

ORASSFLOW EC BLUE

(www.orass.com)

The Agenda

Discussing the latest trends in the **HVAC** Industry. Handshaking with the leaders and continuously innovating the EC Technology, we provide the latest in Pharma HVAC solutions.

Why is Power Important ?

What is 1 Kwh ?

1 KWh ~ Rs. 90,000

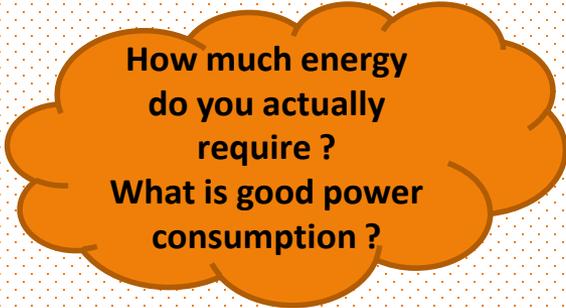
(8760 hours p.a. @ Rs. 7.50 / Kw including Heat load gains)

For OrassFlow

- ✓ We See saving of 1 Kw as
- ✓ 10.57 metric tons per year of CO2 Emission saved
- ✓ 1 Kw saved can account for 11 people throughout the year in India
- ✓ The average footprint for people in India is 1.20 metric tons
- ✓ The average for the industrial nations is about 11 metric tons
- ✓ The average worldwide carbon footprint is about 4 metric tons
- ✓ The worldwide target to combat climate change is 2 metric tons

Power in Air Movement

$$\text{Air Flow} \times \text{Static} = \text{Input Power}$$
$$\text{Input Power} / \eta = \text{Output Power}$$



How much energy
do you actually
require ?
What is good power
consumption ?

Power Can be saved in air movement by

- ✓ Reducing the Air Flow Or Optimizing the Air Flow
- ✓ Designing the system for Optimal Static Pressures
- ✓ Increasing the system efficiency

Introducing Specific Fan power (SFP)

$$\begin{aligned}\text{Mathematically SFP} &= \text{Power/Airflow} \\ &= \text{Watt/CMS}\end{aligned}$$

The SFP of a system is dependent on

- The Pressure drop in the system, in other words, the quality and accuracy of the component level design.
- Efficiency of the power consuming equipment ie. The Impeller , Motor and VFD

Open Topic of Discussion

- Lower the static pressure in the system Lower the power --- Then why design for higher ?
- Higher the ACPH * higher the power requirement – Then why not run at Optimized ACPH?

** Air Changes Per Hour*

Specific Fan power (SFP)

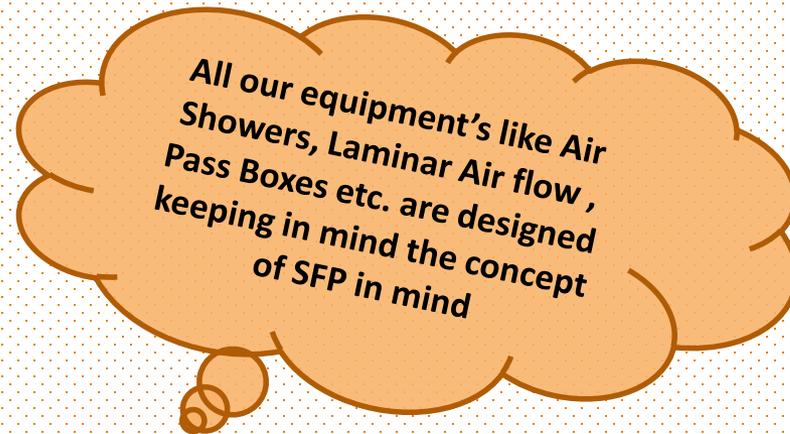
Specific Fan power is a measure of Power used per volume of air = W/CMS
Power – Watts

Volume – Cubic meter second

For Ex. SFP 1 is more efficient than SFP 5 by upto 400% – 600%.

Categories SFP [W/(m³/s)]

- SFP-1 <500
- SFP-2 500-700
- SFP-3 750 -1250
- SFP-4 1250 -2000
- SFP-5 2000 -3000
- SFP-6 3000 -4500
- SFP-7 >4500



We Design ! We Deliver ! We Implement !

OrassFlow has been using the latest technology available in the world to design the AHUs.

- We Pioneered the integration of the latest EC drives in the Air Handling Units making them the most technically advanced with little or no maintenance for the critical area of Drive, Motor and the Impeller.
- Advanced features such as sequential control of output signals to each entity in the environment and integration with complex Building Management Servers in user-friendly method, to allow centralized monitoring, with/without skilled manpower or an Intelligent stand-alone AHU.
- Starting with our belief “Conserve Energy” and adding the vast experience , in our understanding of Air Handling Systems, we have pioneered , building Air Handling Units [AHU] with specific fan power of Class I and Class II. Our research and dedication towards has enabled us to design a maintenance free system with insurance over price rise.

Intelligent AHU'S

- ✓ Composite unit comprising Impeller , Motor and VFD Functionality. (Customer benefits by not having a separate VFD , Motor , Impeller)
- ✓ Real time savings due to change in Fan speed (10 % Reduction in RPM = 27 % Reduction in Power)
- ✓ Optimum speed of Fan in all condition.
- ✓ Real time Close Loop function. (Singularly the most important customer benefit of room air quality and pressurization)
- ✓ Eliminates the need for provision of extra air changes thereby increasing efficiency and reducing the cost.

Reduce Resource Wastage in AHU

- ✓ Extracting all good of the Centrifugal FAN Design.
- ✓ Even distribution of air inside the Air Handler to maximize the use of Filter Area , Cooling & Heating coils .
- ✓ Increasing life of Filters.
- ✓ Reducing Heat Imparted to the system.
- ✓ Why work at 65 ACPH when you can choose Optimum ?

Reduce Deviation from Limits

- ✓ Up to 80% reduction in Reaction time of the drive to the system dynamics.
- ✓ Conformity to delivery of CFM in the room of up to +/- 5 %.
- ✓ Ability to Scale Up and Down with same efficiency Levels.
- ✓ CFM or Pressure in the room can be scaled up to 25%.

Reduce Fault Point

- ✓ Reduces Manual interventions
 - ✓ Dampers
 - ✓ Room Balancing etc.
- ✓ Life of the system is increased by 100% without maintenance

Reduce Risk

- ✓ Reduced Amperage => Reduced Heat => Reduced risk
- ✓ Built in fail safe mechanism .
 - ✓ Fault Reporting
 - ✓ Fail safety activation
 - ✓ Start when normalize
- ✓ Built in Harmonic Filtration
- ✓ 25%.

ErP 2015 & OrassFlow

Goal of the ErP Directive - The goal of the ErP Directive (**Energy-related Products Directive**) is to protect the climate by increasing the overall share of renewable energy in the EU to 20 % by 2020 and to increase energy efficiency by 20%.

- ✓ All HVAC units designed and commissioned by OrassFlow are designed to keep in mind the lowest specific powers in mind. Our drives abide by the European Standards and are compliant with the ErP 2015 guidelines.
- ✓ In ErP 2015 Directives EU is going to mandate a minimum efficiency for energy using products and fans which will not fulfil this requirement have to be replaced.
- ✓ OrassFlow offers a wide range of HVAC unit drives that comes under ErP 2015 Compliance. OrassFlow HVAC Units are deigned to meet all needs of both commercial and industrial buildings, complying with construction and operational standards for international markets.
- ✓ OrassFlow HVAC Units come with ready integration to the building management system to further aid the ease and operability of the system

What's in it for Engineer?

Engineering		
Description	Conventional Air Handling Units	OrassFlow Air Handling Units
<u>Drive</u>		
Motor Efficiency at varying load	40-80%	More that 90%
Motor Control	Through VFD	Built in
Motor Impeller Coupling (Balancing)	High Attention Reqd.	Composite unit ; factory set
Motor Winding/Manufacturing Quality	Questionable	Backed by German Engineering
Range of Motor HP (Standardized)	8 to 9	3 to 5 (allows for flexibility of operation)
Power Grid Connected load	100%	Reduction up to 20-30%
Ease of operations	required skilled labour	No labour required once set
Maintenance	Timely maintenance required	No maintenance required
<u>Filters</u>	Local or standard	Large Pack size filters for low static and long life
<u>Coils Design</u>	Manual or Automatic	All selection through software
<u>Insulation & Thermal Breaks</u>		Aluminium extruded thermal breaks with Puff or rock wool insulation
<u>Automation</u>	Very difficult without BMS	Autonomous units with high level of automation possibility without BMS

What's in it for QC & Safety?

Quality		
Description	Conventional Air Handling Units	OrassFlow Air Handling Units
<u>Area Classification</u>		
Pressure Balancing (Response time)	Poor	Excellent
CFM: Claimed vs. Actual (This has huge bearing on room classification - ACPH)	+/- 30%	+/- 15%
CFM Range (This allows for achievement of room classifications as desired with no loss of power as all ACPH are based on thumb rule)	+/- 10%	+/- 25%
<u>Safety</u>		
Motor (Phase Protection)	No Protection	Protected
Overheating	No Protection	Protected
Fire(Due to Harmonics)	No Protection	Protected
Phase Reversal	No Protection	Protected

What's in it for Finance?

Finance		
Description	Conventional Air Handling Units	OrassFlow Air Handling Units
Power saving with control of RPM	25-40% of the Fan Laws with VFD	100% of the fan laws without any external device
Power Saving	Poor With VFD	~ 40% on VFD driven systems
Savings due to Heat Control	Nil	up to 50-90% of power savings as per 40 above
Requirement of Connectivity Infrastructure investment	high	low
Reduction in Chiller requirement	Nil	10-25%
Generator capacity requirement	high	15-20% reduction
Connected load	Rated Capacity of Motive power	Reduction up to 10%
Life of filters	Reduced	Excellent (due to more than 95% control over delivered CFM)

What's in it for Management?

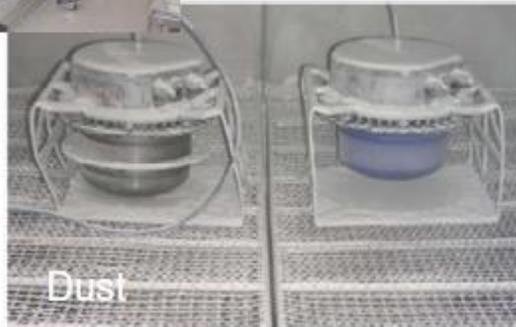
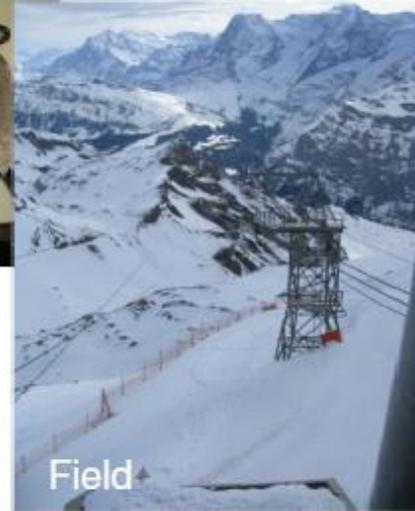
Management

Description	Conventional Air Handling Units	OrassFlow Air Handling Units
Payback Period	-	1.5 - 2 Yrs.
Risk management in case of failure	No recourse	100% Manageable
Ability to Scale up	Nil	Excellent 10-40%
Robustness of system	Fair	Excellent
Trouble free Operations	Fair	Completely

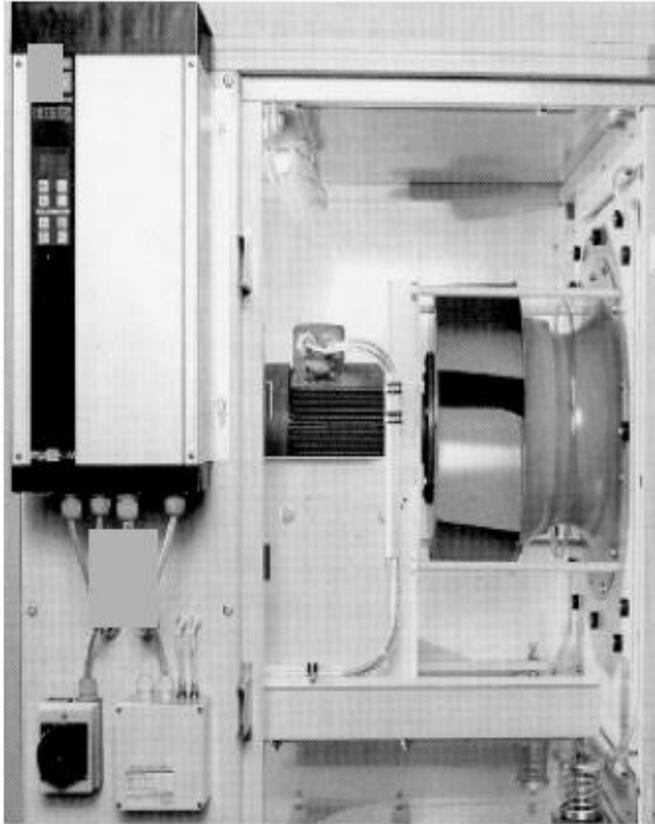
With High Efficiency in the Running the high capital is very easily recoverable.

EC - Reliability

Water – Dust – Dirt !
ECblue can resist it all!



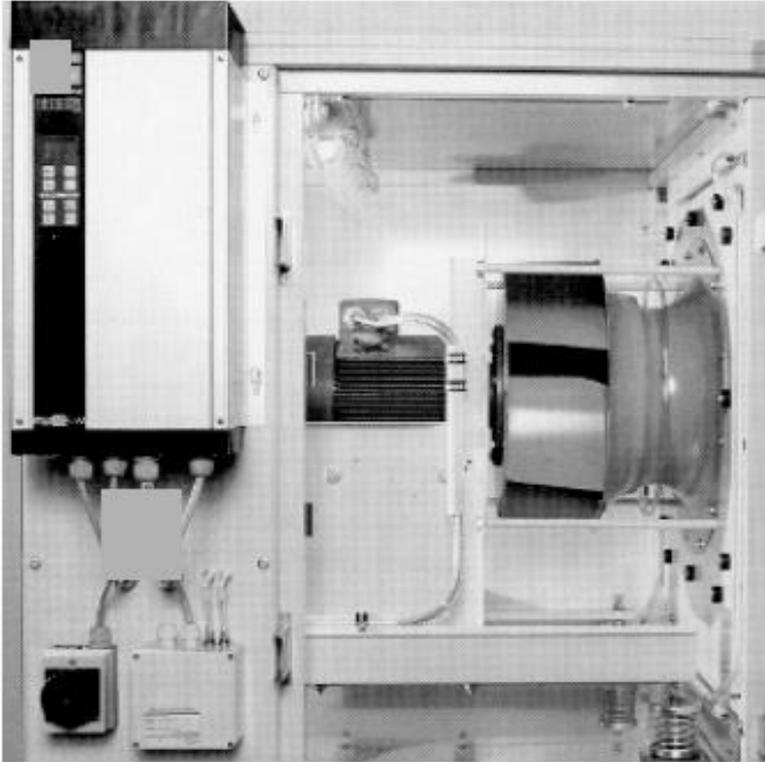
AHU Construction Made Easy



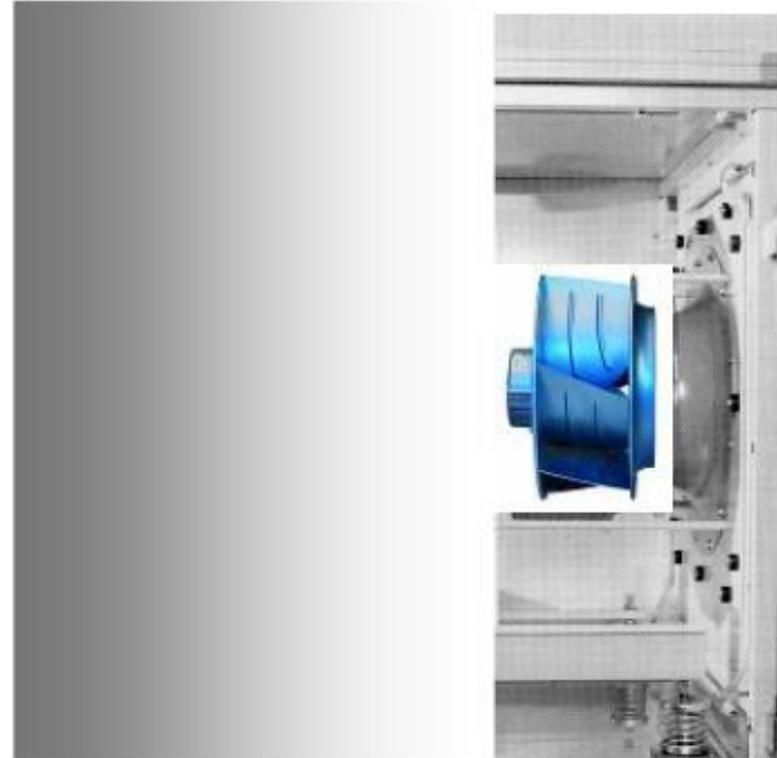
- Space
- Simplicity



Less Components ~ Less Faults



With Variable Drive



With EC Fan Inside

Why decide when you can Combine !

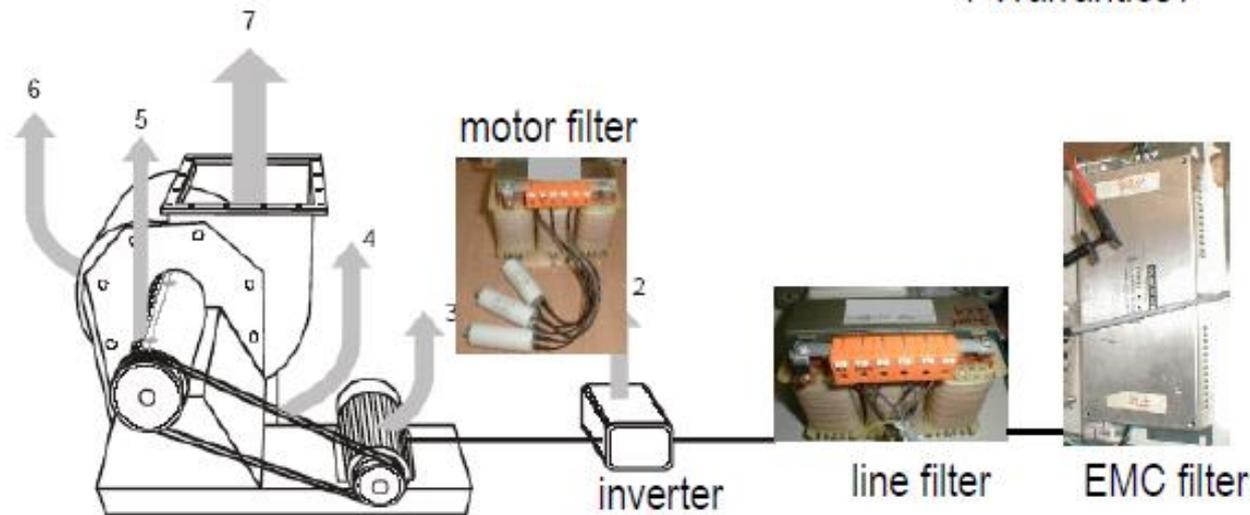
In EC Fan we design the complete system for the client.

? Proper combination of components?

? Correct installation?

? Maintenance?

? Warranties?



Standard motor with variable frequency drive

Enerjiyi Korumak

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