wastewater not otherwise defined as domestic wastewater, including the runoff and leachate from areas that receive pollutants associated with industrial or commercial storage, handling or processing facilities
Influent	Liquid and solid material fed to the digester.
Inorganic Material	Compounds derived from other than vegetable or animal sources, generally do not contain carbon atoms
Iron Sponge	A machine that removes sulfides during the anaerobic digestion process
Loading Rate	The total amount of solids and liquids fed to the digester daily.
Methane	A combustible gas produced by anaerobic digestion; also the principal component of natural gas
Methanogens	Methane producing microbes.
Microturbine	A small-scale gas turbine generation system to combust gas and generate electricity.
Municipal Solid Waste (MSW)	Also known as trash or garbage; refuse or rubbish is a waste type consisting or everyday items that are discarded by the public
Net Metering	An agreement with the utility company to purchase the electricity produced by the digester system at a rate equal to the farm electricity purchase rate.
Nutrients	Organic or non-organic chemical compounds essential for plant growth.

Term	Definition
Operating Temperature - Mesophilic	The temperature range of 95 to 105°F in which methanogenic microbes thrive.
Operating Temperature - Psychrophilic	Less than 68°F.
Operating Temperature - Thermophilic	Temperature range of 125 to 135°F where certain methanogenic bacteria are most active, the greatest pathogen destruction occurs in this temperature range.
Organic Loading Rate (OLR)	Amount of organic matter arriving at the anaerobic digestion system every day, expressed in kg of volatile solids per day per cubic meter of digester (kg VS/d/m^3). This feeding rate is calculated based on system performance and the hydraulic retention time (HRT). This dictates the nutritional pressure of VS applied to the bacteria. The higher the OLR, the less the digestate will be degraded and the more likely it is to reduce the burden of methanogenic microorganisms. A low OLR with high HRT may create metabolites lethal to methanogens. An OLR of between 2.5 and 4 kg VS/J/m^3 in mesophile and between 4 and 6.5 kg VS/J/m^3 in thermophile complies with the sound operation of a digester.
Organic Material	Matter composed of organic compounds that has come from the remains of once-living organism such as plants and animals and their waste products in the environment
Plug-Flow Digester	A tank designed for a manure management system which handles organic material containing 11-14 percent solids. The digester is given daily influent plugs that flow- through the digester. The digester is heated. This helps with the destruction of volatile solids, methane production and odor reduction.
pH	The quantitative measure of the acidity or basicity of aqueous or other liquid solutions. Too high and too low effects the balance of the digester biology.
Recycling	Term used to describe the use of organic matter in agricultural, horticultural or forestry applications or for the rehabilitation of degraded sites.
Redox	Reduction-Oxidation potential.

Term	Definition
Renewable Compressed Natural Gas (R-CNG)	RNG that is compressed to a high pressure, often for use as a transportation fuel.
Renewable Liquefied Natural Gas (R-LNG)	RNG that is converted to liquid form, often for use as a transportation fuel.
Renewable Natural Gas (RNG)	Biomethane that is upgraded to natural gas pipeline quality standards such that it may blend with, or substitute for, geologic natural gas, including odorizing.
Residence Time	The average length of time during which a substance, a portion of material, or an object is in a given location or condition, such as adsorption or suspension
Settled Solids	The separated manure solids which settle to the bottom of the digester.
Silica Gel	Hydrated silica in a hard granular hygroscopic form used as a desiccant (removes moisture)
Siloxanes	A compound having a molecular structure based on a chain of alternate silicon and oxygen atoms, esp. (as in silicone) with organic groups attached to the silicon atoms
Sludge	Thick, soft, wet waste or a similar viscous mixture of liquid and solid components, esp. The product of an industrial or refining process.
Slurry	The mixture of solids and water processed in the digester.
Source Sorted Organic (SSO)	Organic vegetable and animal materials derived primarily from the preparation, consumption and distribution of food and beverages and sorted at the place where these residual materials are produced, generally sorted by municipalities and ICIs.
Status Parameters	Values and status number that allow the tracking and process in a stable and secure manner (HRT, ORL, CH4, pH, temperature, Buffer capacity, Redox, FOS-TAC, Carbon balance, N-NH3, N-NH3/Ntot, N-NH3/CT, TS, VS, TSS, VSS, COD, BOD)
Sulfide	A binary compound of sulfur with another element or group

Term	Definition
Synchronous Generator	This type of generator can operate in parallel with the utility or operate in isolation from the power company (stand-alone). This generator does not need the utility voltage to create electricity; the machine is self-excited. Generally, more expensive utility breaker controls are required.
Syngas	A gas mixture composed primarily of hydrogen (H2) and carbon monoxide (CO), along with hydrocarbons from the thermochemical decomposition of organic or inorganic materials.
Temperature-Phased Anaerobic Digester (TPAD)	Two tanks designed as part of a residuals management system. The digesters are heated, the first digester in the thermophilic temperature range and the second digester in the mesophilic temperature range. This will maximize biological activity for the destruction of volatile solids, methane production and odor reduction.
Total Dissolved Solids (TDS)	The volume of solid material that cannot be filtered out. A measure of the combined content of all inorganic and organic substances contained in a liquid in molecular, ionized or micro-granular suspended form
Total Nitrogen (TN)	Total nitrogen is a measure used to characterize inputs, but it remains a vague measure because it will have to be broken down by a calculation of protein nitrogen (Nprot) and ammonia nitrogen (N-NH4). The latter will, however, be a parameter for monitoring the process.
Total Solids (TS)	Physico-chemical parameter expressing the rate of solids in a liquid sample.
Total Suspended Solids (TSS)	The volume of solid material that can be filtered out.
Toxicant	A component in manure or some other feedstock causing an adverse effect on bacterial metabolism. E.g., a pesticide.

Term	Definition
Volatile Fatty Acids (VFA)	An analysis of the Volatile Fatty Acids (VFA) profile allows to identify an unstable or even toxic biochemical state. Because short chain fatty acids are lethal to some bacteria this can impair digestion and production. Such imbalance could also create, under certain conditions, a problem of foaming. Analysis of the VFA profile is not done on a regular basis but rather in case of problems, quality control or when using a new input. VFA's are typically present in feedstocks, and also produced in the digester by acid- forming bacteria and then used by the methane-forming bacteria to produce methane. Carbonic acid is the chemical compound with the formula h2co3, a weak acid that forms two kinds of salts: carbonates and bicarbonates
Volatile Solids (VS)	Solids, frequently organic, which volatilize at a temperature of 550 degrees Celsius. This is the actual organic matter which can be converted to gas.

Sources:

- MI Department of Agriculture & Rural Development
- American Biogas Council
- Biogas World