

# Manoj Kumar - India and Middle East Air Quality Monitoring

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## What considerations are important when designing air monitoring stations for use in the Middle East and India?



The climate in the Middle East and sub-continent is generally hotter and more humid. Instrument performance is affected by changes in temperature and humidity, especially carbon monoxide and ammonia analysers. Therefore, instruments working in this climate need to be installed in well designed and properly insulated shelters, with air conditioning customised to that particular location's climatic conditions.

### Middle East

In the Middle East dust and sandstorms are a common disruption to air quality monitoring. Ecotech has had many similar experiences with its shelters throughout Australia's central and desert regions developing power efficient, highly insulated, storm proof air quality stations.

### Indian Sub-continent

Within the Indian sub-continent the humidity during summer, especially in southern India, can affect instrument measurement, similar to tropical northern Australia. Ecotech's stations use many different techniques to eliminate the errors humidity can bring. These include: a vertical heated sample manifold, insulated sample lines and a sufficiently high flow rate to avoid condensation forming. Humidity can also have a significant impact on

particulate monitors with some working better than others in this environment, for instance a particulate monitor that collects particulates onto its filter for 24 hours or more will see its mass change based purely on ambient humidity, a monitor which changes its filter on a hourly basis will be less influenced by humidity influences.

### Why do you believe U.S. EPA and EN approval are important within these markets?



The monitoring of air quality is very important to the health of people within any community. Most country's air quality standards are based on international standards such as WHO, European Union or the U.S. EPA which specify a maximum 1 hour concentration for a particular criteria gas such as CO, O<sub>3</sub>, NO<sub>2</sub> and SO<sub>2</sub>.

In order to provide a high level of confidence in the measurement of these gases, monitoring procedures based on either EN (European Norms) or U.S. EPA should be adopted. These procedures detail how an air quality monitoring system should be operated, maintained and calibrated. An analyser with demonstrated approval from any of these organisations can then be used with confidence providing good operation, maintenance and calibration procedures are employed.

### What do you believe is the best way to measure air pollution?

The simple answer is with either U.S. EPA or EN approved



analysers, installed in an air conditioned monitoring shelter (operated in accordance with U.S. EPA/EN guidelines). In addition to the analysers certification other factors which need to be taken into account include site selection, proper selection of monitoring shelters to suit the local climate, suitable design of sample manifolds and the use of traceable calibration gas for these analysers. Operation, calibration, maintenance, data collection and reporting procedures are also of critical importance in order to obtain data which can be relied upon by environmental authorities and the local community.

### How important is calibrating instruments to environmental monitoring?

Calibrating instruments is very important as only a calibrated instrument will give you accurate and traceable results. Calibrations are best performed using one or more cylinders of calibration gas (which contain a known concentration of gas within them), a dilution calibrator and a zero air generator. Utilising this setup automatic daily zero and span calibration checks can be performed and, if necessary, off-site full multipoint calibrations as well. This method eliminates some of the inconsistencies and problems associated with using internal permeation tubes. In our experience the cylinder gas will last 2 years or more and often longer.

### What does Ecotech provide above and beyond other manufacturers to the Middle East and Indian Sub-continent regions?

Ecotech is a more flexible organisation that can tailor solutions to the exact needs of its customers. Working in partnership with specialist air monitoring companies in each country, Ecotech and its partner work together to create air monitoring stations specific to the client's environment and needs. Ecotech is able to offer the complete solution including: analysers, calibration systems, data acquisition systems and central reporting software. This ensures that all equipment and software works seamlessly together.