



THE SPIGOT

from the NORTH DAKOTA RURAL WATER SYSTEMS ASSOCIATION

DRONES



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Drones have become a very large part of our daily lives. People may not physically use a drone, but they still observe drone usage through pictures or videos. Drones can be used for making movies, television shows and commercials, military tasks, or for personal enjoyment. And there are many more applications these devices can be used for and more potential for future advancements.

Originally developed for the military and aerospace industries, drones have found their way into the mainstream because of the enhanced levels of safety and efficiency they bring. These robotic unmanned aerial vehicles (UAV) operate without a pilot on board and with different levels of autonomy. There are many kinds of aerial drones, however, there are two main categories – manual remote aircraft and autonomous aircraft.

Manual drones need to be commanded for the entire flight, while the autonomous can have a programmed flight pattern or path that will use system sensors and laser imaging, detection and ranging (LIDAR) detectors to complete the programmed flight. LIDAR uses laser light detection and ranging to map and control the altitude and speed at which the vehicle has been programmed to determine its flight path.

Drones also play a very important role with search and rescue missions, including locating someone thrown from a vehicle at night. A properly equipped drone with an infrared camera can do an aerial sweep of the area while gathering different heat signatures. This, in turn, will help locate where someone has wandered off to. It is very important to do this as quickly as possible because the individual may have sustained life-threatening injuries and time is of the essence.

Photography is another use for drones. Used to their full

potential, drones produce movies, commercials and even magazine photo shoots. Those hard-to-get pictures and video images that had required an airplane or helicopter can now be captured by drones. The bird's-eye view of a city or beach can be obtained. There are drones made specifically for photography that provide a new way to capture some of your favorite destinations from above.

Another great use for drones is wildlife and historical preservation. Carbon footprints are a big concern to a lot of people. Because of the different rules, requirements and regulations established to preserve our natural wildlife lands and historic sites, a drone can be used to map certain terrain, inspect the wildlife and determine if any preventative measures are needed, or should be taken, to ensure it is preserved. With the application of a drone's ability to assist in a historical preservation, it adds a form of safety and efficiency to the inspection of old buildings, artifacts, monuments, and landscapes. These photos and





in the ground from a possible leak or the actual level of water in a water tower or storage tank. Differences in the temperatures is determined as a very defined line.

Drones have become so universal that they are not only aerial but aquatic as well. These aquatic drones come in various types of styles and designs. One design used by the water and wastewater industries is a drone that floats on the water and can be piloted manually or use a preprogrammed piloted route. While being piloted over the water, the drone uses sonar to map the depth of the water and the lower terrain. It also can gather information such as how much organic matter has settled on the bottom of the body of water. This data can be useful for future lagoon treatment and can determine what kind of conditions are being dealt with or need attention.

Drones have become a massive influence on our lives. The technology is continually moving forward, creating more and greater capabilities. NDRWSA can help you with visualizing and inspecting your water system or lagoon.

videos can not only be used for the inspection, but also for putting together a virtual tour, commercial or advertisement for these different entities.

Drones can be used to determine how pollutants affect an area and where those pollutants came from, helping address a big concern of how man-made and naturally occurring contaminants make their way to underground aquifers and surface water.

North Dakota Rural Water Systems Association (NDRWSA) has ventured into this technology with open arms. It has purchased a drone and can now provide assistance at a higher level to all North Dakota municipalities. Diversifying in this area helps in their ability to go above and beyond in keeping water systems on the correct path and keeping them up to date with current technologies and proper maintenance schedules for their systems.

Moving forward with these technologies is critical to the state's well-being. With the combination of video recording and the infrared camera, NDRWSA can inspect treatment facilities, above ground storage tanks and water towers, lagoons, etc. Infrared capabilities can depict a warmer spot

