

USING AREARAEs FOR FENCELINE MONITORING

INTRODUCTION

While AreaRAEs are most often used for rapid deployment in temporary monitoring situations, this Application Note demonstrates how one major oil company uses AreaRAEs for fixed fence-line monitoring. The driving force for such measurements is to limit emissions from the site. In addition, it reduces liability by providing continuous monitoring in case someone from the general public claims exposure to chemical releases from the site. Major advantages include low installation costs by eliminating power cables, low operator costs via wireless data transmission, and the ability to monitor five gases, including VOCs, all in one compact monitor and software package.

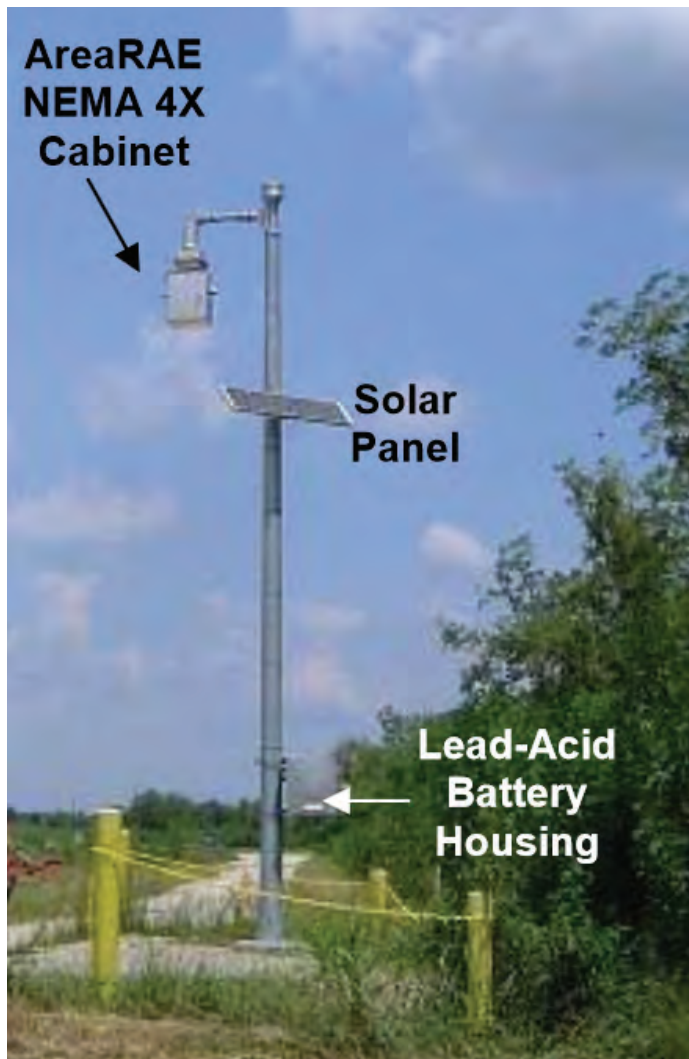


Figure 1. Overview of fence-line monitoring post.

SYSTEM DESCRIPTION

In this application the oil company set up the AreaRAEs to monitor for LEL, O₂, VOCs, SO₂, and CO. Figure 1 shows an overview of one of the fence-line monitoring posts. Several similar posts were installed around the compound at strategic locations where an emission might be of concern, such as where the compound borders on a school or residential area. The NEMA 4X cabinet protects the sensors from the weather, including gas inlet and outlet facing down for rain protection, and covered by screens to prevent insects and particles from entering (Figure 2).



Figure 2. Close-up view of AreaRAE cabinet and solar panel.

The system is entirely self-contained and wireless in regard to both power supply and data transmission. The AreaRAE runs continuously off of power supplied by a lead-acid battery near the base of the pole. A solar panel recharges the battery during daylight hours. No power is brought to the monitoring station; the only power cable runs from the battery up the pole to the monitor.

The entire AreaRAE cabinet can be lowered for service using a flagpole-type cable (Figure 3). Electrical contacts at the top of the housing automatically connect the power when the housing is raised snugly into the socket at the top of the pole.



Figure 3. Lowering the AreaRAE for service using the flagpole-type cable.

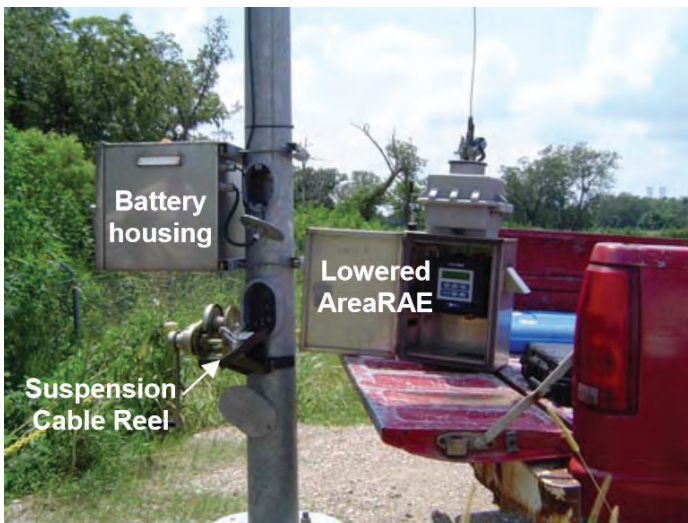


Figure 4. Lowered AreaRAE showing the flagpole-type cable reel.

ADVANTAGES

There are several advantages of this system, particularly the low installation costs not requiring power be brought to the site.

- True wireless operation in both power connection and data transmission for low installation and operator maintenance costs.



Figure 5. AreaRAE lowered for calibration.

- Smaller size for five sensors in one package, compared to competitors’ systems, which tend to have one sensor per housing.
- ProRAE Remote software transfers actual calibrated data directly rather than 4-20 mA signal, so that no extra data processing or PLC is required.
- GPS available (if in Plexiglas instead of metal enclosure).
- Ability to tie into portable instruments used on the same site using the same centralized host platform. For example, if a spill occurs within a site complex, the fence line and portable monitors can communicate with the same host controller to oversee the incident and determine if the release has reached the perimeter.
- Compatible with direct data transfer to Expert Systems such as plume models and DMIS (Disaster Management Information System).