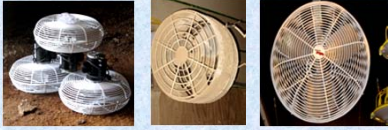




## Circulation Fan Systems



Baskets




Orifice



Paddle

*Jess Campbell - Auburn University  
National Poultry Technology Center*



## Benefits of Using Stir Fans


Type	Fuel Savings	Payback in Fuel
Old House	15 – 25%	1-2 years
New House	5 – 15%	2-3 years

**Grower:**




1. Saves Fuel Energy
2. Improves Environmental Control
3. Better Moisture Removal
4. Improved Litter Quality
5. Healthier Better Performing Bird

**Company:**

1. What Benefits Grower = Company
2. More Efficient Production




## Deciding Factors for Stir Fans







- Type of House
- Brood on End or Center
- Type of Stir Fan
- Aggressive or Gentle or Both
- Operation
- Type of Heat
- Compromise Between:
  - Right, Live With & Cheapest

3





## Vent Door Smoke

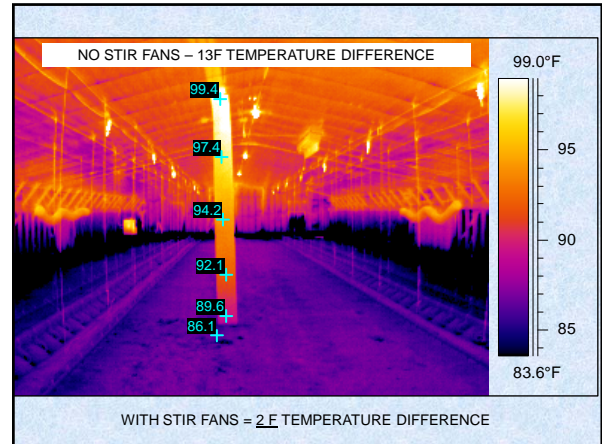



## Brooder Video-Heat Rises




## Furnace Video – Heat Rises



- ### Calculating Stir Fans
- General Idea is About 10-15% of Total Air in House =  $40 \times 500 = 20,000 \text{ ft}^2 \times 9.5 = 190,000 \text{ ft}^3 \times 10\% = 19,000 \text{ cfm}$  of Stir Fan Capacity
  - Smoke It and See What You Think
  - Use a Measurement
  - Guess
- NPTC  
National Poultry  
Technology Center  
MISSOURI STATE UNIVERSITY

### 40 x 500 w/ 18-20" Basket Fans

- $40 \times 500 = 20,000 \text{ ft}^2 \times 9.5 = 190,000 \text{ ft}^3$
- $190,000 \text{ ft}^3 \times 10\% = 19,000 \text{ ft}^3$  of air

50' ← 50' → 50' → 50' → 50' Brooding Chamber	60' → 60' → 60' → 60' Off End
---	----------------------------------

- $19,000 \text{ ft}^3 / 2,500 \text{ cfm fan} = 7.6 \text{ fans}$  or **8**
- Alternate Spacing/Arrangement Acceptable

NPTC  
National Poultry  
Technology Center  
MISSOURI STATE UNIVERSITY

### 40 x 500 w/ 18-20" Basket Fans

- Example Layout Using Only **6** Fans

65' ← 65' → 55' → 65' Brooding Chamber	10' → 80' → 80' → 80' Off End
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National Poultry  
Technology Center  
MISSOURI STATE UNIVERSITY

### 40 x 500 w/ 18-20" Basket Fans

- $40 \times 500 = 20,000 \text{ ft}^2 \times 9.5 = 190,000 \text{ ft}^3$
- $190,000 \text{ ft}^3 \times 10\% = 19,000 \text{ ft}^3$  of air

- $19,000 \text{ ft}^3 / 2,500 \text{ cfm fan} = 7.6 \text{ fans}$  or **8**
- Alternate Spacing/Arrangement Acceptable

NPTC National Poultry Technology Center

### 50 x 500 w/ 18-20" Basket Fans

- $50 \times 500 = 25,000 \text{ ft}^2 \times 9.5 = 237,500 \text{ ft}^3$
- $237,500 \text{ ft}^3 \times 10\% = 23,750 \text{ ft}^3$  of air

- $23,750 \text{ ft}^3 / 2,500 \text{ cfm fan} = 9.5 \text{ fans}$  or **10**
- Alternate Spacing/Arrangement Acceptable

NPTC National Poultry Technology Center

### 66 x 600 w/ 18-20" Basket Fan

- $66 \times 600 = 39,600 \text{ ft}^2 \times 9.5 = 376,200 \text{ ft}^3$
- $376,200 \text{ ft}^3 \times 10\% = 37,620 \text{ ft}^3$  of air

- $37,620 \text{ ft}^3 / 2,500 \text{ cfm fan} = 15 \text{ fans}$  or **16**
- Alternate Spacing/Arrangement Acceptable

NPTC National Poultry Technology Center

### 66 x 600 w/ 18-20" Basket Fans

- $66 \times 600 = 39,600 \text{ ft}^2 \times 9.5 = 376,200 \text{ ft}^3$
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NPTC National Poultry Technology Center

### 66 x 600 w/ 18-20" Basket Fan

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- $37,620 \text{ ft}^3 / 2,500 \text{ cfm fan} = 15 \text{ fans}$  or **16**
- Alternate Spacing/Arrangement Acceptable

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### 24" Orifice Fan Video

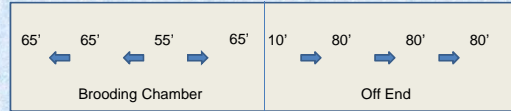
NPTC National Poultry Technology Center

### 24" Orifice Fan Blowing Horizontal



### 40 x 500 w/ 24" Orifice Fans

- $40 \times 500 = 20,000 \text{ ft}^2 \times 9.5 = 190,000 \text{ ft}^3$
- $190,000 \text{ ft}^3 \times 15\% = 28,500 \text{ ft}^3$  of air

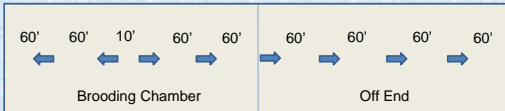


- $28,500 \text{ ft}^3 / 5,000 \text{ cfm fan} = 5.7$  fans or 6
- MUST BE ON VARIABLE SPEED
- Alternate Spacing/Arrangement Acceptable



### 54 x 500 w/ 24" Orifice Fans

- $54 \times 500 = 27,000 \text{ ft}^2 \times 9.5 = 256,500 \text{ ft}^3$
- $256,500 \text{ ft}^3 \times 15\% = 38,475 \text{ ft}^3$  of air

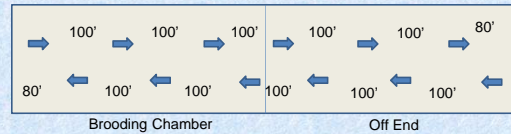


- $38,475 \text{ ft}^3 / 5,000 \text{ cfm fan} = 7.7$  fans or 8
- MUST BE ON VARIABLE SPEED
- Alternate Spacing/Arrangement Acceptable



### 66 x 600 w/ 24" Orifice Fans

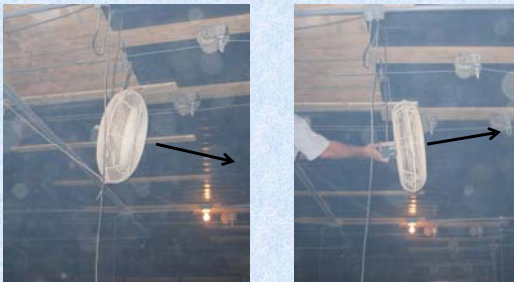
- $66 \times 600 = 39,600 \text{ ft}^2 \times 9.5 = 376,200 \text{ ft}^3$
- $376,200 \text{ ft}^3 \times 15\% = 56,430 \text{ ft}^3$  of air



- $56,430 \text{ ft}^3 / 5,000 \text{ cfm fan} = 11.3$  fans or 12
- MUST BE ON VARIABLE SPEED
- Alternate Spacing/Arrangement Acceptable



### Install Tilted Toward Ceiling



23

### High Ceiling with Paddle Fan Blowing Down

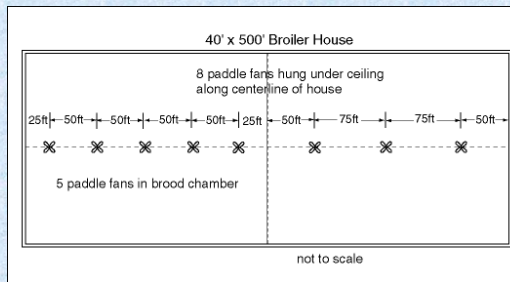


24

### Dropped Ceiling with Paddle Fan Blowing Down



### Typical Paddle Fan Layout

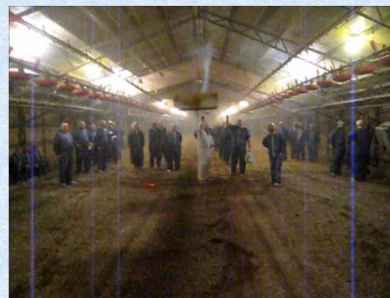


### Low Ceiling Paddle Fan Blowing Up



27

### 36" Panel Fan in High Ceiling



28

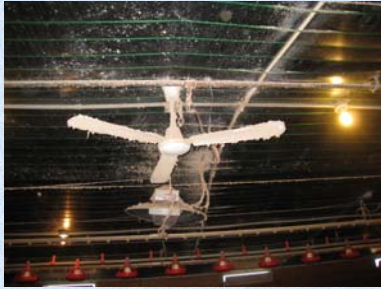
### The Effect of Recirculation Fans in a Tight House



### Wet Litter vs. Dry Litter



## Having Fans and Not Using Them?



## Stir Fan System Summary

- High Priority on Any Checklist
- Proven to be A Quick Payback Technology
- There is a Fan for Every House
- Variety in Installation & Operation
- Troubleshooting
- Standard Program – Test Before Install
- Win/Win/Win = Grower, Company & Birds

## Thank You

← *Questions & Comments?*



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