

Regional Testing Centers

Nordica MacCarty

Aprovecho Research Center

Gracia Lanza, Zamorano University

Klas Heising, GTZ Bolivia/Peru

ETHOS 2010



Role of Centers

- Center of testing excellence will:
 - Lab testing with Emissions
 - Understanding/interpretation of results
 - Field testing with emissions/IAP
 - *Unbiased*, experienced testers for the region
 - Stove design improvement
 - Well versed in stove performance through testing experiences
 - Understanding of stove design principles
 - Provide certification/validation of local stove implementation projects



Existing Centers

- **Zamorano University, Honduras**
- **GTZ, Bolivia/Peru**
- **Makerere University, Uganda**
- **China Agricultural University, Beijing China**
- **ARECOP, Indonesia**
- **iSquareD, India**
- There are seven other organizations that have equipment/training, but have not yet specifically requested to be identified as regional testing centers.



Support Provided by Aprovecho

- Technical Support for equipment
 - Includes Calibration when needed
- WBT updates
- Stove Design Theory and assistance
- The idea is to empower the local people to invent and evaluation most appropriate solutions
 - So far field-based projects have seen the most quantities distributed, but often the lowest quality stoves! We must take advantage of their unique position.
 - This summer, two technicians from ARECOP will spend the summer at our laboratory learning to test and improve stoves.
- Support is essential to developing capabilities



Standardized Testing

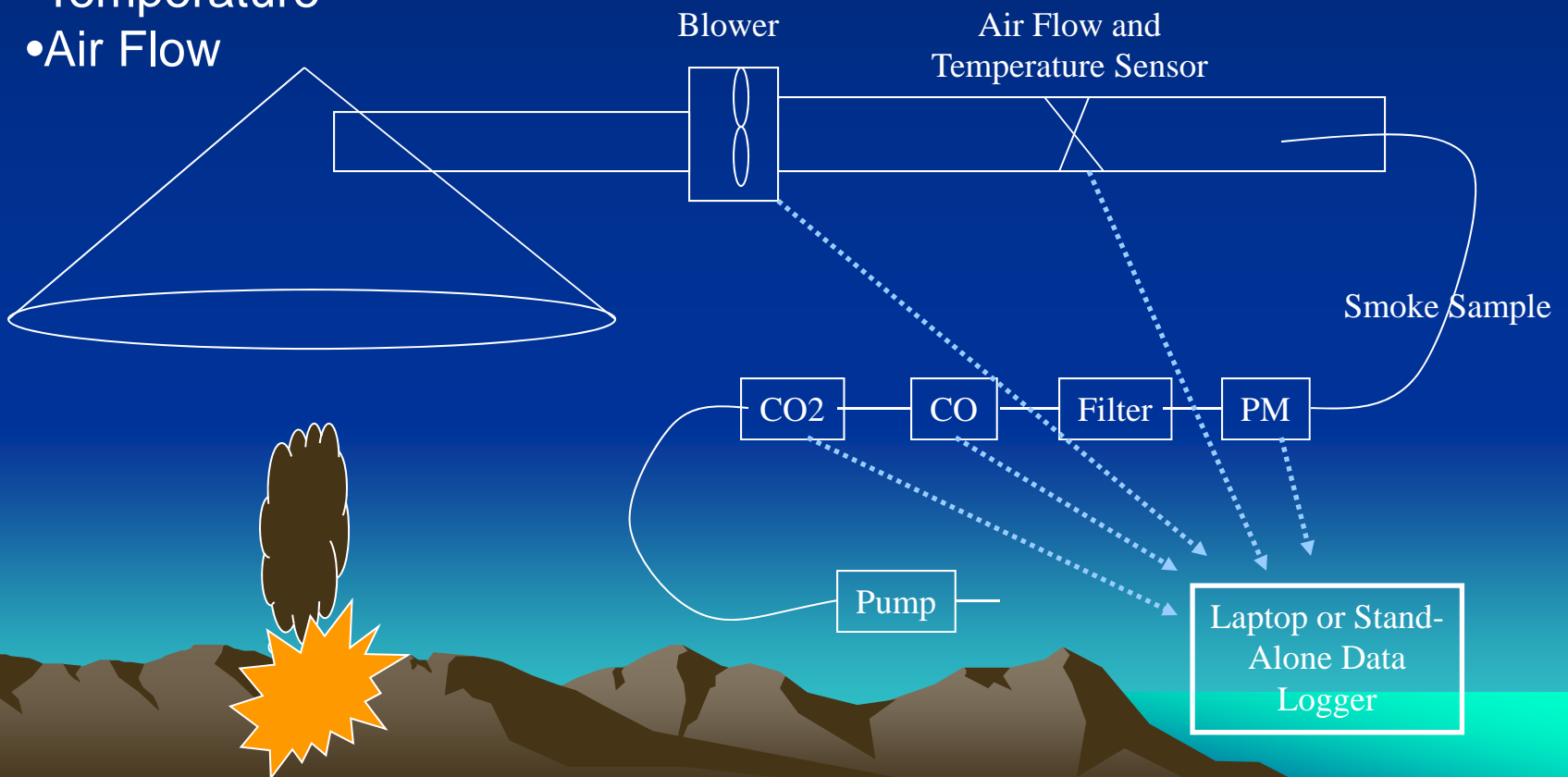
- Standard tests means data is
 - shareable
 - Comparable
 - UNDERSTANDABLE
- WBT 4.0.....
- One can't optimize heat transfer efficiency without measuring combustion efficiency, and vice versa.



PEMS

Collects Smoke in Hood and Measures each second:

- Carbon Monoxide
- Carbon Dioxide
- Particulate Matter 2.5
- Temperature
- Air Flow



Emissions Equipment

- To understand the total emissions from a stove, the emissions must be collected, mixed, cooled, measured, and processed/analyzed in a complete and consistent manner.
- A probe sticking into the exhaust somewhere is simply NOT sufficient.
- PM measurements are the most difficult, yet in many ways the most important!
- Unfortunately no off-the-shelf equipment exists in the proper ranges and species for cookstove measurement
 - Relatively low powered
 - very smoky



Steps to Successful Stoves:

- ✓ Standard testing protocol
- ✓ Emissions equipment
- ✓ Standards/benchmarks
- ✓ Regional testing centers for evaluation and excellence

The necessary pieces are falling into place.



Existing Testing Centers



We are delighted that folks from two of the Regional Testing Centers are here today...

Gracia from Zamorano University in Honduras

Klas from GTZ in Peru and Bolivia