

Evacuation Monitoring and Accountability System (EMAS)

The Evacuation Monitoring and Accountability System (EMAS) is an automated system designed to account for personnel both during and after the emergency evacuation of a public or private building. The system architecture incorporates the latest radio frequency identification (RFID) technology, a novel radio frequency (RF) scheme, and custom designed software that can be used either with or without current building access control systems.

The system was initially developed for the Department of Energy Y-12 National Security Complex's Enriched Uranium Operations to account for personnel during emergency evacuations such as nuclear criticality, fires, acts of nature and acts of terrorism. The stringent requirement was to account for all building residents and visitors within 30 minutes or less from the onset of an evacuation. This initial system was successful and over time has evolved into a much more sophisticated tool that can be used by both facilities managers and first responders to account for building residents during emergency situations.

The EMAS architecture is extremely flexible and can be designed to meet user requirements and budgets. There are currently three configurations that can be implemented: manual, automatic and hybrid.



The manual system requires user intervention upon entry and exit of the building and at the evacuation assembly areas. This is the basic system design and is most applicable to small buildings with small populations. The automatic system takes a "hands-off" approach and requires no user intervention upon entry, exit or at the assembly areas. The hybrid system requires some user intervention upon building entry and at the assembly areas, but automatically detects personnel as they exit the building. Evacuation assembly areas are optional in some of the configurations.

Each approach incorporates the use of either active or passive RFID technology. Building residents use an identification card, badge or other device with an embedded RFID tag that can be read by the system's readers. Visitors to the building are issued a temporary card so that they can also be accounted for within EMAS.

To account for personnel, EMAS duplicates accountability data at a remote site so that the possible destruction of equipment at the emergency location does not render the overall accountability system inoperable. Once the evacuation starts, facility managers and first responders are able to track the evacuation progress on PDAs or laptop computers. The system

software displays either the number of personnel left in the building or the names of those not yet accounted for, and is updated in real time. An additional option to EMAS allows for the tracking of personnel within zones of the building. This would allow first responders to know where to target their search and rescue efforts.

EMAS was intentionally designed to be an extremely robust system, and the uniqueness of each approach allows the user to make a selection based on current requirements and resources. Any one of the approaches will provide a system that provides for the accurate and timely accountability of personnel during an emergency evacuation and is flexible enough that it could be modified to meet specific user requirements.

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