Report By:

National TAB
1329 E. KEMPER ROAD
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Report: TAB REPORT

Function: Test, Adjust, & Balance

Date: 05/23/2024

PROJECT

Fibbar Macgees (Sunnyvale, CA)

152 and 156 S Murphy Ave

Sunnyvale, CA 94086

Client

Martinico & Sons, Inc.

1776 S. 7th St.

San Jose, CA 95112

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Project: Fibbar Macgees (Sunnyvale, CA)

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Project: Fibbar Macgees (Sunnyvale, CA)

System/Unit: AHU/RTU

Asset: RTU-1 AREA:PREP

Unit Data		
	Design	**Actual**
MFG	NA	BRYANT
Serial Num	-	3023P34306
Model Num	NA	582KP09N125A2A
Configuration	-	VERTICAL
Num OA Filters 1	-	1
OA Filter Size 1	-	20X24X1
Num PreFilter 1	-	4
PreFilter Size 1	-	16X20X2

Motor Data		
	Design	**Actual**
Motor MFG	-	BRYANT
Frame	-	NA
Horsepower	3.5	3.5
Motor Rpm	-	NA
Phase	3	3
Rated Voltage	208	208
Rated Amperage	-	6.4
Service Factor	-	NA

Test Data		
	Design	**Actual**
SF CFM	4250	
RA CFM	-	
OA CFM	-	793
RL Voltage	208	208
RL Amperage	-	1.6
OA Damper Position	-	25%
Brake Horse Power	2.4	NA

Performance Data		
	Design	**Actual**
MA Plenum SP	-	-0.243
Fan Suction SP	-	-0.488
Fan Discharge SP	-	-0.242
Total ESP	0.7	
Fan Total SP	0.85	

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Project:Fibbar Macgees (Sunnyvale, CA)

AHU/RTU

Diffuser Supply (GRD)

RTU-1/PREP

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
1-1	KITCHEN	CSD-5	14	480	691	445	92.7
1-2	KITCHEN	CSD-5	14	480	691	505	105.2
1-3	WOMENS RR	CSD-2	8	150	180	137	91.3
1-4	MENS RR	CSD-2	8	150	186	140	93.3
1-5	KITCHEN	CSD-5	14	480	602	527	109.8
1-6	PREP	CSD-5	14	480	426	462	96.3
1-7	PREP	CSD-5	14	480	894	527	109.8
1-8	PREP	CSD-5	14	480	873	442	92.1
Total				3180	4543	3185	100.16%

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Project: Fibbar Macgees (Sunnyvale, CA)

System/Unit: AHU/RTU

Asset: RTU-2 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	NA
Serial Num	-	
Model Num	NA	NA
Configuration	-	
Num OA Filters 1	-	
OA Filter Size 1	-	
Num PreFilter 1	-	
PreFilter Size 1	-	

Test Data		
	Design	**Actual**
SF CFM	-	
SF RPM	-	
RA CFM	-	
OA CFM	-	1023
RL Voltage	-	
RL Amperage	-	
OA Damper Position	-	85%
Brake Horse Power	-	

Motor Data		
	Design	**Actual**
Motor MFG	-	
Frame	-	
Horsepower	-	
Motor Rpm	-	
Phase	-	
Rated Voltage	-	
Rated Amperage	-	
Service Factor	-	

Performance Data		
	Design	**Actual**
MA Plenum SP	-	
Fan Suction SP	-	
Fan Discharge SP	-	
Total ESP	-	
Fan Total SP	-	

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	
Motor Bore Size	-	
Motor Sheave SetPt	-	
Fan Sheave Size	-	
Fan Sheave Bore	-	
Belt CL Distance	-	
Num of Belts	-	
Belt Size	-	

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Project: Fibbar Macgees (Sunnyvale, CA)

System/Unit: AHU/RTU

Asset: RTU-3 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	NA
Serial Num	-	NMBM082754
Model Num	NA	D4CG036N04125B
Configuration	-	VERTICAL
Num OA Filters 1	-	
OA Filter Size 1	-	
Num PreFilter 1	-	
PreFilter Size 1	-	

Motor Data		
	Design	**Actual**
Motor MFG	-	NA
Frame	-	NA
Horsepower	-	NA
Motor Rpm	-	NA
Phase	-	3
Rated Voltage	-	208
Rated Amperage	-	35
Service Factor	-	NA

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Project: Fibbar Macgees (Sunnyvale, CA)

System/Unit: FAN - Exhaust

Asset: EF-1 AREA:MENS RR

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

Test Data		
	Design	**Actual**
CFM	440	446
RL Voltage	-	120
RL Amperage	-	
Total ESP	0.5	

Motor Data		
	Design	**Actual**
Motor MFG	-	VORTEX
Frame	-	NA
Horsepower	150W	140W
Motor Rpm	-	NA
Phase	1	1
Voltage (rated)	120	120
Amperage (rated)	-	60
Service Factor	-	NA

Notes:
No dampers installed to adjust exhaust CFM.

Written By: David Nicolas Sanchez on 05/23/2024

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Project:Fibbar Macgees (Sunnyvale, CA)

FAN - Exhaust

Diffuser Ret/Exh (GRD)

EF-1/MENS RR

Asset								
Asset Name	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
E1-1	CEG-3	10	220	1	188		188	85.5
E1-2	CEG-3	10	220	1	258		258	117.3
Total			440		446	0	446	101.36%

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Project: Fibbar Macgees (Sunnyvale, CA)

System/Unit: FAN - Exhaust

Asset: EF-2 AREA:WOMENS RR

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

Test Data		
	Design	**Actual**
CFM	440	467
RL Voltage	-	120
RL Amperage	-	
Total ESP	0.5	

Motor Data		
	Design	**Actual**
Motor MFG	-	Vortex
Frame	-	NA
Horsepower	150W	140W
Motor Rpm	-	NA
Phase	1	1
Voltage (rated)	120	120
Amperage (rated)	-	NA
Service Factor	-	NL

Notes:
No dampers installed to adjust exhaust CFM.

Written By: David Nicolas Sanchez on 05/23/2024

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Project:Fibbar Macgees (Sunnyvale, CA)

FAN - Exhaust

Diffuser Ret/Exh (GRD)

EF-2/WOMENS RR

Asset								
Asset Name	**Type**	**Size**	**DESIGN CFM**	**AK**	**CFM(1)**	**CFM(2)**	**FINAL CFM**	**% to design**
E2-1	CEG-3	10	220	1	330		330	150.0
E2-2	CEG-3	10	220	1	137		137	62.3
Total			440		467	0	467	106.14%

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Project: Fibbar Macgees (Sunnyvale, CA)

System/Unit: FAN - Exhaust

Asset: KEF2 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	CAPTIVE AIRE
Model Num	NA	DU180HFA
Serial Num	-	6767775
Type	-	UPBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TELCO GREEN
Frame	-	
Horsepower	-	2
Motor Rpm	-	1200
Phase	-	
Voltage (rated)	-	230
Amperage (rated)	-	
Service Factor	-	

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	DD
Motor Bore Size	-	DD
Motor Sheave SetPt	-	DD
Fan Sheave Size	-	DD
Fan Sheave Bore	-	DD
Belt CL Distance	-	DD
Num of Belts	-	DD
Belt Size	-	DD

Test Data		
	Design	**Actual**
CFM	-	3717
Fan RPM	-	1134
Fan Rotation	-	CCW
Motor RPM	-	1134
RL Voltage	-	244
RL Amperage	-	7.04
Suction ESP	-	
Discharge ESP	-	
Total ESP	-	

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Project: Fibbar Macgees (Sunnyvale, CA)

System/Unit: FAN - Exhaust

Asset: KEF-1 AREA:HOOD 1

Unit Data		
	Design	**Actual**
MFG	CAPTIVE AIRE	CAPTIVE AIRE
Model Num	DU85HFA	DU85HFA
Serial Num	-	5654995
Type	CRE UPBLAST	UPBLAST
Configuration	-	VERTICAL

Motor Data		
	Design	**Actual**
Motor MFG	-	TELCO GREEN
Frame	-	
Horsepower	1	1
Motor Rpm	-	1800
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	11.6
Service Factor	-	

Test Data		
	Design	**Actual**
CFM	1350	1397
Fan RPM	1232	
Fan Rotation	-	CCW
Motor RPM	-	
System SetPt	-	65%
RL Voltage	-	120
RL Amperage	-	NA
Total ESP	1.00	
Fan Inlet SP	-	
Fan Discharge SP	-	

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Project: Fibbar Macgees (Sunnyvale, CA)

System/Unit: FAN - Supply

Asset: MAU-1 AREA:HOOD 1

Unit Data		
	Design	**Actual**
MFG	NA	CAPTIVEAIRE
Model Num	NA	A1-15D
Serial Num	-	5654995
Type	-	
Configuration	-	
Num Filters Size 1	-	
Filter Size 1	-	

Motor Data		
	Design	**Actual**
Motor MFG	-	TELCO GREEN
Frame	-	
Horsepower	1	1
Motor Rpm	1519	1800
Phase	1	1
Voltage (rated)	115	115
Amperage (rated)	-	11.6
Service Factor	-	

Test Data		
	Design	**Actual**
CFM	1215	1205
SF RPM	1519	
RL Voltage	-	115
RL Amperage	-	11.6
Suction ESP	-	
Discharge ESP	-	
Total ESP	0.5	
Brake Horse Power	-	0.5370

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Project:Fibbar Macgees (Sunnyvale, CA)

FAN - Supply

Diffuser Supply (GRD)

MAU-1/HOOD 1

Asset							
Asset Name	**Location**	**Type**	**Size**	**DESIGN CFM**	**CFM(1)**	**FINAL CFM**	**% to design**
M-2	HOOD 1	DUCT	12X8	607	815	602	99.2
M2-1	HOOD 1	DUCT	12X8	607	815	602	99.2
Total				1214	1630	1204	99.18%

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Project: Fibbar Macgees (Sunnyvale, CA)

System/Unit: FAN - Supply

Asset: MUA2 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	CHAMPION COOLER
Model Num	NA	75/85DD
Serial Num	-	ID7040197
Type	-	
Configuration	-	

Motor Data		
	Design	**Actual**
Motor MFG	-	DIAL
Frame	-	56Z
Horsepower	-	1
Motor Rpm	-	1725
Phase	-	1
Voltage (rated)	-	115/230
Amperage (rated)	-	13.5/6.8
Service Factor	-	1.0

Drive Data		
	Design	**Actual**
Motor Sheave Size	-	
Motor Bore Size	-	
Fan Sheave Size	-	
Fan Sheave Bore	-	
Belt CL Distance	-	
Num of Belts	-	
Belt Size	-	
Belt Alignment Verified	-	

Gas Heat		
	Design	**Actual**
Heater Operates (y/n)	-	
Flame Status (pass/fail)	-	
Inlet Air Temp SetPt	-	
Discharge Air Temp SetPt	-	
Air Flow Switch SP Actual	-	

Test Data		
	Design	**Actual**
CFM	2900	2567
SF RPM	-	448
Motor RPM	-	1748
RL Voltage	-	
RL Amperage	-	
Total ESP	-	
Fan Discharge SP	-	

General		
	Design	**Actual**
Fan Rotation Correct	-	

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Project: Fibbar Macgees (Sunnyvale, CA)

System/Unit: Kitchen Hood Type I

Asset: HD-1 AREA:KITCHEN

Unit Data		
	Design	**Actual**
MFG	CAPTIVE AIRE	CAPTIVE AIRE
Model Num	5424 ND-2-PSP-F	5424 ND-2-PSP-F
Job / Serial Num	-	5654995
Type	TYPE I CANOPY	TYPE 1
Hood length	72	72"
Hood Width	54	54"
Supply Plenum Type	-	
Supply Plenum Width	16	16”
Supply Plenum Length	84	84”

Test Data Exhaust		
	Design	**Actual**
Filter Type	CAPTRATE SOLO	CAPTRATE SOLO
Filter Size 1	20X16	20X16
Filter Qty 1	4	4
Filter AK factor size 1	2.08	2.08
Filter Total AK Area	8.32	8.32
Filter1 FPM	-	165
Filter2 FPM	-	177
Filter3 FPM	-	171
Filter4 FPM	-	162
Filter Ave FPM(corr)	-	168
CFM	1350	1397

Cooking Equipment		
	Design	**Actual**
Item 1	-	AIR FRIER
Item 2	-	AIR FRIER

Test Data Supply		
	Design	**Actual**
Total AK Area	9.33	9.33
Kv factor (Vel)	0.91	0.91
Num of Readings	-	6
Reading1 FPM	-	148
Reading2 FPM	-	119
Reading3 FPM	-	141
Reading4 FPM	-	145
Reading5 FPM	-	145
Reading6 FPM	-	154
Ave FPM(corr)	-	142
CFM	1214	1205

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Project: Fibbar Macgees (Sunnyvale, CA)

System/Unit: Kitchen Hood Type I

Asset: HD-2 AREA:

Unit Data		
	Design	**Actual**
MFG	NA	NA
Model Num	NA	NA
Job / Serial Num	-	NA
Type	-	TYPE 1 SLOPE
Hood length	-	150"
Hood Width	-	55"

Test Data Exhaust		
	Design	**Actual**
Filter Type	-	BAFFLED
Filter Size 1	-	20X25
Filter Qty 1	-	6
Filter AK factor size 1	-	3.42
Filter Total AK Area	-	20.52
Filter1 FPM	-	205
Filter2 FPM	-	197
Filter3 FPM	-	199
Filter4 FPM	-	177
Filter5 FPM	-	168
Filter6 FPM	-	141
Filter Ave FPM(corr)	-	203
CFM	3750	3717

Cooking Equipment		
	Design	**Actual**
Item 1	-	GRILL
Item 2	-	PLANCHA

Overall Summary

The purpose of the visit to Freddy's in Edmond, OK was to address smoke capture concerns.

Smoke capture was poor on the fryer hood and the main griddle hood. The following are the major findings and recommendations from the visit:

Findings and recommendations are below.

1. The MUA back supply style plenum is notorious for causing smoke capture issues and that is a major factor here. The pulley needs to be changed to reduce airflow by half to around 1000 CFM. It is a non heated/non conditioned MUA so this will also be better for comfort.
2. The MUA filter is clogged and is reducing airflow by about 50%. This needs to be cleaned. But, doing so will also cause the smoke capture to worsen. So it needs to be done at the same time as the pulley change.
3. Full vertical end panel needs to be added to the right side of the griddle hood. A quarter end panel needs to be added to the left of the griddle hood.
4. Outside air filters need to be installed on RTU's 1 and 3 so that the outside air can be balanced for building pressurization. Additionally, this helps reduce return air paths in the kitchen which are contributing to the poor smoke capture.
5. The fryer hood capture is poor as well. There is a large amount of smoke escaping primarily on the left side but also on the left side. The griddle hood is the primary concern as that is what causes grease to accumulate on the return grilles and surfaces. But improving the fryer capture will reduce fry smell, and improve comfort in the building. Ideally, full vertical end panels would be added, but if that's not possible from an operational standpoint then quarter end panels should be added on both sides.

Above are the major recommendations and findings. Below is a technical summary with additional details and findings.

Technical Summary

Arrived on site and talked to the manager. They had not noticed any capture issues. However, grease accumulation was noted on the return grilles.

Measured all airflows in the building. Both dining Rtu's are operating at appropriate airflows. The hood exhausts were also found to be balanced. The MUA was very low (approximately 1000 CFM) and the building pressure was negative.

Performed an initial smoke test on all hoods. The main griddle hood was approximately 95% capture. Some minor loss was noted at the front of the hood perimeter. The backup griddle hood had 100% capture. The fryer hood had about 80% capture. There was significant smoke escaping out the left of the hood.

Went to the roof and found that the MUA intake air filter was clogged. Removed this temporarily and re-measured airflow to be close to the original design. Re-smoked all hoods and smoke was rolling out on the right side of the main grille hood. Mocked up a cardboard end panel and capture improved to 100%. A full stainless steel end panel is recommended on the right of the hood and a quarter end panel is recommended on the left of the hood.

End panel mockup on main griddle

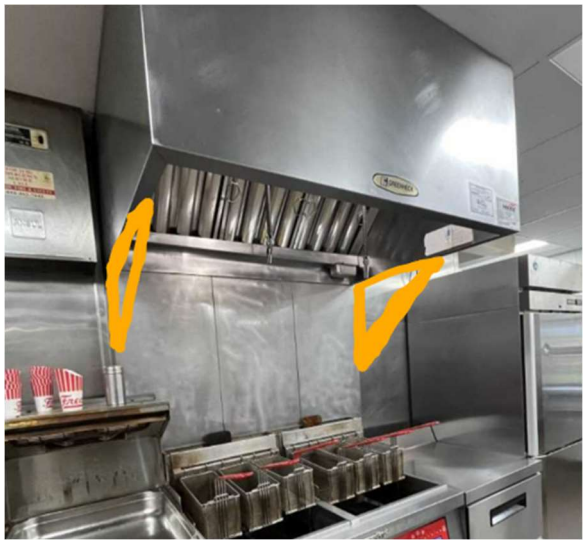
The fryer hood capture is now poor. Reducing the MUA should help. But quarter end panels are also recommended. Full vertical end panels would be ideal if they don't effect Operations.

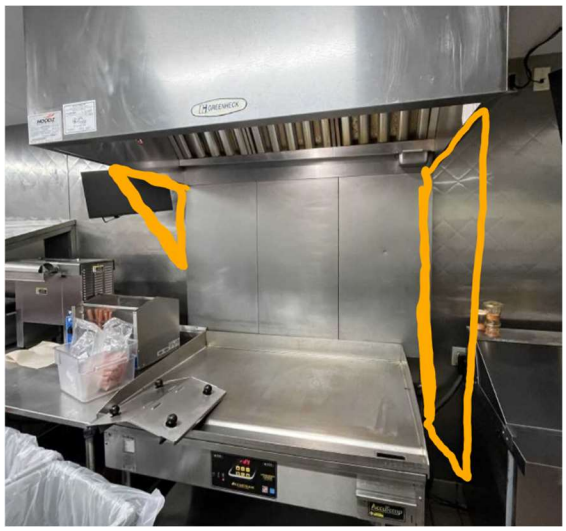
Fryer smoke capture loss

RTU's 1 and 3 are missing outside air filters so OA could not be set yet. This is creating a return path through the kitchen that is making the hood capture issues worse. Installing these and balancing the outside air should help reduce this effect.

Additionally found that the women's restroom exhaust fan rotation was backwards.

Before leaving the site, final performance data was gathered and the intake air filter was replaced on the MUA.





Recommend end panel locations

See following pages for additional insight into additional maintenance items that were found on site.