NOTE: Enter your data in yellow cells and results in blue cells will automatically update.

FAN LAWS

Notes:

Air Density is constant, Specific Gravity of Air is 1, Fan Size is the same.

1 = Existing Condition; 2 = New Condition

New BHP

New BHP From Change in CFM

$$BHP_2 = \left(\frac{CFM_2}{CFM_1}\right)^3 \times BHP_1$$

CFM_1	10,000
BHP_1	10.00
CFM_2	7,000
BHP_2 =	3.43

New BHP From Change in RPM

$$BHP_2 = \left(\frac{RPM_2}{RPM_1}\right)^3 \times BHP_1$$

RPM_1	850
BHP_1	10.00
RPM_2	800
BHP_2 =	8.34

New BHP From Change in SP

$$BHP_2 = \left(\frac{SP_2}{SP_1}\right)^{1.5} \times BHP_1$$

SP_1	2.40
BHP_1	10.00
SP_2	2.00
BHP_2 =	7.61

New CFM

New CFM From Change in BHP

$$CFM_2 = \sqrt[3]{\frac{BHP_2}{BHP_1}} \times CFM_1$$

BHP_1	10.00
CFM_1	10,000.00
BHP_2	3.43
CFM_2 =	7,000

New CFM From Change in RPM

$$CFM_2 = \frac{RPM_2}{RPM_1} \times CFM_1$$

RPM_1	850
CFM_1	10,000
RPM_2	680
CFM_2 =	8,000

New CFM From Change in SP

$$CFM_2 = \sqrt{\frac{SP_2}{SP_1}} \times CFM_1$$

SP_1	2.40
CFM_1	10,000
SP_2	1.54
CFM_2 =	8,010

New SP

New SP From Change in CFM

$$SP_2 = \left(\frac{CFM_2}{CFM_1}\right)^2 \times SP_1$$

CFM_1	10,000
SP_1	2.40
CFM_2	8,000
SP_2 =	1.54

New SP From Change in RPM

$$SP_2 = \left(\frac{RPM_2}{RPM_1}\right)^2 \times SP_1$$

RPM_1	850
SP_1	2.40
RPM_2	800
SP_2 =	2.13

New SP From Change in BHP

$$SP_2 = \sqrt[1.5]{\frac{BHP_2}{BHP_1}} \times SP_1$$

BHP_1	10.00
SP_1	2.40
BHP_2	8
SP_2 =	2.00

New RPM

New RPM From Change in CFM

$$RPM_2 = \frac{CFM_2}{CFM_1} \times RPM_1$$

CFM_1	10,000
RPM_1	850
CFM_2	8,000
RPM_2 =	680

New RPM From Change in SP

$$RPM_2 = \sqrt{\frac{SP_2}{SP_1}} \times RPM_1$$

SP_1	2.40
RPM_1	850
SP_2	2.13
RPM_2 =	801

New RPM From Change in BHP

$$RPM_2 = \sqrt[3]{\frac{BHP_2}{BHP_1}} \times RPM_1$$

BHP_1	10.00
RPM_1	850
BHP_2	8.34
RPM_2 =	800