GAS FIRED, LOW INTENSITY, INFRARED PRODUCTS FOR POULTRY HOUSES

Delmarva Breeder, Hatchery and Grow Out Conference
Salisbury, MD
September 14, 2005
Worldwide Facilities

Quality in Any Language™
History

• Pioneered the Low Intensity industry in 1963 - CORAYVAC®.

• Currently sell in over 45 countries.

Quality in Any Language™
Introducing the New Vantage III Modulating Heater
Why Variable Input Tube Heaters?
Fact: Outside “Design” Conditions Only Occur 1% of the Time

- Match Heater Input to actual chicken house heat load requirements
- Reduce “on / off” cycles of the heater
- Reduce temperature set point “overshoot”
- Maximizing Run times translates into fuel savings
Until Three Years Ago, Roberts-Gordon’s Answer Was A Dual Stage Tube Heater
Sounds Like a Great Idea!

Let’s take a closer look at how it operated.
Maximum Input
Independent Test of Our Dual Stage Type Burner

Thermal efficiency

- Test #1 “Hi fire”: 79.8%
- Test #2 “Low fire”: 77.9%
Radiant Efficiency Tests of the Dual Stage

- Radiant Efficiency test conducted in Hi mode and in Low mode to European standards.
- Radiant efficiency on Low fire was reduced 9.5% versus radiant efficiency on the high fire test.
What Can We Conclude About The Dual Stage Heater?

- Low fire has lower thermal efficiency than Hi fire
- Low fire has reduced fixture efficiency over Hi fire
- When moving from hi fire to low fire, the proper air / fuel ratio for optimal combustion is not maintained
- Simple calculation shows that operating at Low fire for 85% of the heating season will actually increase operating costs
Roberts-Gordon Sets Out To Build
A Better Mouse Trap!

What Does Modulation Mean?

- Input is not limited to either “hi” or “lo”, but can operate over an entire range of input possibilities
- Fuel and air are always in proper balance for maximum combustion efficiency
- Optimum fixture efficiency is maintained
Benefits of True Modulation:

- Fuel Savings – up to 15% over single stage units
Reduces Fuel Usage

- Runs at the Minimum Input Needed to meet demand by monitoring zone air temperatures vs. temperature setpoint and modulating burner input accordingly.
- Eliminates temperature setpoint overshoot, reducing energy waste of overheating the space and frequent cycling.
- Maximizes run times of the heater.
- Proper Fuel / Air Ratio and Fixture Efficiency is always maintained!
Benefits of True Modulation:

- Maximized Comfort
Comfort

- **Precision Control**: True modulation offers a full range of possible inputs. Burner input is tightly controlled to match heat demand with precision.

- **Adjusts Heater Intensity** to improve comfort through low, moderate and high heat demand conditions.

- **Longer cycles** promote more consistent Mean Radiant Temperature (MRT).
Design Considerations

- **Heat Loss**
  Must replace the heat being lost by the poultry house through transmission and ventilation

- **Distribution**
  Must Heat Floor Evenly to Increase MRT building a sufficient “charge” of heat that can be exchanged with its surroundings

- **Evenness**
  Gentle Radiant Field from Multiple Directions
Control and Zoning Capability

• Can be controlled by thermostat or poultry house controllers
• Heaters can be zoned separately or together
• Does not require additional wiring and relays for operation
SENSOR PLACEMENT

Sensor placement remains the same as with single stage units...half way down the emitter tube and over the feed line.
PRODUCT FEATURES
Vantage III Modulating
Modulating Vantage III - Details

Inputs – Low fire 60% of Maximum

- 80,000 / 52,000 – 20’
- 115,000 / 75,000 – 30 - 40’
- 150,000 / 100,000 – 40 – 50’
- 200,000 / 130,000 – 50 – 60’
- Natural and L.P. (slightly different on low side)
- Heat Treated Aluminized Tube
Quality, Design, Features

- 16 gauge, epoxy coated burner box is gasketed and sealed
- Blower is placed in the burner box
- Multi compartment burner box to separate “hot” operations from electrical and valve train components for safety and longevity
- Burner has integrated diagnostic capability; solid state ignition
- Heat treated aluminized steel emitter tube used throughout for high corrosion resistance. Porcelain coated tube optional.
- Stainless steel tube connectors install quickly and without tools
- Advance reflector design with additional supports eliminates tube hot spots and maximizes fixture efficiency
- Reflector end caps are standard, not “optional”
- Heavy chrome plated hangers for long life and safety
Roberts-Gordon
Providing Energy Efficient Comfort for 75 Years
Thank You!