

Four Strategies to Reduce Energy Costs



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Strategy # 1 - Fuel Savings using SimpleShed Technology

- Principles of SimpleShed
- Equipment
- Operation
 - SimpleShed Threshold
 - Time Delay
- Standby Mode



Moisture Mirror II



14-Series Heater Cabinet



Initial Testing – January 2006



Idalou Coop - Idalou, TX

Moisture Mirror II controlling 2 – 8-Million Btu Heaters with SimpleShed

	December 2005	January 2006	Difference
Rainfall	0"	0"	0
Average Temperature	42° F	48° F	6° F ↑
Bales	14,278	15,968	1,690 (12%) ↑
Fuel Use	3,406 MCF	2,472 MCF	934 MCF (27%) ↓
Fuel Cost	\$12.21/MCF	\$8.36/MCF	\$3.85/MCF (32%) ↓
Fuel Bill	\$41,587	\$20,665	\$20,922 (50%) ↓

SimpleShed Strategy – Staging Heaters for Optimal Drying and Fuel Use

Moisture Mirror II



SimpleShed Disabled
115% Heater Bank



Module
Feeder

8% Shed Threshold
1 minute delay
110% Heater Bank



First
Stage
Dryer

12% Shed Threshold
1 minute delay
95% Heater Bank



Second
Stage
Dryer

Strategy # 2

Using a Steamroller for Efficient Moisture Restoration

Moist Air Applicator Efficiency:

1. Air Volume Requirements
2. Effective Moisture Restoration

Air Volume Requirements

- Lint Slide Grid = 2,000 CFM
- Steamroller = 2,400 CFM
(20% > Lint Slide Grid)
- moisture condenser = 3,500 CFM
(45% > Steamroller; 75% > Lint Slide Grid)

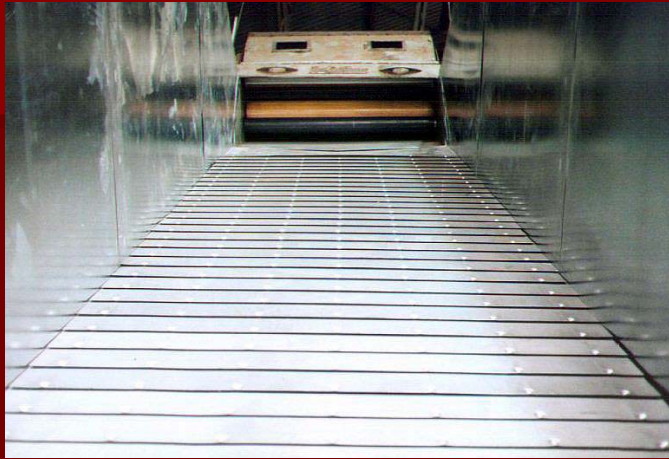
MORE AIR = MORE BTUS = MORE FUEL

50% = ~ 50% = ~ 50%
(Approximate Linear Relationship)



Effective Moisture Restoration

Lint Slide Grid – 8 pounds/bale



Steamroller – 20 pounds/bale



Moisture Condenser – 10 pounds/bale



Air, Moisture, and Energy

Cotton Ginning Moist Air Applicator Comparison



Typical Moist Air Volume
(CFM)

Typical Maximum Moisture
Restoration Capability
(pounds of moisture per bale)

Typical Energy Consumed
in 40 BPH Gin
(BTU per pound of moisture)

Lint Slide Grid
Low cost applicator
No batt compression

2,000

8

3,125
(4 cents/pound)**

Moisture Condenser*
Low cost applicator
Good batt compression

3,500

10

5,000
(6.4 cents/pound)**

Steamroller*
Most efficient applicator
Best batt compression

2,400

20

1,625
(2 cents/pound)**

*Moisture Condensers and Steamrollers are often used with an independent heater which will consume additional fuel, particularly in cold conditions.
**Using natural gas at a cost of \$1.29/therm. 1 therm = 1CCF

Strategy # 3

Moisture Tunnel Technology – Increased Performance, Increased Efficiency

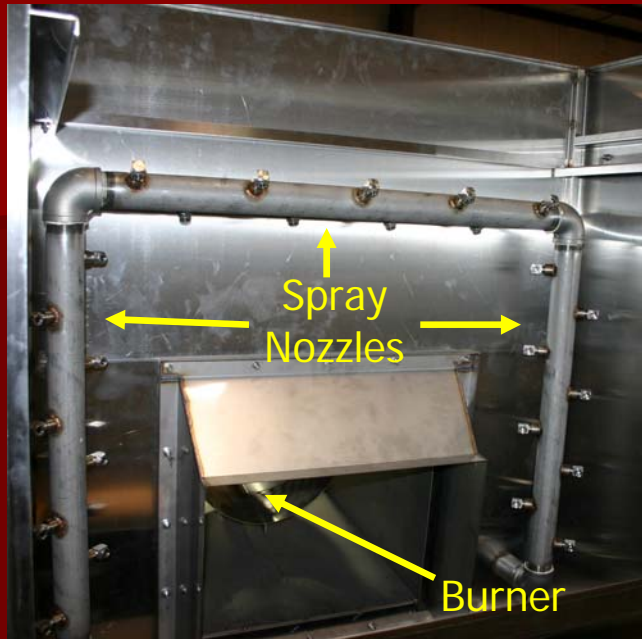


Southwest Lite – 2006

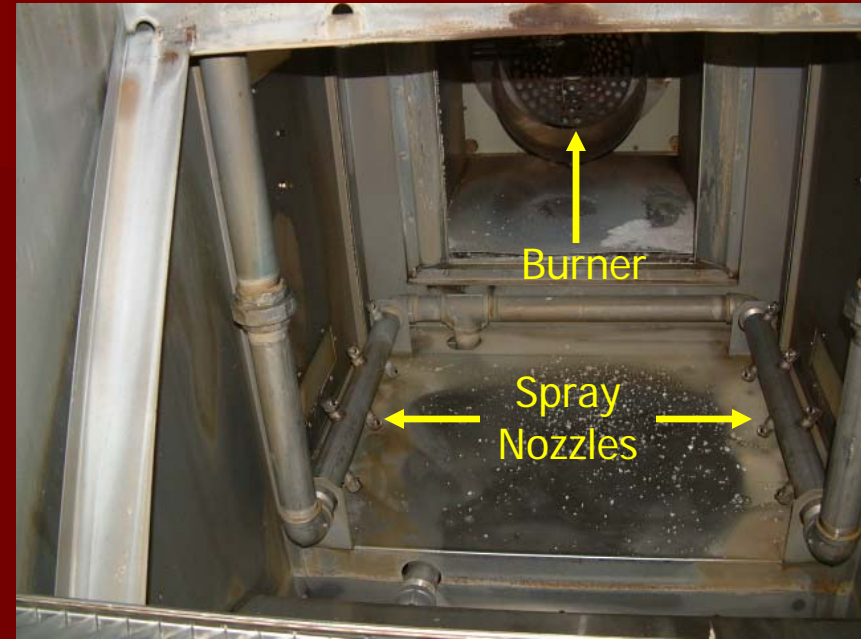


The Southwest - 2004

Southwest Lite



Southwest



Moisture Tunnel Technology

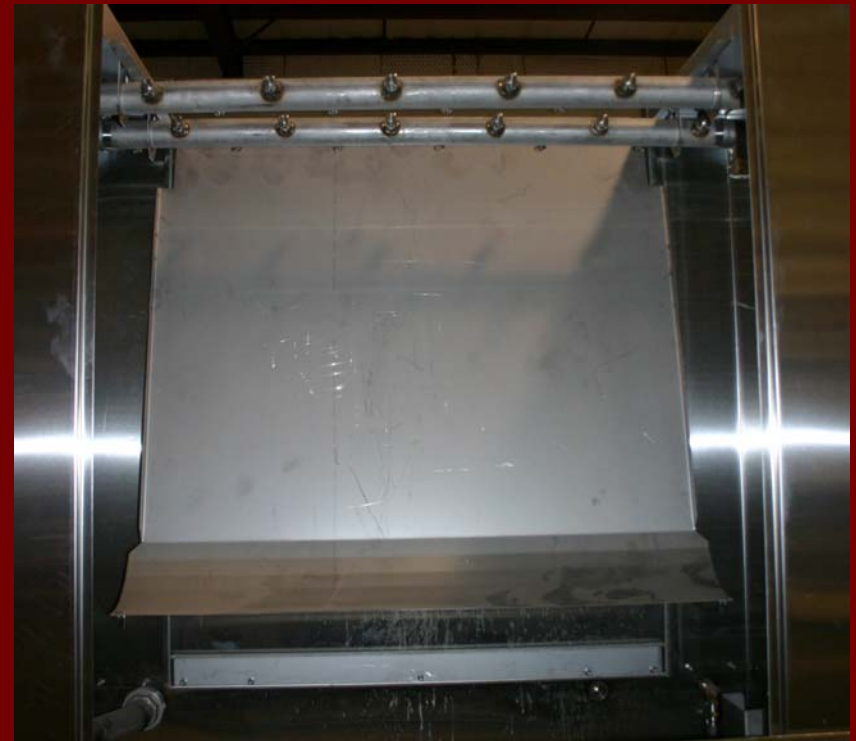
- Direct fire and water interaction
- Capable of evaporating 3 (Lite) to 4 (Southwest) gallons of water per minute
- Increased fuel efficiency – 10%
- Improved turn-down – air and water temperature differential

Classic Humidaire Unit

HU-60-1455



Capable of evaporating
2 gallons of water per minute.



Spray Chamber
with Air Deflector Sheet

Strategy # 4

Fuel Savings Features of the Moisture Mirror II and III

Mirror I



2001

Mirror II



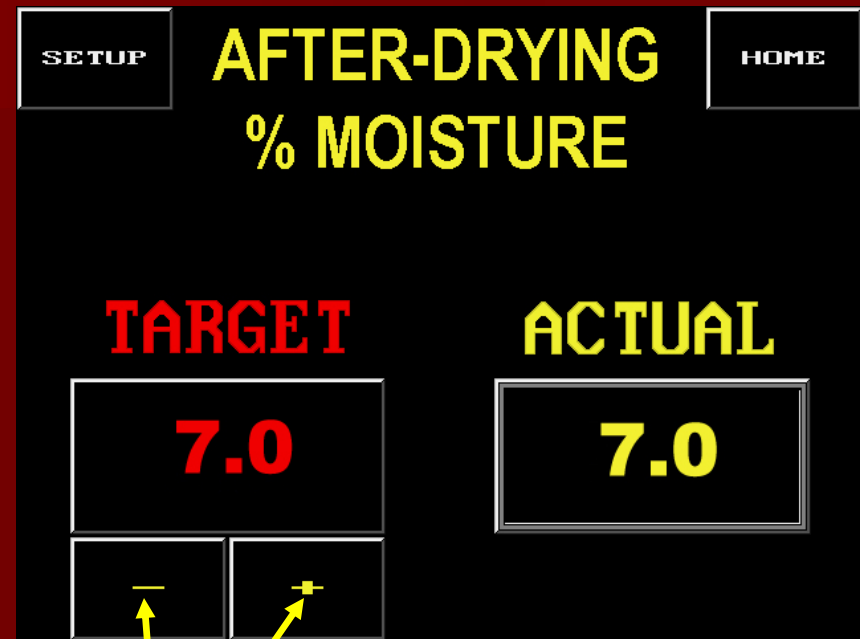
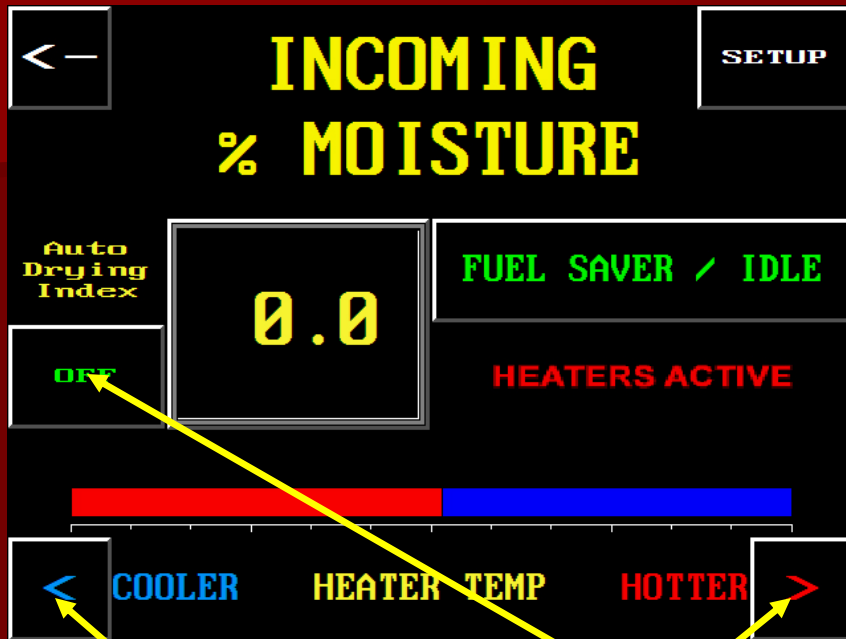
2004

Mirror III



2006

Auto-Drying Index



Drying-Index Adjustment

Auto Drying-Index (Moisture Mirror II)

Auto-Idle Feature

<— **AUTO IDLE THE HEATERS WHEN:**

External input on for seconds **NO**

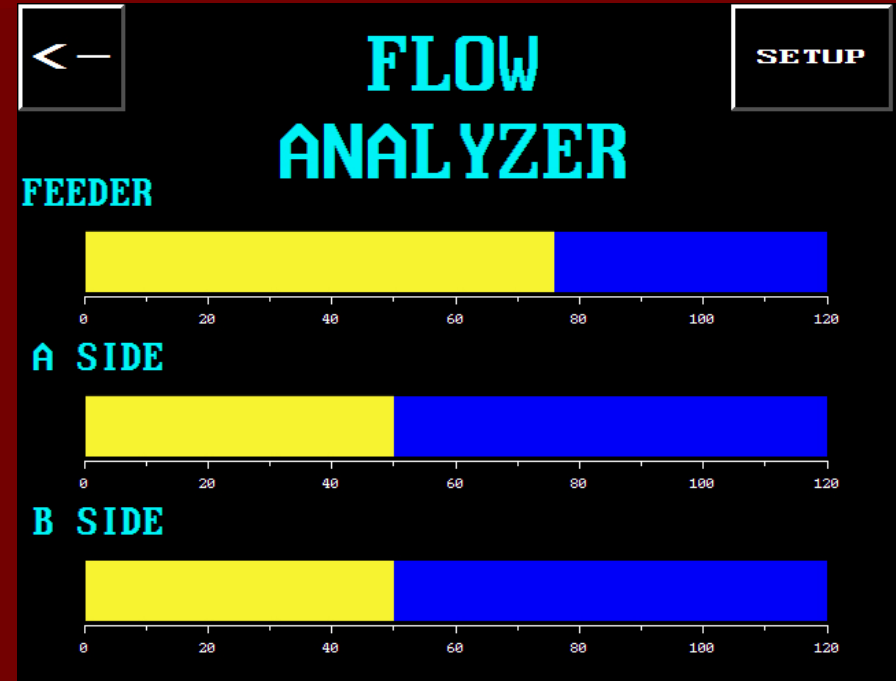
Feeder load is below: % for seconds **YES**

OR

Side A load is below: % for seconds **YES**

OR

Side B load is below: % for seconds **YES**



- Equipment Requirements
- Set parameters
- Idle, resume

Conclusion

- Challenges in Ginning
- Embrace Technology
- Energy Consumption
- Challenge

