

# *Getting Hot With Insect Pests*

**Ole Dosland**

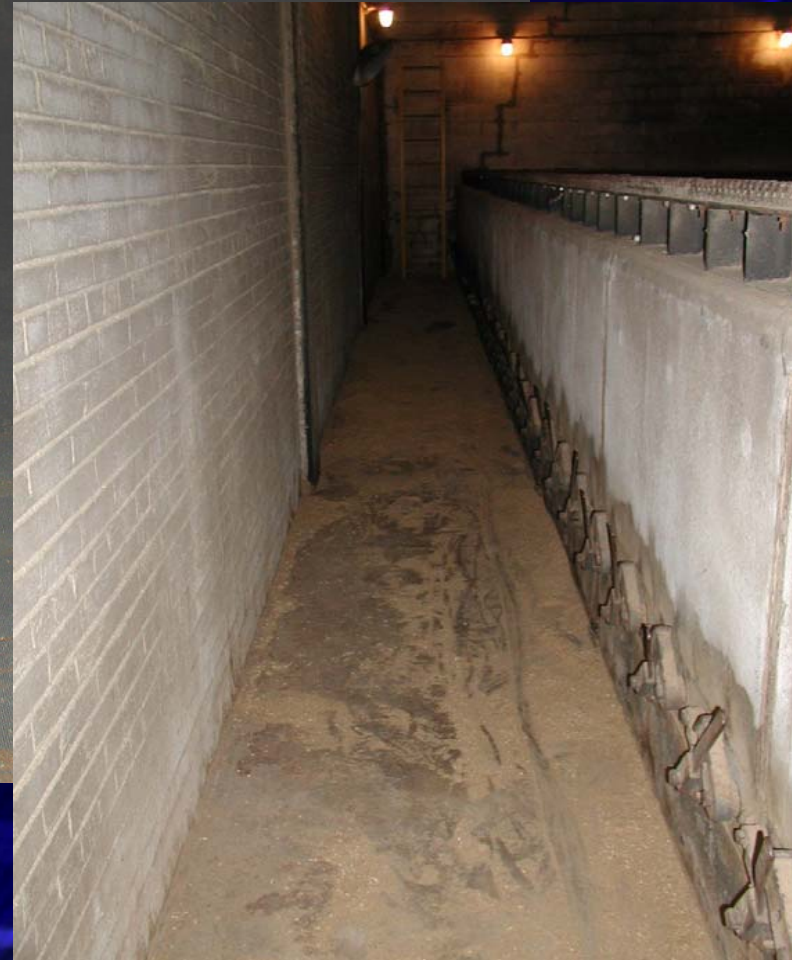
**Director of Technical Training**

**& E-Learning**

# The Place

"BETTER BEER STARTS HERE"





## The Challenge





**The Heat Source**



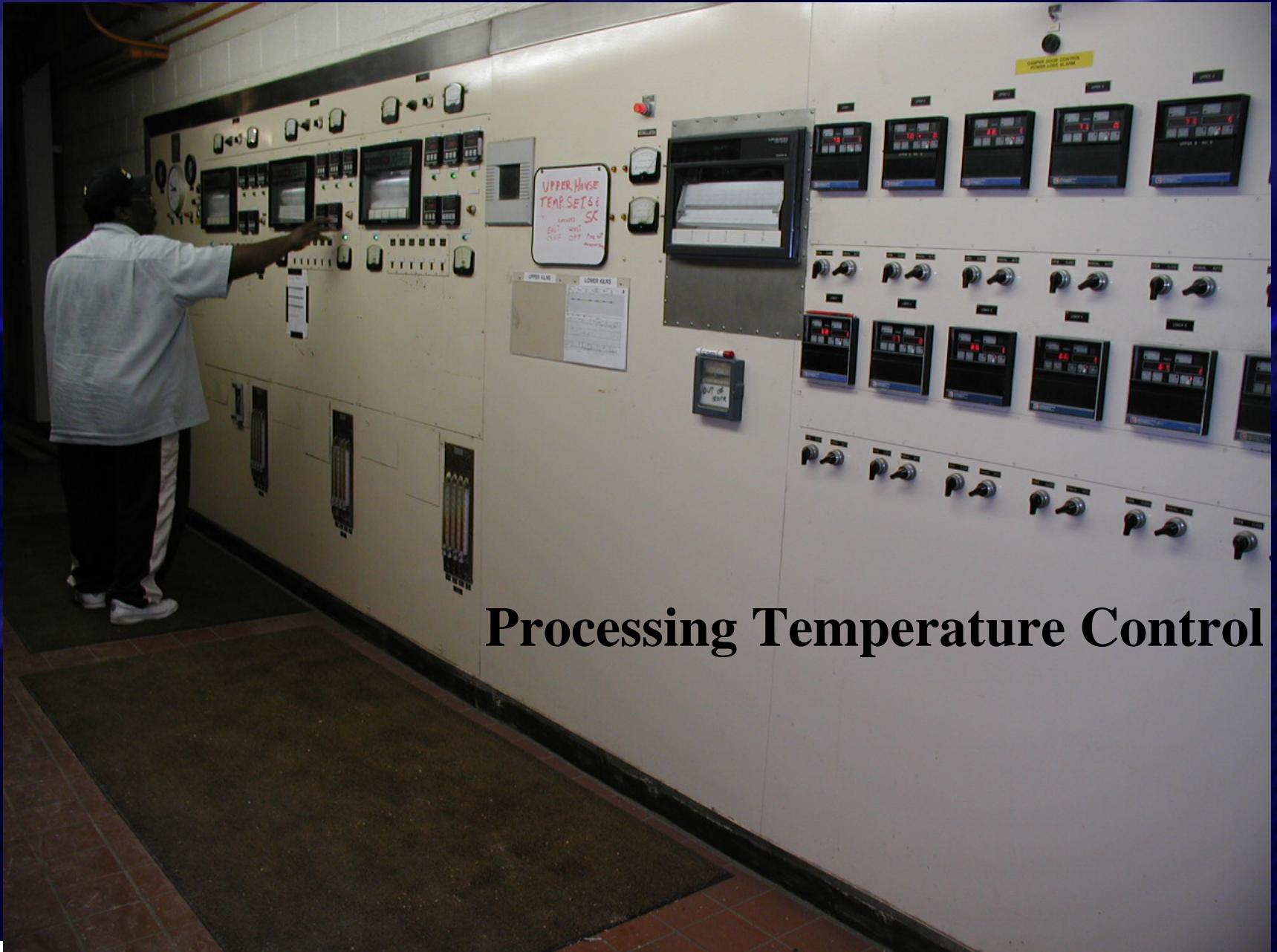


## Processing Air Distribution









## Processing Temperature Control



# Creative Air Distribution











**The Weak Link ?**







# Power Distribution & Thermocouple Lines





# Multiple Temperature Monitoring



- **Processing Thermocouple Remote**
- **Copesan Laser Surface**
- **Copesan Laser Probe / Electro-thermo Digital Probe**
- **Copesan Air Temperature & Humidity**





**The Day Shift**



## Research for Paper



“Data Rich -  
Information Poor”





# Command Central





**This Is Hard Work!**







**Heat Treatments Are  
Like A Marathon.**

**Pace Yourself.**



# 98% Of Test Insects Are Dead





# *In-House Heat Treatment*

## Heat Treatment Time Line

- **Set-up 5 Hours Starting Noon Sunday**
- **Heat Turned On 3 PM Sunday**
- **Monitoring Started 5 PM Sunday**
  - Temps at 120 Degrees F.
- **Heat Turned Off 1 PM Monday**
- **Cool Down Started 3 PM Monday**
  - Open doors and remove air movers, fans, test cages, power/thermocouple lines, etc.
- **Final Monitoring & Depart Premises (5:30 PM)**



# ***In-House Heat Treatment***

## **Some More Facts**

- **3 Planning Meetings & 1 Post Meeting**
- **Over 602,640 Cubic Feet Kilns Heated**
  - **Theoretically Times Four For Grand Total**
- **Over 50 Air Movers**
  - **Over 25 Extension Cords & Junction Boxes**
- **600 Insects In Test Cages**
- **10 Copesan Individuals Involved**



# **In-House Heat Treatment**

## **More Facts**

- **>1,000 Laser Surface Temps. Recorded**
- **> 130 Lower Probe Concrete Temps. Recorded**
- **> 3,000 Temperature & RH Data Logged**
- **> 33,000 Upper Thermocouple Temps. Taken**
- **Numerous Other Temps. Not Recorded**
  - **Cool Zone Challenges**
- **> 100 Relative Humidity Measurements**



# **In-House Heat Treatment**

## **What Is The Heat Treatment Cost?**

If one was able to fumigate this space with methyl bromide, it may cost over \$40,000.

The cost to do this heat treatment was less than \$20,000.



# *In-House Heat Treatment*

## The Mission

- **“Roast My Bugs With My Heat”**
  - 120 – 140 Degrees F.
  - 16 - 24 Hours

## The Result

- **A Big Bug Roast**
  - 120 – 140 Degrees F.
  - 22 - 24 Hours
  - (5 PM Sunday – 5 PM Monday)
  - The Bugs Are Dead





# Mission Accomplished!

