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USING DRONES IN SUPPORT OF RESCUE INTERVENTIONS TEAMS IN TOXIC/FLAMMABLE/EXPLOSIVE ENVIRONMENTS

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Abstract

Intervention and rescue activities require knowledge of the real situation in the affected area as accurately as possible. Therefore, the physical exploration of this area is at the same time necessary and risky.
The use of drones from a safe distance can protect the intervention team from exposure to unknown hazards. Endowment of the drone with a suite of sensors such as high resolution cameras, thermal imaging, infrared, and gas detection equipment permits vital data to be transmitted to the base of intervention. Hazardous areas can be studied from different angles, from an altitude that provides a panoramic view, and make available rescuers information about dangers encountered, state of access routes, number of people caught by the event, and control or protective measures that need to be taken.
The current paper presents the methods for use and control of drones in support of rescue actions, resulting from tests performed by the research team, trained and certified to use drones, within the National Institute for Research and Development in Mine Safety and Protection to Explosion – NIRD INSEMEX. It was demonstrated that a drone which carries a multigas detector and a high definition video camera can help rescuers which intervene in an area with fire/toxic/flammable hazard. For such a mission, a drone must be capable to flight a long time, to carry the multigas detector and to flight secure without visual contact and without autonomous flight support in case of GPS signal lack. Flights in such conditions impose high power engines with 6-8 propellers for fine adjustments.

Key words: dangerous areas, drone, intervention and rescue personnel, tests, toxic/flammable gases

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