

Inborn Engineering Solutions Pvt. Ltd.

Learning advances as we go to
the fundamentals
So we do...

Excellence comes with passion. We are passionate on engineering, hence our projects excel for being well engineered.

Inborn Engineering Solutions Pvt. Ltd is in the venture of providing HVAC solutions. With meditation to the core subject, we deliver long lasting performance on our design and installations of HVAC systems. We provide solutions to all the core areas of HVAC industry namely, comfort air conditioning, industrial heating and cooling applications, clean rooms, pharma and precision air conditioning.



Inborn Engineering Solutions Pvt Ltd.

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About Us:

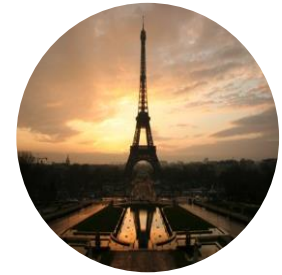
In this age of outflowing opportunities, development and digitalisation are considered synonyms by industries. Core engineering industries while transforming to this persona before being termed as outdated, was bound to shed fundamental principles at many stages and adopted a new culture.

We behold the fundamental engineering principles to derive our solutions - call us outdated. While the entry of a new technology to the market is celebrated across the industry and finds ways to replace the existing ones, we find them as a new alternative. Thus we have a larger number of alternatives to pick the best solution for each requirement.

Inborn Engineering Solutions Pvt Ltd., incorporated in year 2013 in Mumbai, is building up trust of its esteemed clients in designing, building and maintaining HVAC projects. We have been growing manifold ever since inception and is now taking and executing comfort air conditioning projects with industry leading confidence.

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Our Vision



To be a leader in defining and designing solutions to engineering problems in HVAC and energy applications, with fundamental approach and be a trust mark for uncompromised quality in delivering results

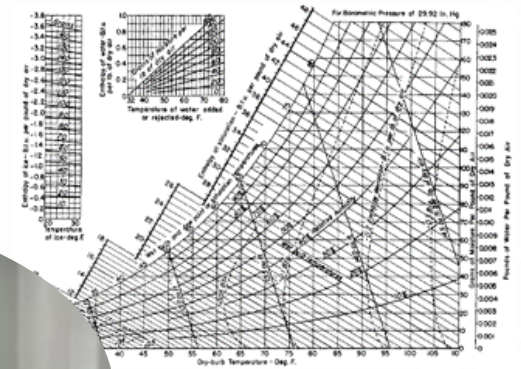
To take part in the international effort of formulating sustainable development with concepts based on environment friendly technologies



Products & Services

Overview

We are in the business of various design & build solutions on HVAC and energy conservation. We are in to the business of Comfort air conditioning, Precision air conditioning, clean rooms, Ventilation projects etc. After understanding the detailed requirements, we do thorough analysis and select the best alternative before giving our proposal. It is our pleasure to see that the projects we execute give long lasting performance and efficiency and enhance our clients to performance on their core business with the perfect environment we have partnered to create for them.



COMFORT AIR CONDITIONING

We do the complete design and build of comfort HVAC system. There are wide range of products available in the market, but selecting the most suitable one and installing the same for the best overall performance is essentially what experts can only do.

Services We do in Comfort AC

- Designing
- Equipment Selection
- Supply of HVAC Equipments
- Installation, Testing & commissioning
- Maintenance

Range of comfort HVAC Systems we deal in

- Unitary Systems
- Ducted Split Air conditioning Units
- Variable Refrigerant Flow (VRF) systems
- Chilled Water Units & AHUs
- AHU with VRF Condensing Units

Thermal Comfort is a function of various parameters. There are established relationships to assess how efficient is the conditioned space in terms of thermal comfort. By properly managing air distribution mechanisms, an HVAC engineer can make the best use of space in terms of ensuring maximum area under the comfortable zone. You can ask our engineers to see how Air Distribution Performance Index (ADPI) helps for this and how we do optimise this.

Health aspect of Indoor Living – Indoor Air Quality is one important element for a healthy indoor living. As the modern lifestyle has more of indoor living than outdoor, one's over all health is majorly decided by the quality of indoor air. Ventilation is one essential process which improves Indoor Air Quality. There are various dimensions to the process of inducing the correct amount of fresh air to the conditioned area.

Optimum balance of equipment capacity, thermal comfort, indoor air quality, energy performance, reliability , durability etc will be a complex model and only an expert can make the perfect HVAC system.

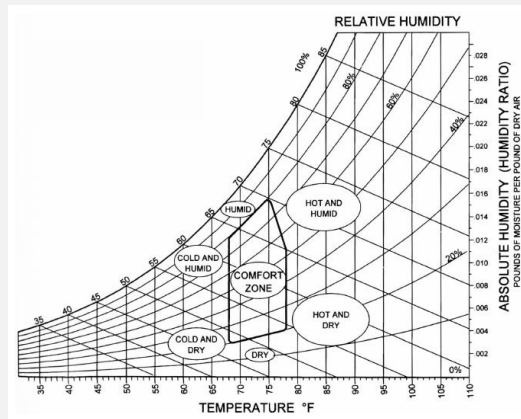


Mitsubishi VRF Condensing Units
In a comfort air conditioning project

Lower level of inducing fresh air increases health risks, a condition known as Sick Building Syndrome (SBS), low productivity in work places, absenteeism etc.

Inducing fresh air to conditioned space is an expensive process due to load on the HVAC system.

Arriving at optimum balance of Indoor Air Quality and energy cost is often not a task to be handled lightly.



Energy efficiency for HVAC system is not something to be misunderstood with equipment efficiency. It is to be defined as gross productive output to the energy used for HVAC. Energy efficiency ratings of commercial air conditioners are mandated by BEE for domestic range of air conditioners. While referring the available performance details for equipment selection, careful installation and maintenance is to be administered for optimum results.

Deriving the best energy performance along with balanced delivery of desired conditions shall have many things to look for :

- Proper sizing of the equipment
- The most suitable technology
- Optimum ADPI
- Energy efficient equipment
- Most recommended fresh air level
- Good installation practices
- Timely maintenance .

Why to go with Inborn?

A cooling or heating device is most often as simple as a plug in to run device. A comfort HVAC project differs greatly from such a simple approach. Hence getting the works done from the experts matter a lot.

Diving to the depth of HVAC, we explore all dimensions to meet every aspect of what can technically be achieved with the considerations of the given space, timelines and price.

Entry of new technologies are often celebrated by the market to create newer business. Where as we explore options from most ancient to post modern while formulating a solution and select the best alternative with analysis ranging from fundamental principles of science to complications of applied engineering, financial analysis to value engineering, elements of aesthetics to importance of ergonomics, making the solution we propose can best be replaced by itself only.

PRECISION AIR CONDITIONING

Conditions required for industrial processes and machines are often different to that used for human comfort. There are cases where temperature and humidity levels need simultaneous attention.

Precision air conditioning systems take care of this requirement.

Range of Services in Precision Air conditioning

- Designing
- Equipment Selection
- Supply of Equipment (Vertiv)
- Installation, Testing & commissioning
- Maintenance

Applications of Precision Air conditioning

- Data centres and server rooms
- UPS rooms
- Various process rooms
- Museums & Art galleries where fungal growth to be controlled

Air Flow rates required in precision air conditioning are different than comfort air conditioning. The air distribution pattern also is to be designed according to the process flow or the equipment orientation.



Data centres being one of the major applications, has witnessed larger amount of studies and guidelines are available for designing the same. The manufacturers of the server units also specifies the environment for such machines.

By not aptly selecting the optimum design, non engineered systems leave heavy safety margins causing wastage of Energy required for cooling.

By following such guidelines, we design and install energy efficient, reliable and performance oriented precision air conditioning systems.

Using wall mounted split air conditioners or such equipment designed for comfort air conditioning for server rooms often prove to be more expensive in over all life cycle cost despite not really meeting the requirements.

Not only does the proper designing of HVAC system for such application are the major area to be focussed but defining a correct process flow or equipment orientation strategy to be implemented to have the best of performance. This is often not viable while making a corrective action after going for a wrong option, thereby limiting any improvement options later on. You can discuss in detail about the engineering ideas behind the solutions we propose and execute with our engineers.



VERTIV™

VENTILATION PROJECTS

Need for mechanical ventilation has over ages increased in proportion to the envelope size of the buildings. A common way of quantifying the ventilation rate is by specifying in terms of the quantity as multiple of the volume of the enclosed space per unit time. Say if the ventilation system displaces an equivalent to five times the volume of an enclosed space in an hour, it is specified as 5 Air changes per hour (ACH)

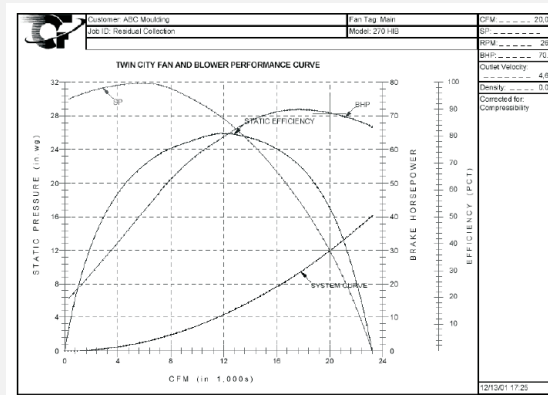
Depending on the applications, the ventilation rate varies which decides the amount of air that is to be fed and extracted.

Applications of mechanical Ventilations

- Under ground constructions
- Kitchen & associated units
- Chemical plants
- Water treatment plants
- Industrial process units
- Hospitals
- Pharma units
- Toilet ventilation

A well engineered ventilation system will ensure

- Adequate ventilation rate
- Ensuring the proper extract locations
- Maintain required room pressure
- Optimum overall energy efficiency
- Economic sizing of duct works
- Best Efficiency point for the fans
- Minimise noise level
- Durability and reliability



Designing a system in such a way that the fan runs at its best efficiency point is one of the important aspect of ventilation system design. Hence calculating the system pressure for the designed air flow and selecting a fan that has its best efficiency point at that condition is essentially an engineer' s work.

While as a practice, toilets, kitchens etc maintain negative pressure by exhausting more air than the make up air, for obvious reasons and if the adjacent area is air conditioned, any deviation in the ventilation air flow quantity will have alarmingly heavy impact on the energy bills and performance due to increased infiltration to the air conditioning system. These are various observations in the industry due to poorly engineered HVAC systems.

We take all effort to provide the client, a system that performs with lowest life cycle cost..

CLEAN ROOMS:

A Clean room is a conditioned space where the cleanliness in terms of dust particles are controlled within a pre defined limit defined by a governing body. Various filtration techniques are applied to control the particle count within the set limits.

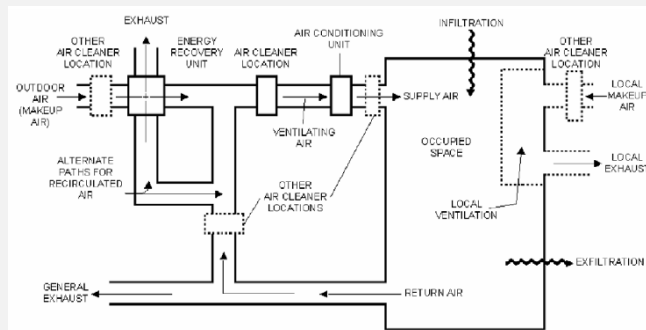
Applications of Clean Rooms

- Pharma Industry
- Food manufacturing & packaging Units
- Electronic component manufacturing
- Hospitals, Operation theatres etc.

Clean Room Services we offer

We provide complete clean room solutions and take turnkey clean room projects.

- Clean Room envelope
- Epoxy flooring
- HVAC equipment
- Air distribution duct works & terminals
- Air Filters including HEPA
- ESP units
- Clean room lighting & fixtures
- Clean Room Monitoring devices
- Pass Boxes
- Laminar Airflow Units
- Clean Room accessories



Clean rooms vary widely with respect to applications, hence the designs. By properly understanding the needs, following the guidelines set by the governing bodies of the industry which the clean room belongs, customising for the user specific aspects and work flow, we construct clean rooms to the optimum performance level.

ENERGY AUDITS

We do energy audits of building and industrial units, often for evaluating HVAC system improvement plans.

A general awareness of energy consumption and its control is followed by each of our engineers in order to ensure that sufficient information is given to the client regarding the efficiency of their system and requirement for addressing the issues if any in time.

HVAC systems in general is the single largest consumer of electrical energy in commercial buildings and amount to 60-70% of an establishment' s total energy consumption, in most cases in India. Improvement in energy consumption pattern of HVAC system is never as simple as simply replacing with a more energy efficient device of the same out put. It requires identification of the most suitable technology, design the system with the best efficiency points of the equipment, optimising load by adopting process analysis, use of proper capacity control mechanisms, maintenance plans and so on.

Our study and recommendations are always based on a system approach considering the impact of a change to the entire system.

Why to do an Energy Audit

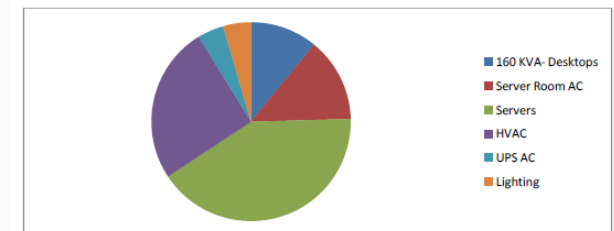
Energy audit helps in

- Identifying and targeting energy wastages
- comparing individual' s performance to industry bench marks and give competitive edge by optimising resources.
- Reduce carbon foot prints
- Exploring alternative energy sources



As energy is an invaluable resource and saving energy is a collective responsibility of the generation, we encourage and support all such programs and are passionate of conducting such studies and propose improvement methodology.

160 KVA- Desktops	17,230	11%
Server Room AC	21,600	14%
Servers	64,800	41%
HVAC	40,269	26%
UPS AC	6,732	4%
Lighting	7,150	5%
Total Units	157,781	100%



A sample summary that shows the energy distribution pattern for an office with data centre.

List of Projects

- 20000 sqft comfort Air conditioning with Chilled Water Air Handling Units – Motilal Oswal Securities , Mumbai
- 200 TR Comfort Air conditioning system with Ducted split Airconditioning units – DGSL Pondicherry
- 260 HP Variable Refrigerant Flow system comfort Air conditioning with Air handling units – Prudential Global Services , Mumbai
- 150 TR Comfort Air conditioning system with Ducted split Air conditioning units – Lumina Datamatics Pondicherry
- Turnkey Clean Room infra project for Lab and production facility in Pharma grade – M P Bio Medicals, Navi Mumbai
- Turn key Clean room project for High precision Electronic component Assembly unit – Micro components, Andheri , Mumbai
- 150 TR comfort Air conditioning works with ducted split Air conditioning units - Motilal Oswal securities , Malad West, Mumbai
- Ventilation system for Sewage Treatment Plant – Lodha Builders, Khoni, Thane
- Chilled water oil cooling system for oil cooler– Bosch Limited, Nashik
- Precision Air conditioning (Vertiv make) - Tata sons, Bombay house, Mumbai
- Operation theatre, HVAC system - Aarogyam multi speciality hospital - Yavatmal, Maharashtra

Business Partners



HITACHI
Inspire the Next



Principles & Values

Closely working together with our clients and delivering performance oriented and efficient infrastructure, is key to a mutually growing business system

Being truthful to our clients and stake holders, pledge to reduce and compensate our carbon footprints, love and live in harmony with nature

For enquires please follow the below contact

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