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Laboratory Testing of Agricultural Ventilation Fans Test Reports 18085 and 18089

Final Report

To

HUYNH THAO M.E.R CO., LTD
Group 6, Bau Dieu Thuong Block, Phuoc Thanh Hamlet, Cu Chi District,
734312, Ho Chi Minh City
Viet Nam

Submitted by

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BESS Lab Manager

Department of Agricultural and Biological Engineering
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University of Illinois Department of Agricultural and Biological Engineering
 Bioenvironmental and Structural Systems Lab
 Final Report

Project Number: 18089
 Test Date: January 25, 2018

Fan:	Motor:	Shutter:
Make- <i>Huyn Thao</i>	Make- <i>Siemens</i>	Material- <i>plastic</i>
Model- <i>55HS1H</i>	Model- <i>1LE0001-0EE4-9-0A</i>	# Doors- <i>17 per column</i>
Blade dia.- <i>54.9"</i>	Hp- <i>1.5 kW</i>	# Columns- <i>3</i>
Orifice dia.- <i>55.3"</i>	RPM- <i>1440</i>	Door length <i>18.6"</i>
	Volts- <i>380</i>	Location- <i>intake</i>
Blade:	Amps- <i>3.60</i>	
Number- <i>3</i>	Hz- <i>50</i>	Guards:
Shape- <i>propeller</i>	Phase- <i>3</i>	Description- <i>wire</i>
Material- <i>cast aluminum</i>	S. F.- <i>-</i>	Spacing- <i>2.3" concentric</i>
Pitch- <i>-</i>		Location- <i>exhaust</i>
Clearance- <i>0.2"</i>	Housing:	
	Material- <i>fiberglass</i>	Discharge Cone:
Drive Sheaves:	Intake area- <i>56.5" x 57.8"</i>	Depth- <i>26.1"</i>
Drive dia.- <i>4.3" o.d.</i>	Discharge- <i>55.3" dia.</i>	Minor dia.- <i>55.3"</i>
Axle dia.- <i>10.15" o.d.</i>	Depth- <i>25.3" top</i>	Major dia.- <i>64.5"</i>
		<i>24.3" bottom</i>

Notes: 0

Test Conditions:

T(wb) F: 57.5	Barometric pressure, recorded	29.54
T(db) F: 75	Barometric Pressure, corrected	29.42 (In. Hg)

Static Pressure (in.H2O)	Airflow (cfm)	rpm	Volts	Amps	Watts	cfm/Watt	SI Units			
							Static Pressure (Pa)	Airflow (m ³ /hr.)	(m ³ /hr)/W	W/1000m ³ /hr
0.00	32400	586	381.0	3.63	1828	17.7	0	55100	30.1	33
0.05	30830	585	381.1	3.68	1864	16.5	12	52400	28.1	36
0.10	29130	583	381.2	3.71	1885	15.5	25	49500	26.3	38
0.15	26830	582	381.2	3.73	1912	14.0	37	45600	23.8	42
0.20	23550	581	381.2	3.76	1924	12.2	50	40000	20.8	48
0.25	19390	582	381.2	3.74	1912	10.1	62	32900	17.2	58
0.30	8210	581	381.3	3.76	1930	4.3	75	14000	7.2	138

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University of Illinois Department of Agricultural and Biological Engineering
 Bioenvironmental and Structural Systems Lab
 Final Report

Project Number: 18085
 Test Date: January 23, 2018

Fan:	Motor:	Shutter:
Make- <i>Huynh Thao</i>	Make- <i>Huynh Thao</i>	Material- <i>plastic</i>
Model- <i>51HS1H</i>	Model- <i>-</i>	# Doors- <i>16 per column</i>
Blade dia.- <i>50.9"</i>	Hp- <i>1.5 (1.1 kW)</i>	# Columns- <i>3</i>
Orifice dia.- <i>51.3"</i>	RPM- <i>1430</i>	Door length <i>17.8"</i>
	Volts- <i>220 / 380</i>	Location- <i>intake</i>
Blade:	Amps- <i>5.2 / 3.0</i>	
Number- <i>3</i>	HZ- <i>50</i>	Guards:
Shape- <i>propeller</i>	Phase- <i>3</i>	Description- <i>wire</i>
Material- <i>cast aluminum</i>	S. F.- <i>-</i>	Spacing- <i>2.3" concentric</i>
Pitch- <i>-</i>		Location- <i>exhaust</i>
Clearance- <i>0.2"</i>	Housing:	
	Material- <i>fiberglass</i>	Discharge Cone:
Drive Sheaves:	Intake area- <i>53.5" x 55"</i>	Depth- <i>26"</i>
Drive dia.- <i>4.3" o.d.</i>	Discharge- <i>50.9" dia.</i>	Minor dia.- <i>50.9"</i>
Axle dia.- <i>10.15" o.d.</i>	Depth- <i>25.3" top</i>	Major dia.- <i>61"</i>
	<i>24.3" bottom</i>	

Notes: 0

Test Conditions:
 T(wb) F: 58 Barometric pressure, recorded 29.35
 T(db) F: 75.5 Barometric Pressure, corrected 29.23 (In. Hg)

Static Pressure (in.H2O)	Airflow (cfm)	rpm	Volts	Amps	Watts	cfm/Watt	SI Units			
							Static Pressure (Pa)	Airflow (m ³ /hr.)	(m ³ /hr)/W	W/1000m ³ /hr
0.00	29240	588	380.8	2.70	1546	18.9	0	49700	32.1	31
0.05	27780	587	380.8	2.74	1573	17.7	12	47200	30	33
0.10	26090	586	380.8	2.78	1599	16.3	25	44300	27.7	36
0.15	24010	585	380.8	2.80	1614	14.9	37	40800	25.3	40
0.20	21040	585	380.8	2.81	1617	13.0	50	35700	22.1	45
0.25	17410	585	380.9	2.78	1601	10.9	62	29600	18.5	54
0.30	7760	589	381.2	2.62	1492	5.2	75	13200	8.8	113

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