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**Content Based
Chemical Engineering**

CENTRIFUGAL FAN PERFORMANCE CHARACTERISTICS

V 1.000

[Typically up to 0.5 psi (3.5 kPa)]

CLIENT:

PROJECT:

TITLE:

Shaft Power

$$P \text{ [kW]} = Q \text{ [m}^3\text{/sec]} \times dP \text{ [kPa]} / \text{Effy}$$

Vary Speed

- Capacity varies directly with speed
- Pressure varies with square of speed
- Power varies with cube of speed

Vary Temperature

- Pressure varies inversely with absolute temp
- Power varies inversely with absolute temperature

Vary Density

- Pressure varies with density
- Power varies with density

CALCULATIONS

Design Performance and Speed

Flow Rate	100	m ³ /hr	
	27.7778	l/sec	
Diff Pressure	5.00	kPa	
	510	mm H ₂ O	
	20.1	inch H ₂ O	
Temperature	50.0	°C	
Density	5.0	kg/m ³	
Shaft Power	0.14	kW	
Efficiency	30.0%		
Motor Power	0.46	kW	
Motor RPM	1500		
Motor Pulley	100		
Fan Pulley	100		
Drive Ratio	1.00		
Fan RPM	1500.0		
Rotor Diam	500	mm	
Tip Speed	39.27	m/sec	

Alternate Speed

Flow Rate	200	m ³ /hr	
	55.5556	l/sec	
Diff Pressure	20.00	kPa	
	2039	mm H ₂ O	
	80.3	inch H ₂ O	
Temperature	50.0	°C	
Density	5.0	kg/m ³	
Shaft Power	1.11	kW	
Efficiency	30.0%		
Motor Power	3.70	kW	
Motor RPM	1500		
Motor Pulley	100		
Fan Pulley	50		
Drive Ratio	2.00		
Fan RPM	3000.0		
Rotor Diam	500	mm	
Tip Speed	78.54	m/sec	

Alternate Temperature

Flow Rate	100	m ³ /hr	
	27.7778	l/sec	
Diff Pressure	3.09	kPa	
	315	mm H ₂ O	
	12.4	inch H ₂ O	
Temperature	250.0	°C	
Density	5.0	kg/m ³	
Shaft Power	0.09	kW	
Efficiency	30.0%		
Motor Power	0.29	kW	
Motor RPM	1500		
Motor Pulley	100		
Fan Pulley	100		
Drive Ratio	1.00		
Fan RPM	1500.0		
Rotor Diam	500	mm	
Tip Speed	39.27	m/sec	

Alternative Density

Flow Rate	100	m ³ /hr	
	27.7778	l/sec	
Diff Pressure	10.00	kPa	
	1019	mm H ₂ O	
	40.1	inch H ₂ O	
Temperature	50.0	°C	
Density	10.0	kg/m ³	
Shaft Power	0.28	kW	
Efficiency	30.0%		
Motor Power	0.93	kW	
Motor RPM	1500		
Motor Pulley	100		
Fan Pulley	100		
Drive Ratio	1.00		
Fan RPM	1500.0		
Rotor Diam	500	mm	
Tip Speed	39.27	m/sec	