

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

Project Number: 18401
 Test Date: August 6, 2018

Fan:	Motor:	Shutter: <i>Roller door</i>
Make- <i>DACS</i>	Make- <i>DACS</i>	Material- <i>Plastic</i>
Model- <i>MagFan One</i>	Model- <i>Y2G112M2-8</i>	# Doors- <i>1</i>
Blade dia.- <i>56.3" (1430)</i>	Hp- <i>1.8 kW</i>	# Columns- <i>1</i>
Orifice dia.- <i>56.8" (1442)</i>	RPM- <i>700</i>	Door length <i>1800 mm</i>
	Volts- <i>230 / 400</i>	Location- <i>intake</i>
Blade:	Amps- <i>8.5 / 4.9</i>	
Number- <i>3</i>	Hz- <i>50</i>	Guards:
Shape- <i>propeller</i>	Phase- <i>3</i>	Description- <i>wire</i>
Material- <i>poly</i>	S. F.- <i>'</i>	Spacing- <i>1.6" x 2.9" / 5.4" concentric</i>
Pitch- <i>-</i>		Location- <i>intake / exhaust</i>
Clearance- <i>0.4" (10 mm)</i>	Housing:	
	Material- <i>poly</i>	Discharge Cone:
Drive Sheaves:	Intake area- <i>61.5" x 61.5" (1562x1562)</i>	Depth- <i>47"</i>
Drive dia.- <i>direct</i>	Discharge- <i>56.8" (1442)</i>	Minor dia.- <i>56.8"</i>
Axle dia.- <i>drive</i>	Depth- <i>12" (305)</i>	Major dia.- <i>68.5"</i>

Notes: *Roll door housing with bell mouth intake frame*

Test Conditions:

T(wb) F: 66	Barometric pressure, recorded	29.38
T(db) F: 77.5	Barometric Pressure, corrected	29.25 (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	40600	728	400.8	3.78	1427	28.4	0	68900	48.3	21
0.05	38700	726	400.8	3.88	1534	25.2	12	65800	42.9	23
0.10	36700	723	400.8	3.99	1651	22.2	25	62400	37.8	26
0.15	35000	721	400.8	4.09	1741	20.1	37	59500	34.2	29
0.20	33100	719	400.9	4.18	1830	18.1	50	56200	30.7	33
0.25	30800	717	400.9	4.27	1909	16.1	62	52400	27.4	36
0.30	28400	715	400.3	4.35	1980	14.4	75	48300	24.4	41
0.35	25800	714	400.4	4.40	2024	12.8	87	43900	21.7	46
0.40	21600	714	400.5	4.38	2015	10.7	100	36700	18.2	55