

**University of Illinois, Department of Agricultural and Biological Engineering  
 Bioenvironmental and Structural Systems Lab  
 Circulating Fan Performance - Final Report**

**Project Number:** c12070  
**Test Date:** January 12, 2012

|                             |                         |                                 |
|-----------------------------|-------------------------|---------------------------------|
| <b>Fan:</b>                 | <b>Motor:</b>           | <b>Guards:</b>                  |
| Make- Termotecnica Pericoli | Make- ABB               | Description- wire               |
| Model- EOR53 / 1            | Model - M2VA804-4       | Spacing- 0.8" x 4" (20 x 100mm) |
| Size- 52.1"                 | Hp- 1 (0.75 kW)         | Location- intake / exhaust      |
| Orifice $\phi$ - 52.7"      | RPM- 1690 // 1410       |                                 |
|                             | Volts- 380-420/ 220-440 |                                 |
| <b>Blade:</b>               | Amps- 1.8/3.3 // 2/3.5  |                                 |
| Number- 6                   | Hz- 60 // 50            |                                 |
| Shape- propeller            | Phase- 3                |                                 |
| Material- aluminum          | S.F. - -                |                                 |

|                          |                            |
|--------------------------|----------------------------|
| <b>Drive Sheaves:</b>    | <b>Housing: Box</b>        |
| Drive o.d.- 3.0" (77 mm) | Material: galvanized steel |
| Axle o.d.- 12" (307 mm)  | Depth- 15.5" (395 mm)      |

**Notes:** 60 Hz test

**5 x D Centerline Velocity (fpm):** 740

**Test Conditions:**

|           |                                |       |
|-----------|--------------------------------|-------|
| T(wb): 48 | Barometric pressure, recorded  | 28.90 |
| T(db): 70 | Barometric Pressure, corrected | 28.79 |

| D<br>Impeller $\phi$<br>(in.) | Thrust<br>(lbf) | rpm | Volts | Amps | kW    | Thrust<br>Efficiency<br>Ratio<br>(lbf/kW) |
|-------------------------------|-----------------|-----|-------|------|-------|---|
| 52.1                          | 18.86           | 398 | 229.1 | 2.97 | 1.038 | 18.2                                      |

|                                    |                   |
|------------------------------------|-------------------|
| <b>Airflow*</b><br>(thrust<br>cfm) | (thrust<br>cfm/W) |
| 21200                              | 20.4              |

\*Airflow - ANSI/AMCA 230-12 Eq. 9.6 IP