NATIONAL TAB
INTELLIGENCE

1329 E Kemper Rd
Suite 4210
Cincinnati, OH 45246
[855] 682 6822

Field Engineer: Ryan Smith
JOB: Pop up Bagels Evaluation
338 Columbus Ave, New York, NY 10023

FIELD ENGINEER REPORT

Facility & Daily Activity

Space is a small operational bagel facility with hard ceiling & exposed ductwork. It consists of a 1st floor area with a 10-ton indoor hanging Air Handler (HVAC) unit. The unit looks like they have exposed duct with diffusers. It also has an outside air inline supply fan that brings OA air into the unit via exterior louver. There is also an exhaust fan (EF1) that is hanging indoors in space. It has a charcoal filter system before it to help remove odor from the exhaust air before it exits the building via louver. The exhaust has a hood over the boiling pots and a grille over the ovens. The ovens also have upward exhausting cap hoods. Finally, there are two (2) small inline bathroom exhaust fans, one in each bathroom, that exhaust out a small louver.

Their cooking equipment consists of four (4) stacked electric ovens (in a 2X2 configuration) & three (3) electric induction burners that they set pots on top for boiling water. Their cooking process consists of setting frozen bagels out on racks to thaw and proof. The bagels are then boiled over the induction burners. The pots on the induction burners boil continuously throughout the day, creating steam. Once the boiling process is done, they top the bagels & then put them in the electric oven. The electric ovens radiate heat through their viewing windows, and release heat and steam when opened. The ovens also create some odors. The cooking process runs continuously throughout the day. The store is an order & take-out facility with zero (0) official seating for customers, just a few standing tables inside and outside the store.

The staff has complaints of high heat and condensation in the space. During the summer, the interior temperature of the store is frequently higher than the outdoor air temperature. Even on cold winter days, interior air temperature approaches 90 degrees Fahrenheit. In addition, condensation drips down from the AHU onto the boiler and oven area of the store in great enough quantities to require buckets and rags to be laid out.

Findings

<u>Pictures</u>
Photos have been attached below to capture the following information.

- Storefront appearance
- Layout of main cooking area
- Condition of AHU, exhaust fan, and OA fan
- Location of Thermostat

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- Condition of area above ovens & boil pots
- Location and condition of outdoor louvers
- Layout and specifications of circuit breaker panels

Employee Complaints

- Very hot in the summer. When it is 90-100F outdoors, they will leave the doors open to cool the store.
- Bakers request a consideration to blow conditioned air into the oven area.
- Significant ice buildup on refrigerant lines.
- Ductwork and AHU refrigerant line drip water depending on the humidity. On a good day it will just drip 2-3x an hour. On a bad day, they will drip continuously as if the roof was leaking during a rain shower. There is a drip tray underneath the AHU to catch water and need to lay towels on the floor and work surfaces in other locations.

Cooking Process

- Bagels are boiled before baking. Boiling pots run continuously all day long, generating constant steam. A significant portion of this steam escapes the hood.
- Ovens continuously radiate heat. Viewing window surface is more than 100F. When the oven doors open, a stream of steam exits in addition to exchanging hot air with the oven interior.
- Videos of cooking steam on Microsoft Teams

Temperature Readings

8:45AM

- Front of house 59.3F
- Back of house (by fridges) 74.5F
- Cellar 76.8F
- Next to ovens 82.5F
- Near boilers 80.3 F
- Outside temp 44.5 F
- Thermostat 87 F

11:45AM

- Front of house 67.5
- Back of house (by fridges) 77
- Cellar 79 F
- Next to ovens 86F
- Near boilers 85F
- Outside temp 50F

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- Thermostat 90 F

4:45AM (after close)
- Front of house 70.8
- Back of house (by fridges) 71
- Cellar 78.7 F
- Next to ovens 81F
- Near boilers 80F
- Outside temp 52F
- Thermostat 84 F

Building Pressure
-0.031”

Airflow & Unit Measurements
Exhaust
- Oven branch 10”X12” 699 cfm
- Trunkline 14”X16” 884 cfm
- Flow hood confirmed boiler hood is 174 cfm
- -1.03" fan suction
- 0.05" fan discharge

AHU
- Amps 2.86, 2.9, 2.97
- Volts 206.6, 207.9, 207.2
- Cabinet door is leaking at top
- MUA static pressure -0.02"
- OA + dining return 943 cfm
- Total supply 18”X24” (16”X22” internal) 2640 cfm
- Fan discharge pressure 0.062"

OA
- Traverse 14x10 300 cfm
- Fan suction -0.223"
- Fan discharge 0.28"
- Based on drilling observation, I think the duct is very dirty

Bathroom Exhausts
- 1st floor: 50 CFM
- Basement: 72 CFM

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Spatial Measurements

- Hard ceiling height is 152”
- AHU:
  - AHU bottom to floor is 114”
  - Bottom of OA duct to floor 123”
  - OA duct is 14”X10”
  - Bottom of supply duct to floor is 123”
  - Supply duct is 24”X18” exterior, internal insulation decreases interior to 22”X16”
- EXH:
  - Boiling pots hood is 48”X60”
  - Oven and hood branches to floor are 100”
  - Oven and hood branches are 12”X10”
  - Main trunkline to floor is 99” which increases to 109” which increases to 114” at outlet
  - Mina trunkline is 16”X14”
- Bathroom exhaust duct to floor is 142” above ovens. The duct then lowers to 114” to go through louver
- See picture below for more store dimensions

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