Report By:

National TAB
1329 E. KEMPER ROAD
SUITE 4210
CINCINNATI, OH 45246

Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 10/09/2023

PROJECT

08-14-23 CULVERS KANSAS CITY, KS REVIVE

1925 Prairie Crossing

Kansas City, KS 66111

Client

MPH Dinning

Project Summary

The summary below provides a quick understanding of our scope of work and general testing procedures. Enclosed in the report is further detail about your building performance including recommendations, asset data, and pictures. Our focus is to work with the trades to remedy any issues or deficiencies during the actual field balancing and not after the balancing has occurred to achieve a positive environment and outcome. The level of success is determined by the availability of the trades, possible parts needed, or time constraints.

RTU's (Roof Top Units)
Each of the RTU's were measured at their terminal devices or via traverse to establish a total flow for that unit. Each RTU was adjusted to within tolerance of the engineer's design flow. Each outlet was then adjusted to within tolerance of the design flow. Outside air was measured by reading the intake air opening with a velocity grid and multiplying by the free area. The outside air damper was adjusted until the airflow was within the design requirements. Any equipment that fell outside of that tolerance is noted throughout the report.

Kitchen Exhaust Hood & Associated Fans
Each kitchen exhaust fan was measured at the hood filter bay utilizing a velocity matrix and a manufacturer's correction factor. Each filter velocity is multiplied by the manufacturer's corrected area. The sum of these readings equals the total flow of the exhaust fans. The total flow of the exhaust was then adjusted to within tolerance of the design flow.

General Exhaust Fans
The general exhaust fans were measured by reading each air device with a flow hood. The total airflow for each fan is equivalent to the sum of these readings. Fan speed was then adjusted so that the airflow was within tolerance of design. Each terminal device was balanced to within tolerance of the design volume using the installed volume dampers. Any equipment that fell outside of this tolerance is noted throughout the report.

Final Building Tests
After completing the test and balance the final building pressure was measured. It was confirmed that the building pressure fell within acceptable tolerances of -0.02" wc to +0.02" wc and that the pressure measurement coincides with the actual and design net airflow. Any deviations from these standards are noted throughout the report.
The hood capture was tested at the perimeter of the hood and the cook top level with the equipment heat on to ensure satisfactory hood capture and containment.

Issue List

- copper lines freezing rtu2
- not wired for humidity control
- pulley seized / loose belt
- RR NOT OPERATIONAL
- rtu 2 low flow
- units not wired for occupancy

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Project Issue Information

Issue Name :	copper lines freezing rtu2		
Description :	Upon inspecting Rtu2, copper lines are freezing		
Created By :	National TAB	**Assigned To :**	National TAB - Sergio Del Toro
Status :	Open		
Originated Date :	09/05/2023 - Sergio Del Toro - National TAB		

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Project Issue Information

Issue Name : not wired for humidity control

Description : Rtus are not wired for humidity control

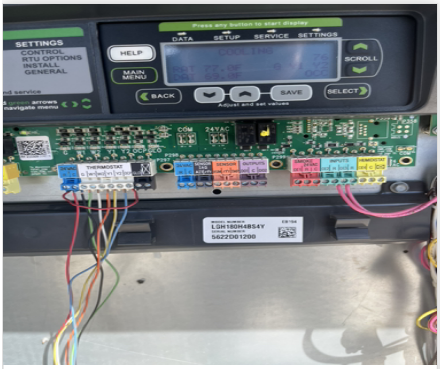
Created By : National TAB

Assigned To : National TAB - Sergio Del Toro

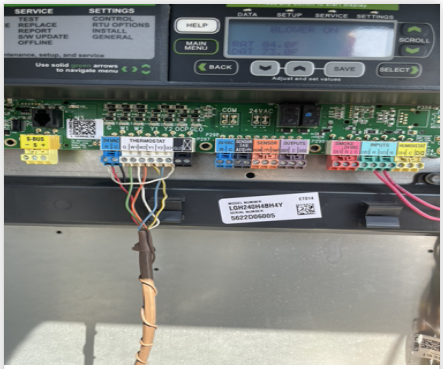
Status : Open

Originated Date : 09/05/2023 - Sergio Del Toro - National TAB

Project Issue File Details



Rtu2(1)
09/05/2023



Rtu1
09/05/2023

HumidityFault
09/05/2023

08-14-23 CULVERS KANSAS CITY, KS REVIVE

Project Issue Information

Issue Name :	pulley seized / loose belt		
Description :	rtu1 pulley are seized and need to be released in order to have unit sped up. also, belt was loose upon inspecting and was tightened.		
Created By :	National TAB	**Assigned To :**	National TAB - Sergio Del Toro
Status :	Open		
Originated Date :	09/05/2023 - Sergio Del Toro - National TAB		

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Project Issue Information

Issue Name :	RR NOT OPERATIONAL		
Description :	RR FANS NOT OPERATIONAL		
Created By :	National TAB	**Assigned To :**	National TAB - Sergio Del Toro
Status :	Open		
Originated Date :	09/05/2023 - Sergio Del Toro - National TAB		

08-14-23 CULVERS KANSAS CITY, KS REVIVE

Project Issue Information

Issue Name :	rtu 2 low flow		
Description :	airflow was increased on rtu2 by opening economizer and having motor pulley open to two turns but unit is still low on flow. recommend pulley change.		
Created By :	National TAB	**Assigned To :**	National TAB - Sergio Del Toro
Status :	Open		
Originated Date :	09/05/2023 - Sergio Del Toro - National TAB		

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Project Issue Information

Issue Name : units not wired for occupancy

Description : economizer on both rtus are not functioning due to unit not showing occupancy. tech jumpered r to ocp on the thermostat strip and has temporarily fixed building pressurization to positive. Need someone to install wiring for occupancy on both units.

Created By : National TAB

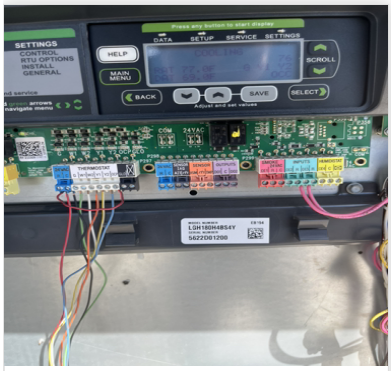
Assigned To : National TAB - Sergio Del Toro

Status : Open

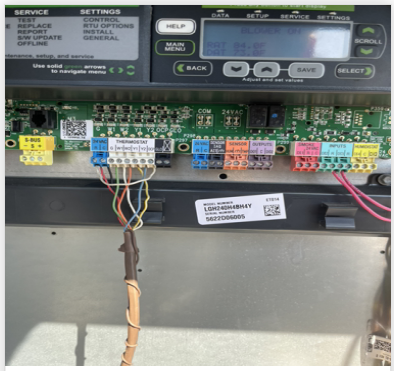
Originated Date : 09/05/2023 - Sergio Del Toro - National TAB

Project Issue Response Details

- **09/05/2023 National TAB - Sergio Del Toro**
  - Pics provided



Rtu2(1)
09/05/2023



Rtu1
09/05/2023

CheckList List

- TECH - STEP 1: INITIAL READINGS
- TECH - STEP 2: INITIAL WALKTHROUGH
- TECH - STEP 3: UNIT DATA AND EVAL
- TECH - STEP 4: TEST, ADJUST AND BALANCE

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CheckList Information

Name :	TECH - STEP 1: INITIAL READINGS	**Status :**	Not Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	08/17/2023 - Wale Odofin - National TAB		

CheckList Item Details

INITIAL BUILDING REVIEW:

What is the initial building pressure before making any changes?

Comment:

-0.04 FRONT -0.03 BACK

Are thermostats programmed?

Comment:

YES

Are building pressure relief working properly?

Comment:

YES

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CheckList Information

Name :	TECH - STEP 2: INITIAL WALKTHROUGH	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	08/17/2023 - Wale Odofin - National TAB		
Completed Date :	09/07/2023 - Sergio Del Toro - National TAB		

CheckList Item Details

INITIAL SITE WALKTHROUGH

All diffusers and grilles are installed and match design?

Comment:

YES

Perforated diffusers are installed on the cook line? (4-ways will disrupt hood capture)

Comment:

YES

All hood filters installed and accounted for?

Comment:

YES

Hoods are wired and have power?

Comment:

YES

Thermostats have power?

Comment:

YES

Have trades/general contractor been notified about any issues and are they created on FaciliBuild?

Comment:

YES

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CheckList Information

Name :	TECH - STEP 3: UNIT DATA AND EVAL	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	08/17/2023 - Wale Odofin - National TAB		
Completed Date :	09/07/2023 - Sergio Del Toro - National TAB		

CheckList Item Details

UNIT DATA AND EVALUATION WHILE GATHERING UNIT DATA CHECK THE FOLLOWING:

RTU's/AHU's

Economizers are assembled and functional?

Comment:

YES

Thermostat wire run from OCP on the RTU to the Ec terminal at the thermostat? If no, jumper can be installed from R to OCP temporarily. (The economizers will not open without OCP being energized.)

Comment:

YES

Motors are all operating below the FLA rating?

Comment:

YES

Are belts tight?

Comment:

YES

If direct drive unit is the speed controller working.

Comment:

YES

Is gas piping installed and valves turned on?

Comment:

YES

Unit free of noticeable noise and vibration

Comment:

YES

EF's

Rotation is correct?

Comment:

YES

Belts are tight?

Comment:

YES

Grease cup installed on hood fan?

Comment:

YES

Hinge kit installed installed on hood fan?

Comment:

YES

Lean grease rated fans back. Is grease duct installation adequate and is duct ran all the way to the base of the fan?

Comment:

YES

Flex conduit is long enough so that fan can be completely tilted back?

Comment:

YES

There is no major leakage around base of fan?

Comment:

YES

Is the motor operating below the motor FLA rating?

Comment:

YES

For restroom fan(s) is the back draft damper installed and can it fully open?

Comment:

YES

Unit free of noticeable noise and vibration?

Comment:

YES

The hood exhaust fans are installed in correct positions and are not switched?

Comment:

YES

HOODS

Kitchen equipment installed in proper places?

Comment:

YES

Can kitchen equipment be turned on for final smoke test?

Comment:

YES

Second stage Grease Grabber filters are installed on the griddle hood?

Comment:

YES

DOCUMENTATION

Have trades/general contractor been notified about any issues and are they created on FaciliBuild?

Comment:

YES

08-14-23 CULVERS KANSAS CITY, KS REVIVE

CheckList Information

Name :	TECH - STEP 4: TEST, ADJUST AND BALANCE	**Status :**	Completed
Assigned Organization :	National TAB	**Asset :**	
Requesting Organization :	National TAB		
Created Date :	08/17/2023 - Wale Odofin - National TAB		
Completed Date :	09/07/2023 - Sergio Del Toro - National TAB		

CheckList Item Details

TEST, ADJUST, AND BALANCE ALL EQUIPMENT:

DURING TESTING MAKE NOTE OF THE FOLLOWING:

Is space free of drafting?

Comment:

YES

Is space comfortable in all areas?

Comment:

YES

Is the space free of ventilation noise?

Comment:

YES

If deviations from design were necessary to resolve 1-3 what were they? Otherwise put "NA".

Comment:

NA

National TAB

Project: 08-14-23 CULVERS KANSAS CITY, KS REVIVE

System/Unit: AHU/RTU

Asset: RTU1 AREA:KITCHEN

Unit Data		
	Design	**Actual**
MFG	NA	LENNOX
Serial Num	-	5622D06005
Model Num	NA	LGH240H4BH4Y
Type	-	RTU
Configuration	-	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	23X13
Num Final Filter 1	-	6
Final Filter Size 1	-	24X24X2

Motor Data		
	Design	**Actual**
Motor MFG	-	US MOTORS
Frame	-	213TZ
Horsepower	-	7.50
Motor Rpm	-	1765
Phase	-	3
Rated Voltage	-	208-230V
Rated Amperage	-	20.40-18.70A

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	6.5"
Motor Bore Size	-	1-1/8"
Motor Sheave SetPt	-	UTO
Fan Sheave Size	-	10.5"
Fan Sheave Bore	-	1-1/8"
Belt CL Distance	-	21.5"
Num of Belts	-	1
Belt Size	-	BX66
Belt Alignment	-	CORRECT

Test Data		
	Design	**Actual**
SF CFM	-	6346
SF RPM	-	998
RA CFM	-	5132
OA CFM	-	1214
RL Voltage	-	210.3/211.8/210.2V
RL Amperage	-	12.2/11.3/12.0A
SF Rotation	-	CORRECT
RA Damper Position	-	71%
Min OA Damper Position	-	29%
Min OA Damper Type	-	OPPOSED BLADE

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.62”
Fan Suction SP	-	-1.03”
Fan Discharge SP	-	0.33
Total ESP	-	0.95"
Fan Total SP	-	1.36"

General		
	Design	**Actual**
Fan Rotation Correct	-	YES
Unit Filters Clean	-	YES
Condensate Drain Installed	-	YES

Completed By: Sergio Del Toro on 09/05/2023

Notes:
TWO TURNS OPEN

Written By: Sergio Del Toro on 09/05/2023

National TAB

Project: 08-14-23 CULVERS KANSAS CITY, KS REVIVE

System/Unit: AHU/RTU

Asset: RTU2 AREA:DINING

Unit Data		
	Design	**Actual**
MFG	NA	LENNOX
Serial Num	-	5622D01200
Model Num	NA	LGH180H4BS4Y
Type	-	RTU
Configuration	-	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	23X13
Num Final Filter 1	-	6
Final Filter Size 1	-	24X24X2

Motor Data		
	Design	**Actual**
Motor MFG	-	INTERLINK
Frame	-	56HZ
Horsepower	-	3
Motor Rpm	-	1750
Phase	-	3
Rated Voltage	-	200-230V
Rated Amperage	-	8.0-7.8A

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	3.5"
Motor Bore Size	-	7/8"
Motor Sheave SetPt	-	2 TURNS OPEN
Fan Sheave Size	-	7"
Fan Sheave Bore	-	1-1/8"
Belt CL Distance	-	20.5"
Num of Belts	-	1
Belt Size	-	BX55
Belt Alignment	-	CORRECT

Test Data		
	Design	**Actual**
SF CFM	-	4941
SF RPM	-	981
RA CFM	-	3776
OA CFM	-	1165
RL Voltage	-	209.8/211.6/209.9V
RL Amperage	-	6.9/7.5/7.4A
SF Rotation	-	CORRECT
RA Damper Position	-	71%
Min OA Damper Position	-	29%
Min OA Damper Type	-	OPPOSED BLADE

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.77”
Fan Suction SP	-	-0.97”
Fan Discharge SP	-	0.36
Total ESP	-	1.13"
Fan Total SP	-	1.33"

General		
	Design	**Actual**
Fan Rotation Correct	-	YES
Unit Filters Clean	-	YES
Condensate Drain Installed	-	YES

Completed By: Sergio Del Toro on 09/07/2023

National TAB

Project: 08-14-23 CULVERS KANSAS CITY, KS REVIVE

System/Unit: FAN - Exhaust

Asset: PRV1 AREA:RESTROOMS

Unit Data		
	Design	**Actual**
MFG	NA	ACCUREX
Model Num	NA	G-095D-D-X
Serial Num	-	10633443
Type	-	DOWNBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	MCMILLAN ELECTRIC
Frame	-	NA
Horsepower	-	1/8
Motor Rpm	-	1550/1300/1050
Phase	-	1
Voltage (rated)	-	115V
Amperage (rated)	-	2.6A
Service Factor	-	NA

Completed By: Sergio Del Toro on 08/17/2023

Notes:
NOT IN OPERATION.

Written By: Sergio Del Toro on 08/17/2023

National TAB

Project: 08-14-23 CULVERS KANSAS CITY, KS REVIVE

System/Unit: FAN - Exhaust

Asset: PRV2 AREA:GRILL

Unit Data		
	Design	**Actual**
MFG	NA	ACCUREX
Model Num	NA	CUBE-161XP-10-6
Serial Num	-	10633442
Type	-	UPBLAST
Configuration	-	CENTRIFUGAL

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	56
Horsepower	-	1
Motor Rpm	-	1725
Phase	-	3
Voltage (rated)	-	208-230V
Amperage (rated)	-	3.40-3.20A
Service Factor	-	1.15

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	3"
Motor Bore Size	-	5/8"
Motor Sheave SetPt	-	UTO
Fan Sheave Size	-	4"
Fan Sheave Bore	-	7/8"
Belt CL Distance	-	6"
Num of Belts	-	1
Belt Size	-	A21

Test Data		
	Design	**Actual**
CFM	-	1377
Fan Rotation	-	CORRECT
RL Voltage	-	NA
RL Amperage	-	NA
Suction ESP	-	-0.74"
Discharge ESP	-	ATM
Total ESP	-	0.74"

Completed By: Sergio Del Toro on 09/05/2023

National TAB

Project: 08-14-23 CULVERS KANSAS CITY, KS REVIVE

System/Unit: FAN - Exhaust

Asset: PRV3 AREA:FRYER

Unit Data		
	Design	**Actual**
MFG	NA	ACCUREX
Model Num	NA	CUBE-161XP-10-6
Serial Num	-	10633440
Type	-	UPBLAST
Configuration	-	CENTRIFUGAL

Motor Data		
	Design	**Actual**
Motor MFG	-	CENTURY
Frame	-	L56H
Horsepower	-	1
Motor Rpm	-	1725
Phase	-	3
Voltage (rated)	-	200-230V
Amperage (rated)	-	3.4-3.6A
Service Factor	-	1.25

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	3"
Motor Bore Size	-	5/8"
Motor Sheave SetPt	-	UTO
Fan Sheave Size	-	4"
Fan Sheave Bore	-	7/8"
Belt CL Distance	-	5.5"
Num of Belts	-	1
Belt Size	-	A21

Test Data		
	Design	**Actual**
CFM	-	1446
Fan Rotation	-	CORRECT
Motor RPM	-	NA
RL Voltage	-	NA
RL Amperage	-	NA
Suction ESP	-	-1.01"
Discharge ESP	-	ATM
Total ESP	-	1.01"

Completed By: Sergio Del Toro on 08/17/2023

National TAB

Project: 08-14-23 CULVERS KANSAS CITY, KS REVIVE

System/Unit: FAN - Exhaust

Asset: PRV4 AREA:DISHWASHER

Unit Data		
	Design	**Actual**
MFG	NA	ACCUREX
Model Num	NA	G-131-B-X
Serial Num	-	10633445
Type	-	DOWNBLAST
Configuration	-	VERTICAL

Test Data		
	Design	**Actual**
CFM	-	172
Fan Rotation	-	CORRECT

Motor Data		
	Design	**Actual**
Motor MFG	-	MARATHON
Frame	-	48
Horsepower	-	1/6
Motor Rpm	-	1140
Phase	-	1
Voltage (rated)	-	115V
Amperage (rated)	-	2.2A
Service Factor	-	1.0

Completed By: Sergio Del Toro on 08/17/2023

National TAB

Project: 08-14-23 CULVERS KANSAS CITY, KS REVIVE

System/Unit: Kitchen Hood Type I

Asset: HD1 AREA:GRILL

Unit Data		
	Design	**Actual**
MFG	NA	ACCUREX
Model Num	NA	UTO
Job / Serial Num	-	UTO
Type	-	TYPE I
Hood length	-	64"
Hood Width	-	23"

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	GREASE GRABBER
Filter Size 1	-	16X16
Filter Qty 1	-	4
Filter AK factor size 1	-	1.53
Filter Total AK Area	-	6.12
Filter1 FPM	-	226
Filter2 FPM	-	236
Filter3 FPM	-	213
Filter4 FPM	-	225
Filter Ave FPM(corr)	-	225
CFM	-	1377

Cooking Equipment		
	Design	**Actual**
Item 1	-	GRILL

Completed By: Sergio Del Toro on 08/17/2023

National TAB

Project: 08-14-23 CULVERS KANSAS CITY, KS REVIVE

System/Unit: Kitchen Hood Type I

Asset: HD2 AREA:DINING

Unit Data		
	Design	**Actual**
MFG	NA	ACCUREX
Model Num	NA	UTO
Job / Serial Num	-	UTO
Type	-	TYPE I
Hood length	-	83"
Hood Width	-	23"

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	GREASE GRABBER
Filter Size 1	-	16X16
Filter Qty 1	-	5
Filter AK factor size 1	-	1.53
Filter Total AK Area	-	7.65
Filter1 FPM	-	195
Filter2 FPM	-	189
Filter3 FPM	-	180
Filter4 FPM	-	192
Filter5 FPM	-	188
Filter Ave FPM(corr)	-	189
CFM	-	1446

Cooking Equipment		
	Design	**Actual**
Item 1	-	FRYER

Completed By: Sergio Del Toro on 08/17/2023

National TAB

Project: 08-14-23 CULVERS KANSAS CITY, KS REVIVE

System/Unit: Kitchen Hood Type II

Asset: HD3 AREA:DISHWASHER

Unit Data		
	Design	**Actual**
MFG	NA	ACCUREX
Model Num	NA	GD3-3.50-S
Serial Num	-	10633694
Type	-	TYPE II
Hood length	-	42"
Hood Width	-	42"

Test Data		
	Design	**Actual**
Exhaust CFM	-	172

Completed By: Sergio Del Toro on 08/17/2023