ZoneProtector - Multipoint Gas Detection

----Gas Detection in Wastewater Treatment and Collection Facilities

Gas Detection and Alarm Requirement from NFPA 820

NFPA 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities, establishes minimum requirements for protection against fire and explosion hazards in wastewater treatment plants. The requirements shall apply to new installations, additions or modifications made to existing facilities. The requirements shall be used by owners in a risk assessment to identify the areas of a treatment plant that are vulnerable to fire or other loss. Combustible Gas Detection, basically for Methane (CH4), is required in many areas. Hydrogen Sulfide (H2S) and Oxygen (O2) monitoring are also frequently used. Methane Gas detection points are placed near the roof of a structure. Oxygen and Hydrogen Sulfide detection points are usually placed in the breathing zone for human protection. Alarm Signaling for combustible gas detectors and ventilation are mandated by NFPA 820.

Ventilation Requirement from NFPA 820

Most semi-enclosed and enclosed process areas in wastewater treatment facilities are classified as Class I, Division 1 or Division 2, Group D. Proper ventilation of an area may reduce classification to Division 2 or non-classified. Refer to NEC Article 500 and NFPA 496 for more information. NFPA 820 requires all the ventilation of the hazardous location need to be monitored.

Collection Systems' Locations (from NFPA 820 Table 4.2.2):

Location	Area Class	Hazard	Fire Detection	Signaling
Residential Water Pump Station Wet Well	Div 2 or Unclassified	LEL (CH4 Flammable gases and floating flammable liquids)		Audio/Visual Alarm, Locl/Remote
Sewage Pumping Station Wet Well	Div 1 or Div 2	LEL, H2S, O2		Audio/Visual Alarm, Locl/Remote
Odor Control Facility	Div 2 or Unclassified	LEL	Yes	Audio/Visual Alarm, Locl/Remote

Solid Treatment Systems' Locations (from NFPA 820 Table 6.2.2):

Location	Area Class	Hazard	Fire Detection	Signaling
Scum-Handling Building	Div 2 or unclassified	LEL (CH4 Flammable gases and floating flammable liquids)		Audio/Visual Alarm, Locl/Remote
Scum Pits, Pumping Area	Div 1 or Div 2	LEL		Audio/Visual Alarm, Locl/Remote
Sludge Thickener (Clarifier)	Div 1 or Div 2	LEL, O2		Audio/Visual Alarm, Locl/Remote
Sludge Pumping Station Dry Well	Div 2 or unclassified	LEL, O2		Audio/Visual Alarm, Locl/Remote
Sludge Storage Wet Wells, Pit, Holding Tanks Area	Div 1 or Div 2	LEL, O2		Audio/Visual Alarm, Locl/Remote
Sludge Blending Tanks and Holding Wells	Div 1 or Div 2	LEL, O2		Audio/Visual Alarm, Locl/Remote
Anaerobic Digesters & Processing	Div 1 or Div 2	LEL, O2		Audio/Visual Alarm, Locl/Remote
Underground (Piping) Tunnels	Div 1 or Div 2	LEL	Yes	Audio/Visual Alarm, Locl/Remote

What is required to have a gas detection system to meet the requirement?

- Methane gas detectors shall be set to alarm at 10 percent of the lower explosive limit (LEL) in accordance with the manufacturer's calibration instructions and shall be connected to alarm signaling systems. Oxygen and H2S detectors should be set per OSHA requirements
- Controller to monitor gas concentration and Ventilation
- Audio/Visual Alarm

Cost Effective Solution from R.C. Systems -- ZoneProtector

ZoneProtector is an integrated gas detection unit that meets NFPA 820 requirements. It has up to 4 channels to allow a combination of gas detection and ventilation monitoring signals. The sensors may be directly attached to the controller with a sampling pump unit to drawing the gases from the detection points, or, may be mounted remotely at each detection point. One input channel can be used to monitor the ventilation system. The unit is equipped with audible/visual alarms and also provides configurable relays for remote alarms.

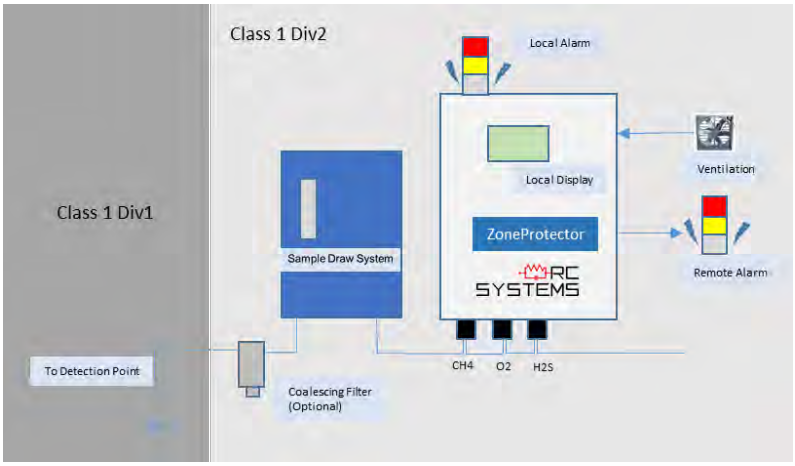
8621 Highway 6 Hitchcock, TX 77563 PH: 409-986-9800 FX: 409-986-9880 www.rcsystemsco.com

Represented by: **C A Briggs Company;** 622 Mary Street; Suite 101 - Warminster, PA 18974
Phone: 267-673-8117 - 800-352-6265 - Fax: 267-673-8118; E-Mail: Sales@cabriggs.com - www.cabriggs.com

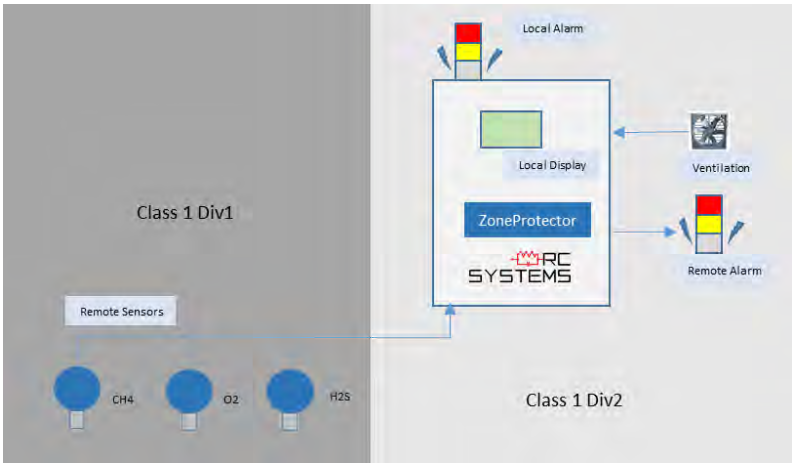
Liquid Treatment Systems' Locations (from NFPA 820 Table 5.2.2):

Location	Area Class	Hazard	Fire Detection	Signaling
Diversion/Control Structure	Div 1 or 2	LEL (CH4 Flammable gases and floating flammable liquids)		Audio/Visual Alarm, Locl/Remote
Coarse and Fine Screen Facilities	Div 1 or Div 2	LEL, H2S, O2		Audio/Visual Alarm, Locl/Remote
Flow Equalization Tanks Area	Div 1 or Div 2	LEL		Audio/Visual Alarm, Locl/Remote
Grit Removal Tanks area	Div 1 or Div 2	LEL, H2S, O2		Audio/Visual Alarm, Locl/Remote
Pre- Aeration Tanks Area	Div 1 or Div 2	LEL, H2S, O2		Audio/Visual Alarm, Locl/Remote
Primary Sedimentation Tanks	Div 1 or Div 2	LEL, H2S, O2		Audio/Visual Alarm, Locl/Remote

Gas Detection Strategy 1: ZoneProtector With Sample Draw System:



Gas Detection Strategy 2: ZoneProtector With Remote Sensor



Specification	
POWER SUPPLY	100-240VAC / 10-30VDC, 50W
INPUTS	4 Channel 4~20mA/DI
STANDARD ALARM RELAYS	2x5 amp 30VDC or 250VAC resistive Form C
OPTIONALl ALARM RELAYS	6x 5 amp 30VDC or 250VAC resistive Form C
ANALOG OUTPUTS (OPTIONAL)	10 bit 4-20mA output
SERIAL PORT (OPTIONAL)	Modbus Master/Slave RS-485 port
DISPLAY	128 x 64 pixel graphic LCD with backlight
	6x discrete LED'
AMBIENT TEMPERATURE	-25 to +60 degrees C
APPROVALS	CSA C22.2 No 1010.1 and C22.2 No.152 for combustibles and ISA S82.02;
	UL 1604 / C22.2 No 213 (NEMA 4X = Division 2 Groups A,B,C,D,
	EN55011 and EN61000 (CE Mark)