

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

Project Number: 14346  
 Test Date: June 25, 2014

**Fan:**  
 Make- *Huynh Thao M.E.R*  
 Model- *48" cone fan*  
 Blade dia.- *47.6" (1209mm)*  
 Orifice dia.- *48.6" (1234mm)*

**Motor:**  
 Make- *Siemens*  
 Model- *1LE0102-0083*  
 Hp- *0.75 kW*  
 RPM- *1405*  
 Volts- *220 / 380*  
 Amps- *3.35 / 1.95*  
 Hz- *50*  
 Phase- *3*  
 S. F.- *-*

**Shutter:**  
 Material- *plastic*  
 # Doors- *15 per column*  
 # Columns- *2*  
 Door length *26" (660)*  
 Location- *intake*

**Blade:**  
 Number- *3*  
 Shape- *propeller*  
 Material- *cast aluminum*  
 Pitch- *-*  
 Clearance- *0.4" (10mm)*

**Housing:**  
 Material- *fiberglass*

**Discharge Cone:**  
 Intake area- *51.6" x 51.8" (1310x1188)*  
 Discharge- *48.6" dia. (1234)*  
 Depth- *24" top (610)*  
*18.7" bottom (475)*

**Drive Sheaves:**  
 Drive dia.- *4.3" o.d. (109mm)*  
 Axle dia.- *10.3" o.d. (261mm)*

**Guards:**  
 Description- *wire*  
 Spacing- *2" concentric (51)*  
 Location- *exhaust*

**Notes:** 0

**Test Conditions:**

T(wb) F: 66 Barometric pressure, recorded 29.36  
 T(db) F: 78 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 <sup>3</sup> /hr.)	(m <sup>3</sup> /hr)/W	W/1000m <sup>3</sup> /hr
0.00	22300	586	381.1	1.87	984	22.7	0	37900	38.5	26
0.05	20800	584	380.3	1.94	1024	20.3	12	35400	34.6	29
0.10	19100	581	379.4	1.99	1072	17.9	25	32500	30.3	33
0.15	17200	580	379.0	2.04	1092	15.8	37	29300	26.8	37
0.20	14100	579	381.2	2.04	1108	12.7	50	23900	21.6	46
0.25	8500	581	381.5	1.99	1073	7.9	62	14400	13.4	75
0.30	5300	578	381.2	2.07	1125	4.7	75	9100	8.1	124