ECODRONES

ABZ INNOVATION C10 – CLEANING DRONE

Use Case – Factory Building

This is a use case document designed to present a problem that offers many potential solutions. But how did the ABZ Innovation C10 cleaning drone solve it? You'll see right away!

The Problem:

A factory building requires facade cleaning. It hasn't undergone any external cleaning for nearly two years. The dirt mainly consists of dust, but there are also rust stains and bird droppings — none of which are visually appealing. The wall is approximately 13 meters tall, which is already too high for a ladder.

Common Solutions:

- Scaffolding could be built around the building, which allows for very thorough cleaning. However, acquiring and setting up the scaffolding takes a lot of time — approximately 4–8 weeks, which is too long.
- A boom lift is available much faster, but it's very expensive to rent. It also requires a qualified operator, and the height makes the task risky.
- An industrial climber can also begin the work quickly if proper anchor points are available on the roof. However, these are increasingly rare on modern buildings. This method also has the highest safety risks.

The ABZ Innovation Solution:

When cleaning facades with a drone, it's crucial that the water used doesn't leave streaks or stains and doesn't damage the building materials. One of the most suitable solutions is osmosis water, which is produced through a special filtration process known as reverse osmosis.

What is osmosis water?

Osmosis water is ultra-pure water from which nearly all dissolved substances — salts, minerals, contaminants, and microorganisms — have been removed. During production, the water passes through a semi-permeable membrane that filters out unwanted particles. The resulting water is:

- 0–10 ppm (parts per million) in contamination — essentially pure H_2O
- Non-conductive
- Chemically neutral, meaning it doesn't react with other substances

Benefits of Osmosis Water for Facade Cleaning:

1. Streak- and spot-free drying
   Since it contains no minerals, osmosis water leaves no limescale or salt residue on glass or metal surfaces. This is especially important for glass buildings or light-colored facades.

2. Chemical-free cleaning
   Osmosis water has excellent dissolving capabilities on its own, so chemical cleaners are often unnecessary. This makes the process more environmentally friendly and avoids material damage from harsh chemicals.

3. More cost-effective operation
   No need for cleaning agents and no residue means less manual wiping or re-cleaning — reducing labor and material costs.

4. Safer drone application
   Chemical-free water is gentler on the drone's spraying system and nozzles and safer for both operators and the environment.

5. Gentle on building materials
   Osmosis water does not corrode metals, does not fade painted surfaces, and does not dissolve silicone or rubber seals.

This technology is especially suited for tall buildings, office towers, shopping centers, and glass or aluminum facades — where aesthetic quality, speed, and eco-friendliness are top priorities.

For this cleaning task, we also chose osmosis water, which was pumped from an IBC tank and filtered on-site using a ground-based device. We activated the high-pressure system after lifting the drone to about 3 meters height, keeping a distance of about 5 meters from the wall.
The drone was then directed to the highest point of the target facade section, and cleaning began with a 70 cm water jet, moving in a survey-like top-to-bottom pattern.
More time was needed where bird droppings were present, but otherwise the operation could proceed steadily. It's important to note that osmosis water is not only cleaned where it directly contacts the surface but also along the runoff path — speeding up the cleaning of lower sections.
With this method, we achieved a cleaning speed of 300 m²/hour!