ECODRONES

ABZ INNOVATION C10 – WASHING DRONE

Use Case – Mossy Roof

This is a use case document designed to present a problem for which there are several possible solutions. So how did the ABZ Innovation C10 washing drone solve this task? You're about to find out!

The Problem:

A building has a roof that requires cleaning. According to the owner, it hasn't been cleaned in over 10 years. During this time, a significant amount of natural debris has accumulated, the majority of which is moss. Additionally, the roof has leaves, twigs, and bird droppings.
The roof height is around 6–8 meters. Its structure is old and its load capacity is questionable, making it risky to walk on and clean using traditional methods.

General Options:

- Scaffolding could be built around the building, which would allow thorough cleaning, but wouldn't enable effective overhead access for roof cleaning. Moreover, acquiring and erecting the scaffolding takes considerable time.

- Boom lifts are available much faster, but rental is expensive and they require a skilled operator.
  Due to the weight of the moss on the roof, cleaning would still be difficult.

- Industrial climbers can't be used in this case, as standing on an old and weakened roof structure is too dangerous.

- Telescopic cleaning tools are a relatively cheap and accessible option, but the process is extremely time-consuming.

The ABZ Innovation Solution:

Regardless of the chosen method, both water and power must be available at the site.
Therefore, organizing hoses always takes some setup time. However, the C10 drone requires very little preparation. Within 15 minutes, the system can be comfortably prepared and made ready for operation.

Tap water was used for cleaning, delivered through a regular garden hose from an outdoor tap to the high-pressure system.The high-pressure unit was tested, and the hose system was purged on the ground — as we always do. This is important not only for time efficiency but also for flight safety. The high-pressure hose operates at 180 bar pressure with a flow rate of 15 liters/minute.

We lifted the drone off the ground and gradually gained altitude. This allowed us to place a large portion of the high-pressure hose onto the roof using the drone. Then we turned on the high-pressure system again.

With the angled nozzle (40°), we approached the highest point of the selected roof slope and began loosening the moss. During flight, we cleaned the surface with a 60–100 cm water jet, moving in a survey-style pattern from top to bottom.

The greatest challenge wasn't loosening the moss but removing the loosened and soaked layers from the roof. What significantly aided efficient cleaning was moving the drone along its vertical axis. The flight speed of the unmanned aircraft was determined by its cleaning efficiency.
Using this method, we successfully cleaned a roof surface that traditional methods would have struggled to handle!

Results:

- Cleaned surface area: 550 m²
- Time required: approx. 3 hours
- Contamination: thick, 10-year-old moss layer
- Chemicals used: 0 liters

This type of washing is far from unique — moss growth is a threat to every roof over time.