

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

Project Number: 16479  
 Test Date: June 30, 2016

|                                   |                                   |                                 |
|-----------------------------------|-----------------------------------|---------------------------------|
| <b>Fan:</b>                       | <b>Motor:</b>                     | <b>Shutter:</b>                 |
| Make- <i>Termotecnica Pericol</i> | Make- <i>ABB</i>                  | Material- <i>aluminum</i>       |
| Model- <i>EOC 53s/1-6 60hz</i>    | Model- <i>M2AA080B4</i>           | # Doors- <i>11</i>              |
| Blade dia.- <i>52"</i>            | Hp- <i>0.75 kW</i>                | # Columns- <i>1</i>             |
| Orifice dia.- <i>52.6"</i>        | RPM- <i>1390 // 1710</i>          | Door length <i>51.3"</i>        |
|                                   | Volts- <i>230/400 // 230/460</i>  | Location- <i>intake</i>         |
| <b>Blade:</b>                     | Amps- <i>3.46/2.0 // 3.0/1.77</i> |                                 |
| Number- <i>6</i>                  | Hz- <i>50 // 60</i>               | <b>Guards:</b>                  |
| Shape- <i>propeller</i>           | Phase- <i>3</i>                   | Description- <i>wire</i>        |
| Material- <i>galvanized steel</i> | S. F.- <i>-</i>                   | Spacing- <i>1.8" concentric</i> |
| Pitch- <i>-</i>                   |                                   | Location- <i>exhaust</i>        |
| Clearance- <i>0.3"</i>            | <b>Housing:</b>                   |                                 |
|                                   | Material- <i>galvanized steel</i> | <b>Discharge Cone:</b>          |
| <b>Drive Sheaves:</b>             | Intake area- <i>51.7" x 51.9"</i> | Depth- <i>24.3"</i>             |
| Drive dia.- <i>2.8" o.d.</i>      | Discharge- <i>52.6" dia.</i>      | Minor dia.- <i>52.6"</i>        |
| Axle dia.- <i>12" o.d.</i>        | Depth- <i>20.8"</i>               | Major dia.- <i>61.6"</i>        |

Notes: \*60 Hz test

**Test Conditions:**

|             |                                |                |
|-------------|--------------------------------|----------------|
| T(wb) F: 63 | Barometric pressure, recorded  | 29.40          |
| T(db) F: 76 | Barometric Pressure, corrected | 29.27 (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                     | 23100         | 378 | 229.5 | 2.78 | 855   | 27.0     | 0                    | 39200                         | 45.8                   | 22                       |
| 0.05                     | 21800         | 376 | 229.6 | 2.93 | 921   | 23.6     | 12                   | 37000                         | 40.2                   | 25                       |
| 0.10                     | 20200         | 375 | 229.9 | 3.07 | 983   | 20.6     | 25                   | 34400                         | 35                     | 29                       |
| 0.15                     | 18000         | 372 | 229.9 | 3.23 | 1053  | 17.1     | 37                   | 30600                         | 29.1                   | 34                       |
| 0.20                     | 15400         | 371 | 229.8 | 3.36 | 1107  | 14.0     | 50                   | 26200                         | 23.7                   | 42                       |
| 0.25                     | 11300         | 370 | 229.3 | 3.51 | 1163  | 9.7      | 62                   | 19200                         | 16.5                   | 61                       |
| 0.30                     | 8600          | 366 | 229.1 | 3.76 | 1267  | 6.8      | 75                   | 14500                         | 11.5                   | 87                       |