

# Temperature and Heat Flux Distributions Around a Pot

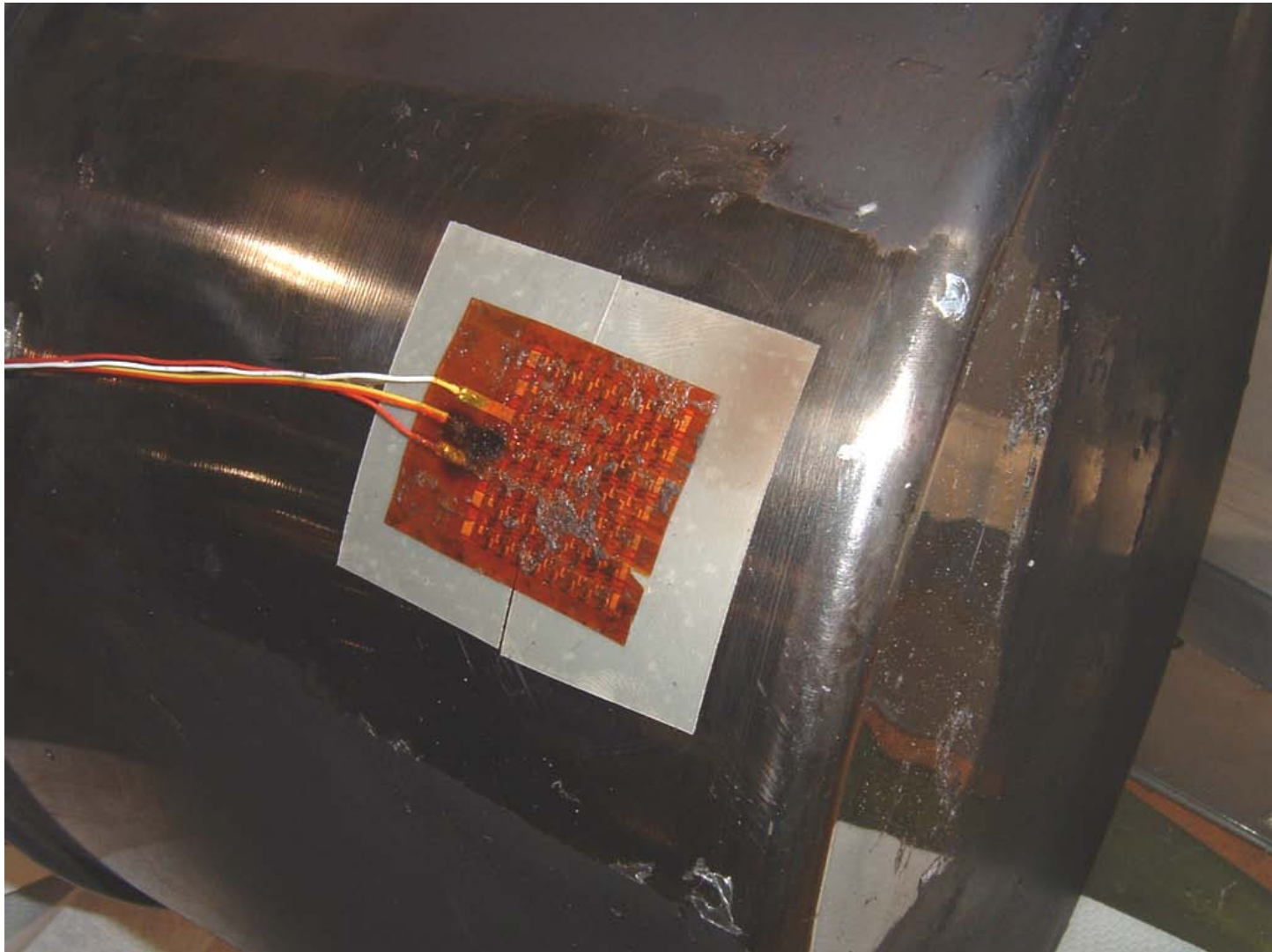
Dale Andreatta, Ph.D., P.E.

- Ultimate goal is to make more efficient stoves.
- Immediate goal is to present the methodology.
- Full paper is available.

Heat flux-flow of heat per unit area ( $q''$ )

- Where? Bottom center, bottom, sides?
- How? Radiation or convection?
- Do skirts help?

# Heat flux sensor from Omega



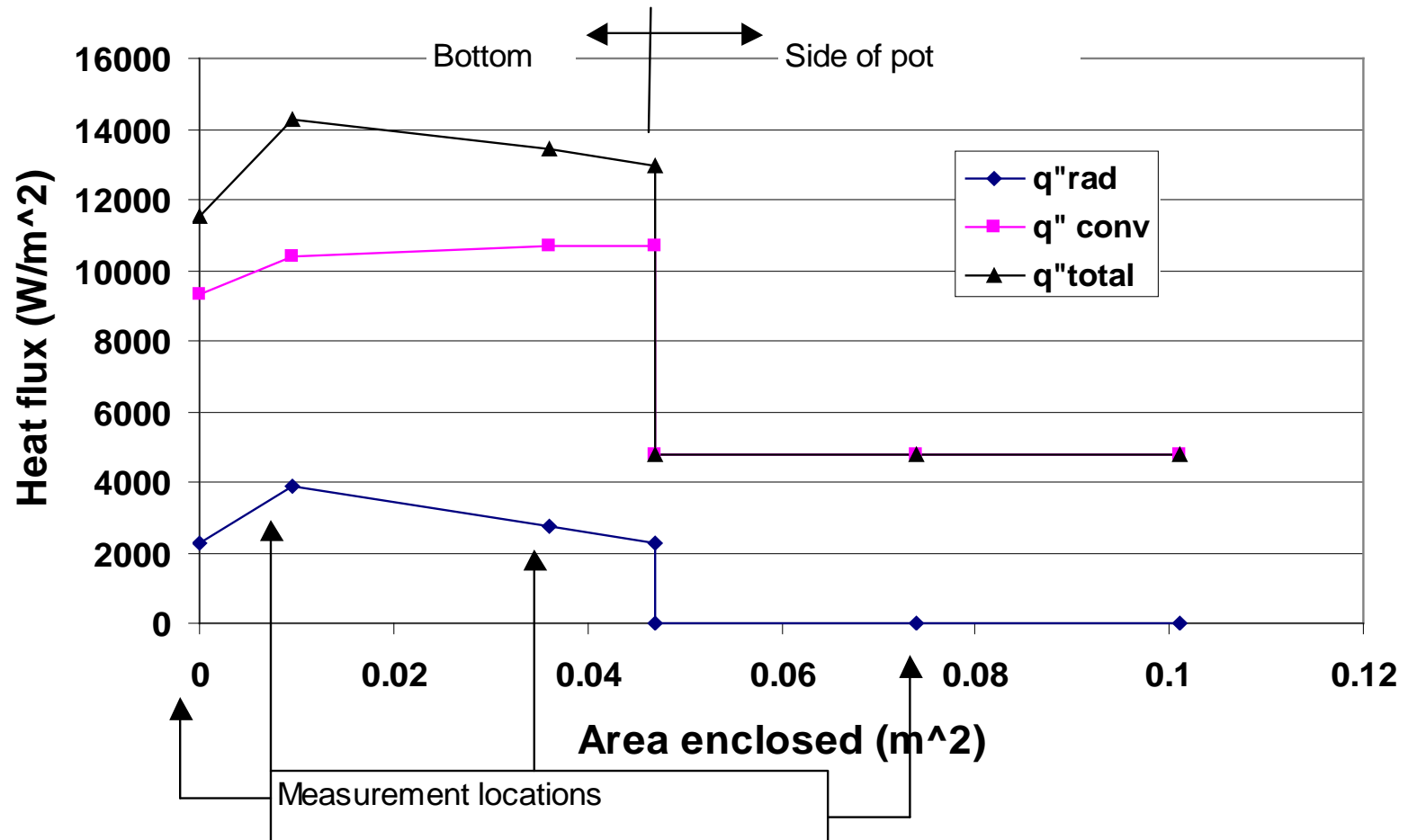
# We can now measure heat flux at various places on a pot

- Flux sensor is fairly inexpensive, about \$130.
- Flux sensor can be attached and detached, within limits.
- Sensor can be covered with silver tape to study effects of radiation and convection separately.

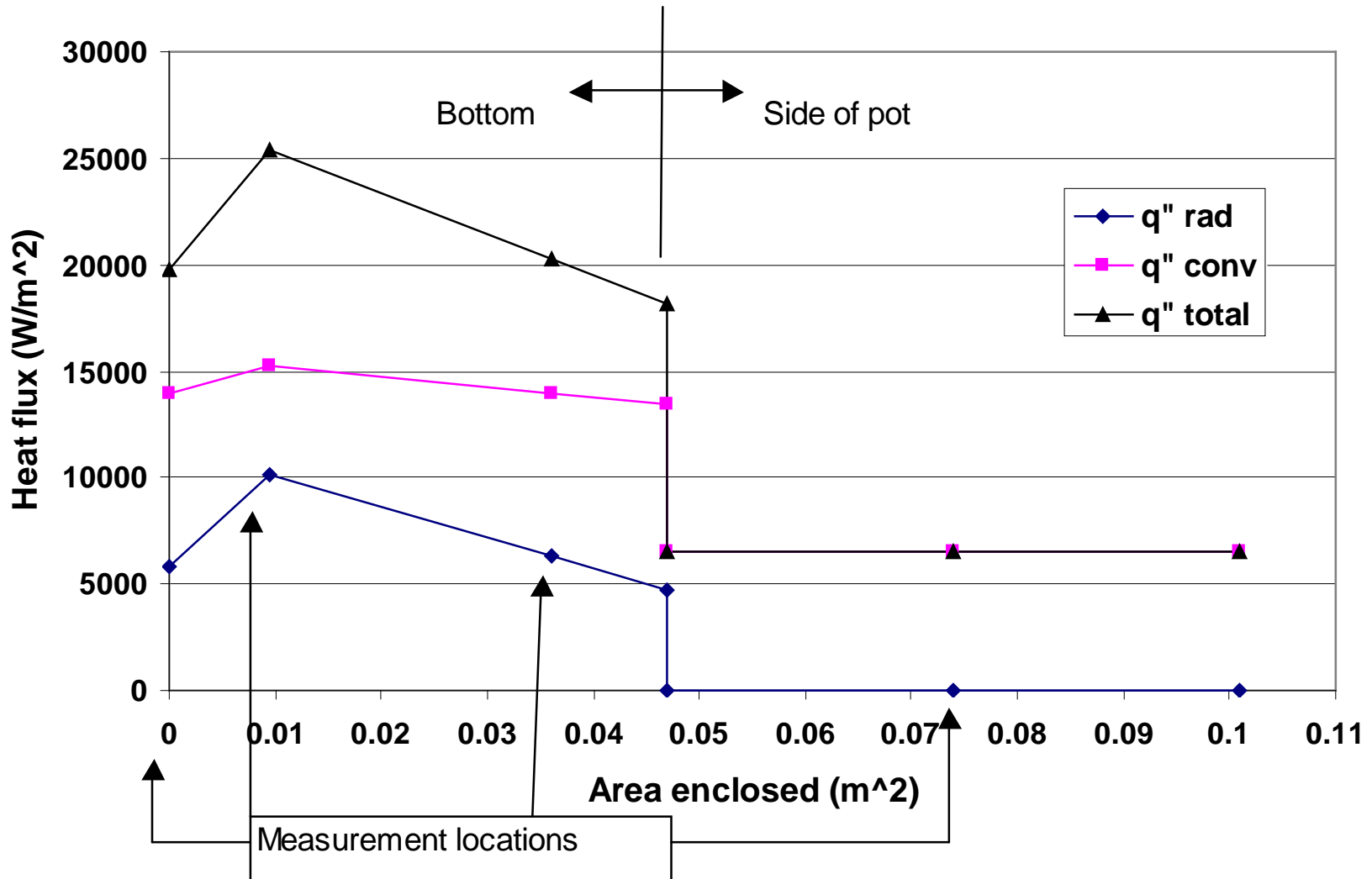
# Flux sensor with tape



# Simulated wood, moderate power, no skirt



# Simulated wood, high power, no skirt





# Limited study of the effectiveness of skirts

- Skirts appear to be very effective in increasing heat transfer.
- This is contrary to some previous findings.

# Summary of Findings

- Heat flux sensor is a good tool for studying heat transfer.
- Under the conditions tested, radiation is important, but convection is the bulk of the heat transfer.
- Under the conditions tested, heat flux is higher on bottom than on side.
- Skirts are very effective.