FEATURES

- Lightweight powder coated control unit is provided in four separate boxes for easy handling
- Digital readout for temperature of dry gas meter and stack gas
- Dry gas meter for total flow measurement
- Unique Tapered thimble holder for leak proof collection
- Six glass Impingers
- Acrylic Rotameters for flow measurements
- Light weight monoblock vacuum pump
- Inclined Manometer with 0.01 inch WG resolution with spill proof arrangement
- S- type Pitot tube of 1.5-meter length individually calibrated as per EPA regulations (I.I.T. Mumbai)
- S.S.Thermocouple of 1.5-meter length

ACCESSORIES

INSTRUMEX'S Stack Monitoring Kit IPM 112 consists of

- **VELOCITY / CONTROL MODULE :**
  The control module contains all necessary operational controls, pressures and temperature measurement display, rotameter, etc., mounted in a sturdy, lightweight aluminum cabinet. The aluminum cover is provided to protect the operational controls from any damage during transportation to site and sampling platform. The cover is mounted on half hinges and is removable during operation.

- **IMPINGER MODULE :**
  The Impinger Module is a double walled, thermally insulated fiberglass cabinet for housing six Impinger tubes.

- **GLASS WARE SET :**
  Borosilicate glass impingers

- **DRY BOX MODULE:**
  This is a diaphragm type gas meter and is used to measure the total volume of gas collected.

- **PROBE ASSEMBLY WITH SUITABLE HOSES :**
  S.S. Braided Teflon hoses for sample collection and Pitot tubes.

- **VACUUM PUMP :**
  Single phase, ½ HP with free flow capacity: 100 LPM, rotary vane type.

- **PITOT :**
  This consists of a Pitot tube, thermocouple and filter holder probe. The Pitot tube is S-type made of SS 304 as per EPA specification. It has been calibrated in a wind tunnel at I.I.T. Mumbai and the calibration co-efficient has been engraved on the tube.

- **FILTER HOLDER ASSEMBLY :**
  The thimble holder with one-meter extension pipe has been designed to hold thimble of two types:
  a) Cellulose thimble size 28mm ID X 100mm Length.
  b) Glass Fiber thimbles size19mm ID X 90mm Length.

- **NOZZLES WITH BEND PIPE :**
  Three types of Nozzles of sizes: 5/8", 1/2"and 3/8" dia.

- **ROTAMETERS :**
  There are two Rotameters provided. One Rotameter of 100 LPM is for measuring the flow for SPM and another Rotameter is provided for gaseous sampling 6 LPM.

INSTRUMEX
IMPORTER / MFG / SUPPLIER OF ANALYTICAL, POLLUTION MEASURING INSTRUMENTS & ACCESSORIES
Ashish Udyog Bhawan, Unit No.7, Ramchandra Ext. Lane, Malad (W), Mumbai - 400 064 (INDIA).
TeleFax : 022-2844 3997 / Mobile : 93222 35281
E-mail : info@instrumex.net / instrumex1@rediffmail.com / www.instrumex.net

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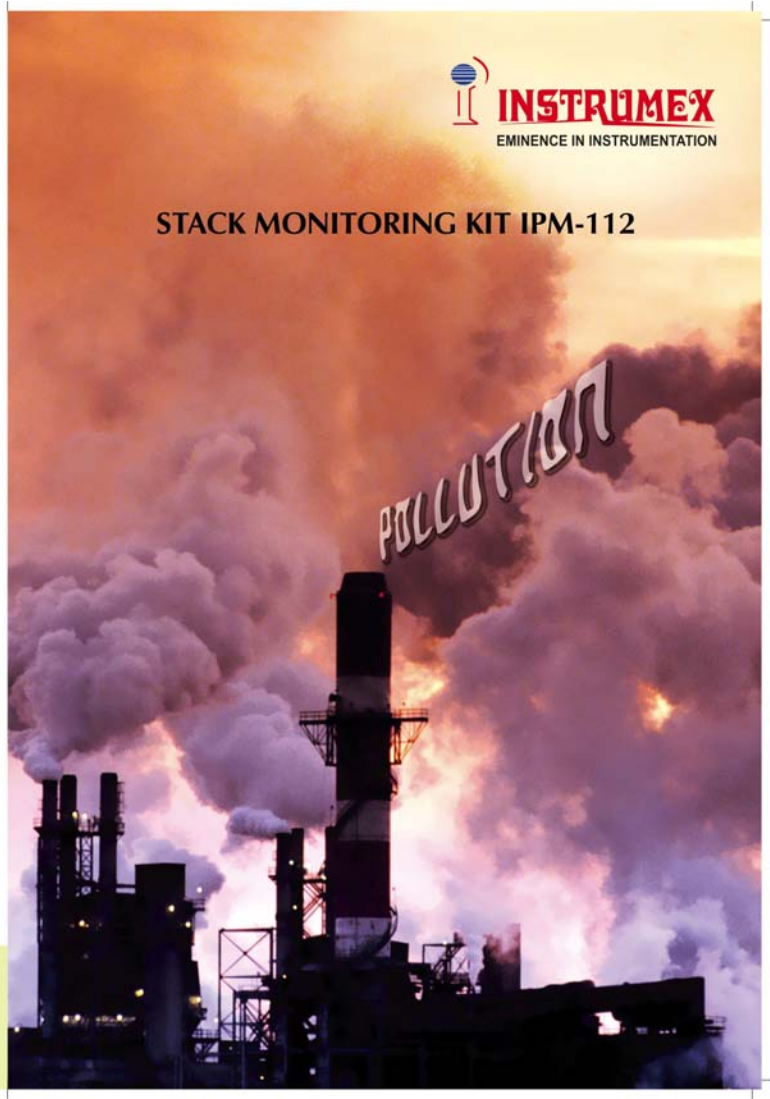
STACK MONITORING KIT IPM-112



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STACK MONITORING KIT IPM-112

INTRODUCTION

Gaseous pollutants along with suspended particulate matter cause a variety of severe health hazards and contributes in air pollution, to a great extent. Hence it becomes an essential practice for the industries to efficiently monitor the polluting emissions and maintain them under prescribed limits.

INSTRUMEX'S STACK MONITORING KIT IPM-112 is designed to serve the most crucial purpose of measuring the total volumetric discharge of particulate matter and gaseous pollutants from the stacks. This efficient and flexible system samples, all gaseous stream effluents in accordance with the Air (Prevention and Control of Pollution) Act of 1981 by which all industrial establishments are required to measure and monitor emissions from their plants and keep them under controlled limits.

It takes accurate iso-kinetic samples of the effluents in the emissions from chemical and combustion process. Designed to operate with its sampling probe in a horizontal or vertical position, this versatile unit can be used in round or rectangular stacks and ducts with flow velocities from 1 to 40 m/sec and temperatures up to 6000C or higher with optional accessories. It collects particulate samples (down to 0.3 dia), Sulphur dioxide gas (SO_2), Sulphur trioxide (SO_3), Sulphuric Acid mist (H_2SO_4), Oxides of Nitrogen (NO_x), Water vapors and many other gases which can be measured by Wet Chemical methods.

PRINCIPLE OF OPERATION

The purpose of stack monitoring (also called source monitoring) is to extract from the stack or duct, a sample that is representative of emission from that source during a time period in which the process is under a desired operating condition. The scope of stack monitoring includes the following:-

1. Determination of stack gas velocity and volumetric flow rate.
2. Determination of gaseous pollutants such as SO_2, So_3, NO_x, F, etc.
3. Determination of particulate matter in stack gas.

In operation, the Pitot consisting of a Pitot Tube, Temperature Sensor and Filter Holder is inserted into a test port and the vacuum pump is operated to maintain the proper iso-kinetic flow rate, as determined by stack velocity, temperature and pressure. Adjustment by control valves assures that the iso-kinetic rate is maintained over a wide range of velocity pressures. Within the filter probe, a contaminated gas enters the high efficiency thimble filter and the particulate matter is thus collected in the filter thimble. From the filter, the gas goes to the Impinger section contained in a double walled Impinger module. After removing the moisture present in the gas stream, the gas now enters in the control module where a known rate of the gas goes into the dry gas meter, under known temperatures and pressure conditions. A suction pump draws the sample through the entire assembly by the Pitot tube, Impinger module and Control Module. The collected sample is analyzed for its weight gain, to calculate the Suspended Particulate Matter concentration. The reagent, which has been used for absorbing the gaseous pollutants, is then analyzed for pollutants, such as, SO2, NOx, etc.