STACK MONITORING: CHALLENGES & DIFFICULTIES

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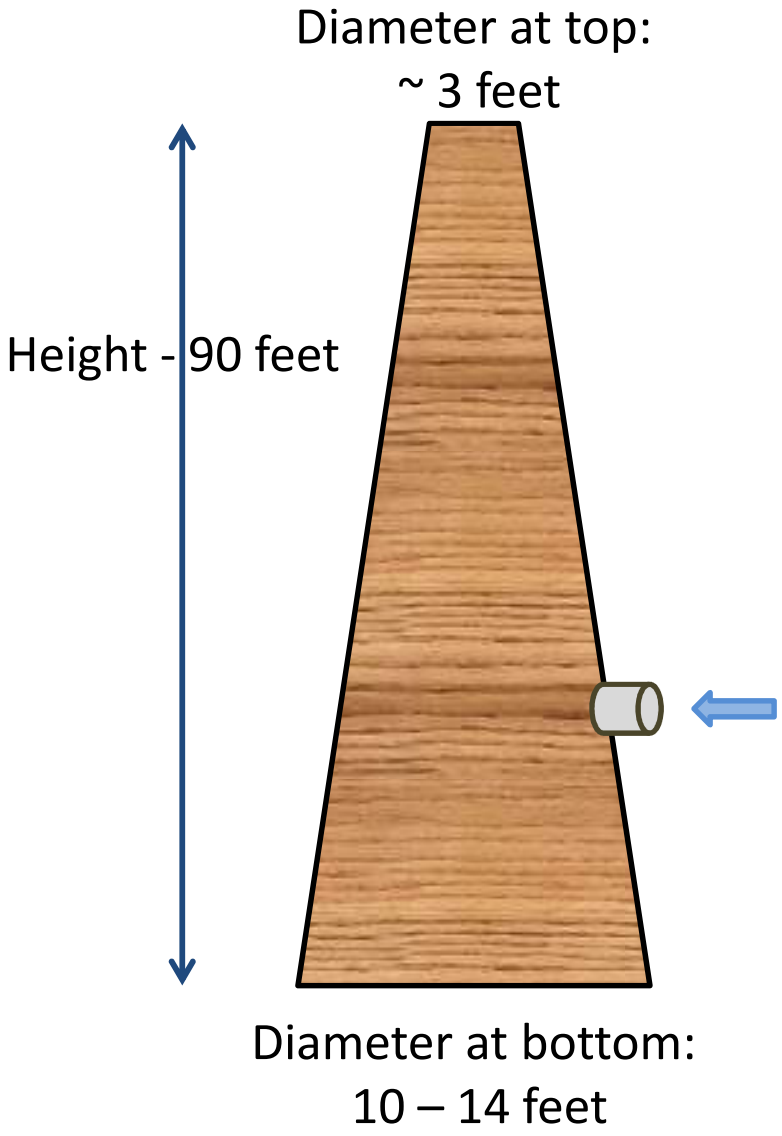
20 December 2017

SAMPLING LOCATION



- Location of sampling port:
  - 8 times the chimney diameter from any obstruction in the bottom
  - 2 times the chimney diameter from the stack exit
  - practically not possible.
- Usually, sample is collected at a height of 30-40 feet

SAMPLING LOCATION

- Sampling port, platform, guardrails, stair/ladder
  - are not provided in several of the kilns
  - In case provided, size of platform (2-3 person and equipment) and support railings are not adequate in majority of kilns
- Alternate arrangement need to be made
  - Hole in chimney wall
  - Bamboo scaffolding and platform
  - Involves additional cost and time (2-3 days) for preparations

SAMPLING LOCATION

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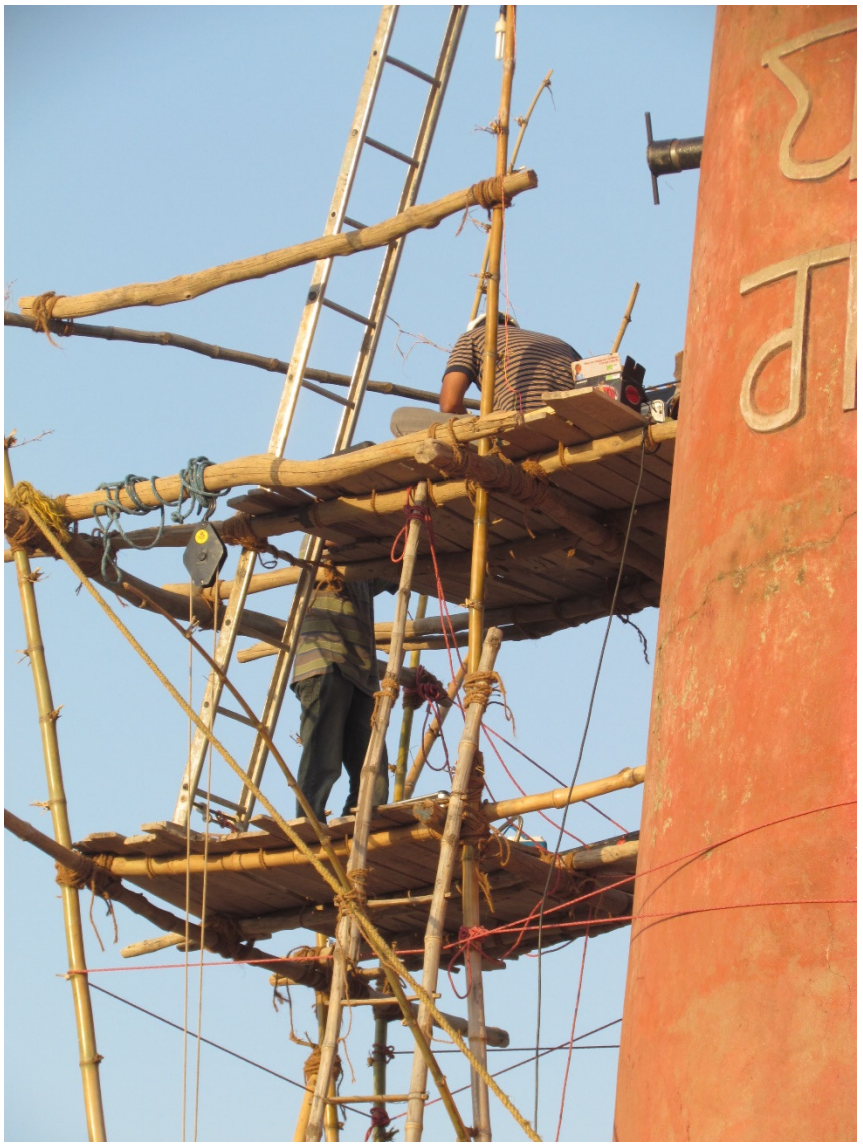
- Absence of power supply or reliable power supply to power the equipment
  - DG set need to be arranged
- Arrangements need to be made for lifting of equipment to the sampling platform
  - Pulley arrangement
- Sealing of port hole



MEASURING VELOCITIES FOR ISO-KINETIC SAMPLING

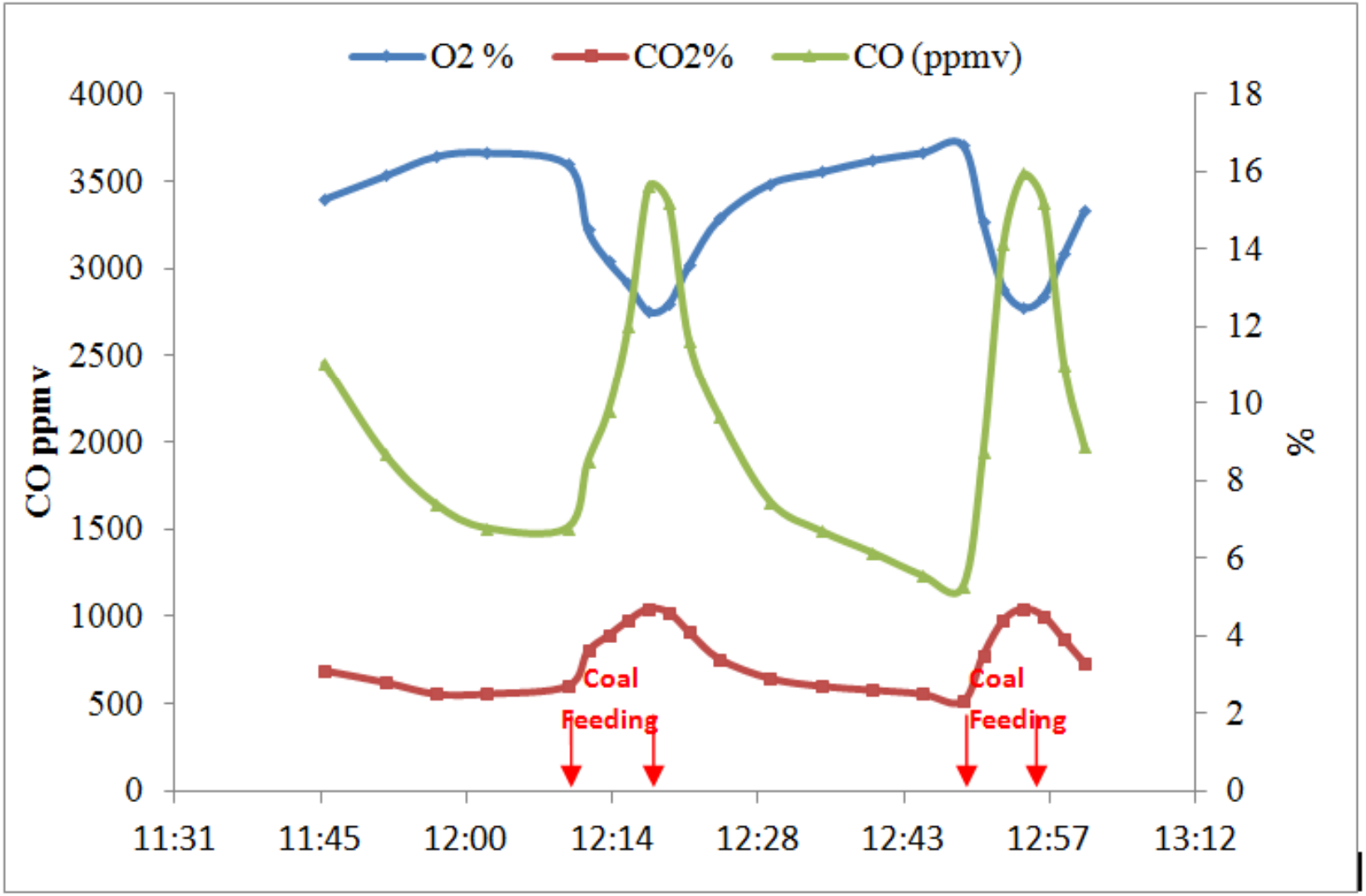
- Difficulty in measuring low velocities
  - Less than 2 m/s

- Traverse points and Number of port holes required
  - Diameter at sampling port > 2 m; ideally 4 port holes required.
  - Practical difficulty in taking measurements at all traverse points.

SAMPLING DURATION

- Intermittent fuel feeding in brick kilns
  - 10-15 minutes of feeding followed by 15-30 minutes of non-feeding
  - Fluctuations in fuel feeding also results in fluctuations in emissions
- Sampling duration should be 45 min to 60 min
  - To capture both feeding and non-feeding periods
  - Too long duration will create difficulties
    - condensation of moisture
    - Increased suction requirement because of dust accumulation on filter

CONCENTRATION OF O_2, CO_2 AND CO OVER 75 MINUTES PERIOD IN A FCBTK



MONITORING OF FUEL FEEDING

- Simultaneous monitoring of fuel feeding also required
  - To keep track of feeding and non-feeding durations during the sampling
  - To track the quantity of fuel fed

LOCATIONS OF SIMULTANEOUS MEASUREMENTS

FLUE GAS ANALYSIS

- Flue gas analysis should be done simultaneously
  - To measure CO_2 composition in flue gases
    - required for normalisation of the measured emission value
  - CO values from the flue gas analysis also give indications about the quality of combustion

FLUE GAS ANALYSER

- It is used to measure the concentration of various components in the flue gas like CO_2, CO, O_2, etc.
- Electrochemical sensors are used for measurement of O_2 and CO concentrations.
- CO_2 concentration is measured by infrared detectors.
- Also has a thermocouple to measures the temperature of flue gas.

THANK YOU !!!

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