Report By:

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

Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 08/07/2023

PROJECT

07-24-23 ARBY'S #6422 - COWETA, OK

13589 S HYW 51

COWETA, OK 74429

Client

Flynn Restaurant Group

6200 Oak Tree Boulevard

Suite 250

Independence, OH 44131

Issue List

- RTU-1 airflow is high. Motor sheave is seized.

07-24-23 ARBY'S #6422 - COWETA, OK

Project Issue Information

Issue Name :	RTU-1 airflow is high. Motor sheave is seized.		
Description :	RTU-1 motor pulley is seized and unable to adjust. Airflow is 4768 CFM out of target of 4000 CFM. Recommend breaking free so that adjustment is possible.		
Created By :	National TAB	**Assigned To :**	National TAB - Brianna Biggs
Status :	Open		
Originated Date :	07/25/2023 - Sergio Del Toro - National TAB		

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) w/ Diffusers
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. . Any EF's that fell outside of this tolerance is noted throughout the report.

MUA (Make Up Air Unit) w/ PSP
Total flow for the MAU (Make-up Air Unit) unit was measured by readings taken at the discharge of the hood's perforated supply plenum. Readings taken with a velocity matrix were averaged and multiplied by a manufacturer's corrected area. Adjustments to the fan speed were made in order to bring the unit to within design tolerance. Any MUA's that fell outside of this tolerance is noted throughout the report.

General Exhaust Fans w/ Grilles
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.

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AIR BALANCE SCHEDULE

UNIT	AREA SERVED	HVAC SUPPLY		HVAC RETURN		HVAC OUTDOOR		OA %		HOOD MAKE-UP		HOOD EXHAUST		GENERAL EXH.	
		DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL	DESIGN	ACTUAL
RTU-1	KITCHEN	4000	4768	3600	4045	400	723	10.0%	15.2%						
RTU-2	DINING	4000	2120	3600	1767	400	353	10.0%	16.7%						
MUA-1	KITCHEN									1600	1571				
EF-1	KITCHEN											2000	1994		
EF-2	KITCHEN											0	0		
EF-3	RESTROOM													110	110
EF-4	RESTROOM													120	120
TOTALS		8000	6888	7200	5812	800	1076			1600	1571	2000	1994	230	230

NET BUILDING AIRFLOW CALCULATION

TOTALS	DESIGN	ACTUAL
TOTAL OA	2400	2647
TOTAL EXHAUST	2230	2224
NET AIRFLOW	170	423

DOOR TESTED	BUILDING PRESSURE MEASUREMENTS (IN. H20)
FRONT	0.012
SIDE	0.008
REAR	0.015
AVERAGE	**0.0117**

FINAL CHECKS

ACTUAL NET AIRFLOW COINCIDES WITH DESIGN: ✓

MEASURED PRESSURES COINCIDES WITH ACTUAL NET AIRFLOW: ✓

PRESSURE FALLS WITHIN IMC TOLERANCE OF +/-0.02" W.C. ✓

NOTES:

National TAB

Project: 07-24-23 ARBY'S #6422 - COWETA, OK

System/Unit: AHU/RTU

Asset: RTU1 AREA:KITCHEN

Unit Data		
	Design	**Actual**
MFG	NA	LENNOX
Serial Num	-	5618E02499
Model Num	NA	LGH120H4BH3Y
Type	-	RTU
Configuration	-	VERTICAL
Num OA Filters 1	-	2
OA Filter Size 1	-	14.25X23
Num Final Filter 1	-	4
Final Filter Size 1	-	25X20X2

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	-	5”
Motor Sheave SetPt	-	UTO
Fan Sheave Size	-	7”
Fan Sheave Bore	-	1”
Belt CL Distance	-	21”
Num of Belts	-	1
Belt Size	-	BX58
Belt Alignment	-	CORRECT

Test Data		
	Design	**Actual**
SF CFM	4000	4768
SF RPM	-	NA
RA CFM	-	4045
OA CFM	400	723
RL Voltage	-	207.4/206.3/204.7V
RL Amperage	-	5.6/5.3/5.1A
SF Rotation	-	CORRECT
RA Damper Position	-	76%
Min OA Damper Position	-	24%
Min OA Damper Type	-	OPPOSED BLADE

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.27”
Fan Suction SP	-	-0.78”
Fan Discharge SP	-	0.83”
Total ESP	-	1.1"
Fan Total SP	-	1.61"

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

Completed By: Sergio Del Toro on 07/25/2023

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Project: 07-24-23 ARBY'S #6422 - COWETA, OK

System/Unit: AHU/RTU

Asset: RTU2 AREA:DINING

Unit Data		
	Design	**Actual**
MFG	NA	TRANE
Serial Num	-	123011651L
Model Num	NA	YSC120F3EMA03000000000000
Type	-	RTU
Configuration	-	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	36X15
Num Final Filter 1	-	4
Final Filter Size 1	-	25X20X2

Motor Data		
	Design	**Actual**
Motor MFG	-	NA
Frame	-	NA
Horsepower	-	3.80
Motor Rpm	-	NA
Phase	-	3
Rated Voltage	-	208V
Rated Amperage	-	8.5A

Test Data		
	Design	**Actual**
SF CFM	4000	2120
SF RPM	-	NA
RA CFM	-	1767
OA CFM	400	353
RL Voltage	-	207.1/206.9/207.3V
RL Amperage	-	4.2/4.2/4.4A
SF Rotation	-	CORRECT
RA Damper Position	-	83%
Min OA Damper Position	-	17%
Min OA Damper Type	-	OPPOSED BLADE

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.27”
Fan Suction SP	-	-0.47”
Fan Discharge SP	-	0.29”
Total ESP	-	0.56"
Fan Total SP	-	0.76"

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

Completed By: Sergio Del Toro on 07/25/2023

Notes:
AIRFLOW IS 2120 CFM OUT OF TARGET OF 4000 CFM.

Written By: Will Turnbough on 09/15/2023

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Project: 07-24-23 ARBY'S #6422 - COWETA, OK

System/Unit: FAN - Exhaust

Asset: EF3 AREA:RESTROOM

Unit Data		
	Design	**Actual**
MFG	NA	NA
Model Num	NA	NA
Serial Num	-	NA
Type	-	DOWNBLAST
Configuration	-	VERTICAL

Test Data		
	Design	**Actual**
CFM	-	110
Fan RPM	-	NA
Fan Rotation	-	CORRECT
Motor RPM	-	NA
System SetPt	-	NA
RL Voltage	-	NA
RL Amperage	-	NA
Total ESP	-	0.51"
Fan Inlet SP	-	-0.51"
Fan Discharge SP	-	ATM

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Project: 07-24-23 ARBY'S #6422 - COWETA, OK

System/Unit: FAN - Exhaust

Asset: EF4 AREA:RESTROOM

Unit Data		
	Design	**Actual**
MFG	NA	NA
Model Num	NA	NA
Serial Num	-	NA
Type	-	DOWNBLAST
Configuration	-	VERTICAL

Test Data		
	Design	**Actual**
CFM	-	120
Fan Rotation	-	CORRECT
Total ESP	-	0.51"
Fan Inlet SP	-	-0.51"
Fan Discharge SP	-	ATM

Completed By: Sergio Del Toro on 07/25/2023

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Project: 07-24-23 ARBY'S #6422 - COWETA, OK

System/Unit: FAN - Exhaust

Asset: KEF1 AREA:HOOD 1

Unit Data		
	Design	**Actual**
MFG	NA	CAPTIVEAIRE
Model Num	NA	NCA24FA
Serial Num	-	4565350
Type	-	UPBLAST
Configuration	-	CENTRIFUGAL

Motor Data		
	Design	**Actual**
Motor MFG	-	HSSA
Frame	-	56
Horsepower	-	2
Motor Rpm	-	1750
Phase	-	1
Voltage (rated)	-	115V
Amperage (rated)	-	16.5A
Service Factor	-	1.15

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	4”
Motor Bore Size	-	0.5”
Motor Sheave SetPt	-	2 TURNS OUT
Fan Sheave Size	-	9”
Fan Sheave Bore	-	1”
Belt CL Distance	-	7”
Num of Belts	-	2
Belt Size	-	BX32

Test Data		
	Design	**Actual**
CFM	-	1994
Fan RPM	-	NA
Fan Rotation	-	CORRECT
Motor RPM	-	NA
RL Voltage	-	NA
RL Amperage	-	NA
Suction ESP	-	-0.82”
Discharge ESP	-	ATM
Total ESP	-	0.82”

Completed By: Sergio Del Toro on 07/25/2023

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Project: 07-24-23 ARBY'S #6422 - COWETA, OK

System/Unit: FAN - Exhaust

Asset: KEF2 AREA:HOOD 2

Unit Data		
	Design	**Actual**
MFG	NA	CENTRIMASTER
Model Num	NA	NA
Serial Num	-	NA
Type	-	NA
Configuration	-	NA

Motor Data		
	Design	**Actual**
Motor MFG	-	EMERSON
Frame	-	NA
Horsepower	-	3/4
Motor Rpm	-	1725
Phase	-	1
Voltage (rated)	-	115V
Amperage (rated)	-	11.2A
Service Factor	-	1.25

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	3”
Motor Bore Size	-	0.5”
Motor Sheave SetPt	-	NA
Fan Sheave Size	-	5.75”
Fan Sheave Bore	-	1”
Belt CL Distance	-	11.5”
Num of Belts	-	1
Belt Size	-	AX33

Test Data		
	Design	**Actual**
CFM	-	0
Fan RPM	-	NA
Fan Rotation	-	NA
Motor RPM	-	NA
RL Voltage	-	NA
RL Amperage	-	NA
Suction ESP	-	NA
Discharge ESP	-	NA
Total ESP	-	NA

Completed By: Sergio Del Toro on 07/25/2023

Notes:
FAN NOT IN USE (ABANDONED)

Written By: Will Turnbough on 09/15/2023

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Project: 07-24-23 ARBY'S #6422 - COWETA, OK

System/Unit: FAN - Supply

Asset: MAU1 AREA:HOOD 1

Unit Data		
	Design	**Actual**
MFG	NA	CAPTIVEAIRE
Model Num	A2-20D	A2-20D
Serial Num	-	5971572
Type	-	MUA
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TECO
Frame	-	145T
Horsepower	-	1
Motor Rpm	-	1150
Phase	-	3
Voltage (rated)	-	230V
Amperage (rated)	-	3.44A
Service Factor	-	1.15

Test Data		
	Design	**Actual**
CFM	-	1571
SF RPM	-	NA
Motor RPM	-	NA
SF System SetPt	-	41.7HZ
RL Voltage	-	92V
RL Amperage	-	1.9A
Total ESP	-	0.32”
Fan Discharge SP	-	0.32”

General		
	Design	**Actual**
Fan Rotation Correct	-	YES

Completed By: Sergio Del Toro on 07/25/2023

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Project: 07-24-23 ARBY'S #6422 - COWETA, OK

System/Unit: Kitchen Hood Type I

Asset: HD1 AREA:MAIN COOKLINE

Unit Data		
	Design	**Actual**
MFG	NA	AIRTECH
Model Num	NA	NA
Job / Serial Num	-	NA
Type	-	TYPE II
Hood length	-	120"
Hood Width	-	42"
Supply Plenum Type	-	PSP
Supply Plenum Width	-	2.25"
Supply Plenum Length	-	113"

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	BAFFLE
Filter Size 1	-	20X20
Filter Qty 1	-	6
Filter AK factor size 1	-	2.68
Filter Total AK Area	-	16.08
Filter1 FPM	-	109
Filter2 FPM	-	132
Filter3 FPM	-	131
Filter4 FPM	-	134
Filter5 FPM	-	113
Filter6 FPM	-	122
Filter Ave FPM(corr)	-	124
CFM	-	1994

Cooking Equipment		
	Design	**Actual**
Item 1	-	FRYER
Item 2	-	OVEN

Test Data Supply		
	Design	**Actual**
CFM	-	1957

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Project: 07-24-23 ARBY'S #6422 - COWETA, OK

System/Unit: Kitchen Hood Type I

Asset: HD2 AREA:ABANDONED

Unit Data		
	Design	**Actual**
MFG	NA	AIRTECH
Model Num	NA	NA
Job / Serial Num	-	NA
Type	-	TYPE II
Hood length	-	120"
Hood Width	-	42"
Supply Plenum Type	-	PSP
Supply Plenum Width	-	2.25"
Supply Plenum Length	-	113"

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	BAFFLE
Filter Size 1	-	20X20
Filter Qty 1	-	6
Filter AK factor size 1	-	2.68
Filter Total AK Area	-	16.08

Cooking Equipment		
	Design	**Actual**
Item 1	-	MEAT SLICER
Item 2	-	STORAGE

Completed By: Sergio Del Toro on 07/25/2023

Notes:
HOOD IS ABANDONED.

Written By: Will Turnbough on 09/15/2023