



BLUE STAR

Service Capabilities



Optimise the Performance of your
Airconditioning and Refrigeration System

Why is it important to service your airconditioning and refrigeration system?

Airconditioning and refrigeration systems, like all mechanical equipment, are subject to wear and tear. They lose efficiency and consume more power over time, unless you monitor and maintain them regularly.

Studies reveal that with regular tune-ups, a system **will deliver up to 95% of its original efficiency**. This helps reduce operating and revamp costs, and also helps you save a lot on power.

Why Blue Star Service?

There is a prevailing misconception that you don't need specialised skills to keep your airconditioning and refrigeration system in peak condition. Or that in the case of a breakdown, any local AC repair man can step-in for troubleshooting.

Nothing can be further from the truth. Most local technicians lack in-depth understanding of the complex designs and circuitry that make up the innards of modern day airconditioning and refrigeration systems. Also, they are ill informed when it comes to indoor air quality, airside management and energy efficiency. In addition to this, their lack of resources and infrastructure can cause irreparable damage to your system.



The Blue Star Edge

Blue Star's service experts, armed with adequate on-site and classroom training are highly qualified to monitor and service airconditioning and refrigeration systems. In fact, Blue Star has one of the largest pool of qualified and trained HVAC engineers, and these are supported by a robust network of channel partners across the country. All backed by over six decades of expertise in airconditioning and commercial refrigeration.

The Blue Star Advantage

Expert Service Solutions from Blue Star give you the following advantages:



Trained Personnel: Our engineers and technicians undergo intensive training to handle expensive, sophisticated airconditioning and refrigeration equipment.



Priority Service: When you opt for our annual service, we offer you priority service. Which means that your calls get attended to promptly and the system is serviced quicker.



Preventive Checks: Under all our service solutions, we offer preventive maintenance checks which help in identifying problems early, preventing costly downtime.



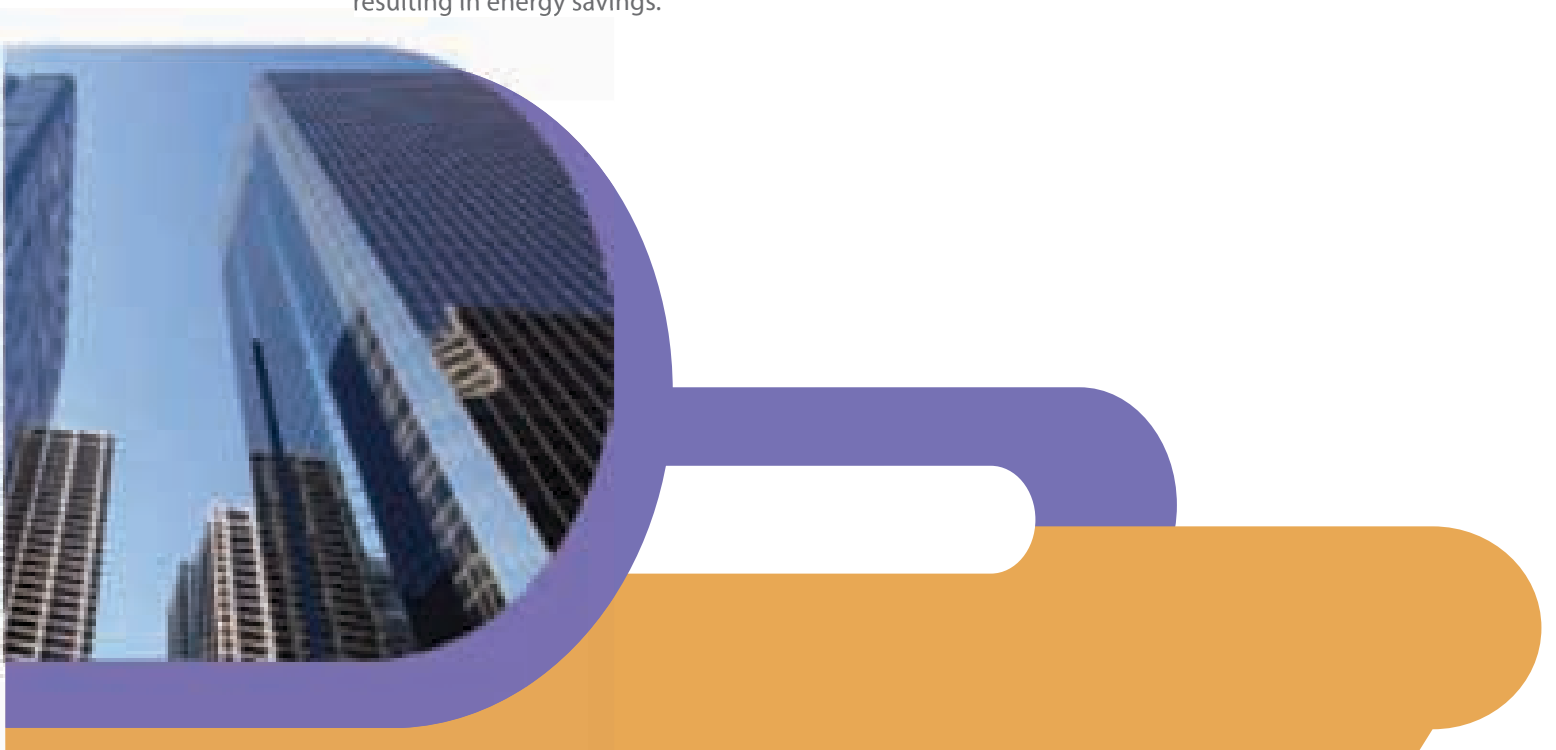
Any Time Access: All our service personnel including technicians are given cell phones for your ease and convenience.



Genuine Spares: By opting for our service solutions, you are assured of genuine spares that will go a long way in ensuring high uptime for your system.



Seasonal Settings: In summer, you would prefer lower temperatures and when the climate is cold you often feel the need to change your settings to higher temperatures. Before the onset of a season, our engineers calibrate the airconditioning system to suit your unique requirement, thereby resulting in energy savings.



Blue Star's Bouquet of Services

At Blue Star, you will find a wide spectrum of Service Solutions to meet all your requirements. Apart from standard maintenance solutions, we also offer premium value-added services for your critical needs.

Risk Protection Contracts: This comprehensive contract includes all labour, spares and consumables. It covers routine preventive maintenance as well as attending to breakdowns.

Labour Maintenance Contracts: This contract includes only labour for routine preventive maintenance and attending breakdowns. The spares and consumables are charged for separately.

Operating Contracts: This is a pure labour contract. The operators are stationed for single, double, round-the-clock or 365 days shift, depending on your needs. They regularly monitor the operating status.



Value Added Services

Validation and Commissioning Services

We have a team of professionals who validate the system installation with standard parameters. This covers the chiller, ancillary equipment and accessories attached to the system. Post validation, commissioning is carried out as per the standard checklist. Our team also gives frontline engineers the necessary training to ensure smooth functioning of the system.

Product Upgrades and Enhancements

These services are primarily targeted at old airconditioning systems. Over a period of time it is quite likely that due to additional equipment load or change in the office layout there is a change in the heat load. To cater to the revised heat load, there may be a need to modify the ducting, enhance the capacity of the air handling unit or even replace the old chilling machine.

Enhancements may also arise out of the replacement of condensing units, upgrading to new energy efficient compressors, refrigerant conversion, replacement of old electromechanical controls with microprocessor-based controls etc.

Replace your old Fan Coil Unit

The continuous exchange of hot air with cool air in your airconditioning system takes place through the Fan Coil Unit (FCU). Over time, the unit ages making it extremely noisy. Blue Star's new FCU is reliable and trouble-free; it has a special low noise feature that makes it the quietest in its category.



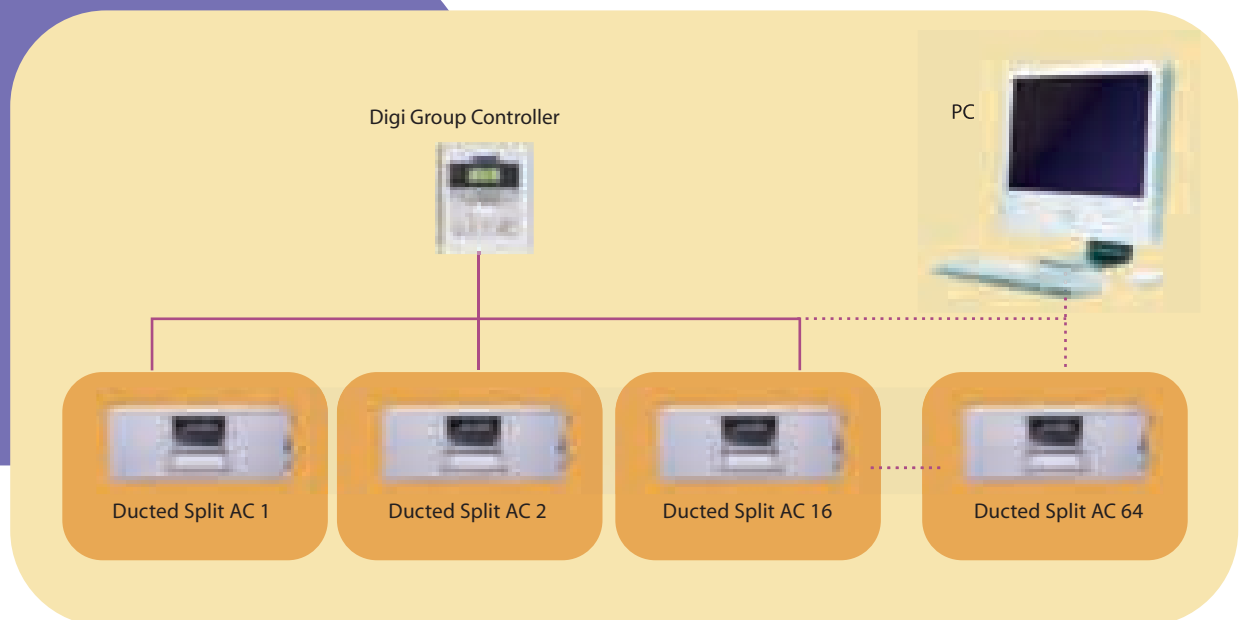
Fan Coil Unit

Refrigerant Conversion

Since 2005, CFC-based refrigerants have started being phased out. It has become extremely critical to change to the refrigerant R-11 for your airconditioning system. The Montreal Protocol mandates phasing out all CFCs by 2010.

Digi Group Controller with PC Connectivity

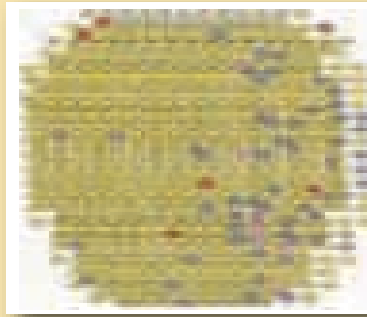
The Digi Group Controller is a smart way to control your airconditioning system. It is a device that helps you time your airconditioning system on a flexi-schedule, with breaks whenever you want. It also helps you choose between various temperature bandwidths for different times of the day and controls the entire system. This system also comes with a number of special advantages for secure operation and constant monitoring.



Advanced Pre-emptive Diagnostics for Airconditioning Systems

To prevent breakdowns and enhance the life of your airconditioning system, we offer you a wide range of diagnostic tools. Eddy Current Testing (ECT) is one such tool that particularly addresses chiller and condenser tube damage. ECT is an electromagnetic, non-destructive diagnostic process that detects corrosion, erosion, breakage and leakage in the chiller heat exchanger tubes. Performing ECT on chiller tubes every few years helps locate defects at an early stage, before they bring the entire system down.

A tube sheet diagram after the Eddy Current Testing inspection:



- Blocked tubes
- Already plugged tubes
- Suggested plug after inspection (wall thinning 40% and above)
- Wall loss 0 to 20%
- Wall loss 20 to 40%

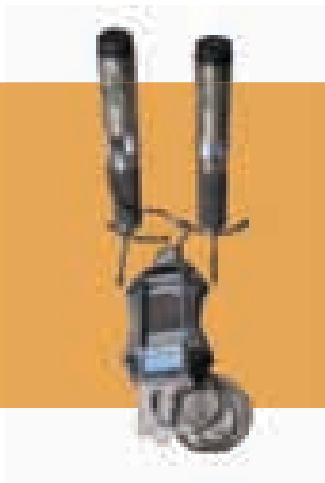
Advanced Microcontroller for Chillers

Upgrading chillers from the electromechanical panel to the advanced microcontroller offers large benefits. It helps in continuous monitoring of the equipment and taking corrective action to ensure efficient performance. Moreover, it provides flexibility of operation, resulting in a substantial reduction in power bills. All in all, it ensures accurate cooling and provides a digital platform for remote connectivity, as well as compatibility with building management systems.



Indoor Air Quality Management Services

Indoor Air Quality (IAQ) refers to the nature of air within an inhabited, enclosed space, with particular relevance to suspended particulate matter, dust, harmful biological contaminants, chemical vapours and odours present in it. Today, it is assuming greater importance amongst corporate and commercial customers, as people realise the harmful effects of poor indoor air quality on health and productivity. Blue Star offers a range of IAQ Management Services starting with a comprehensive indoor air quality audit.

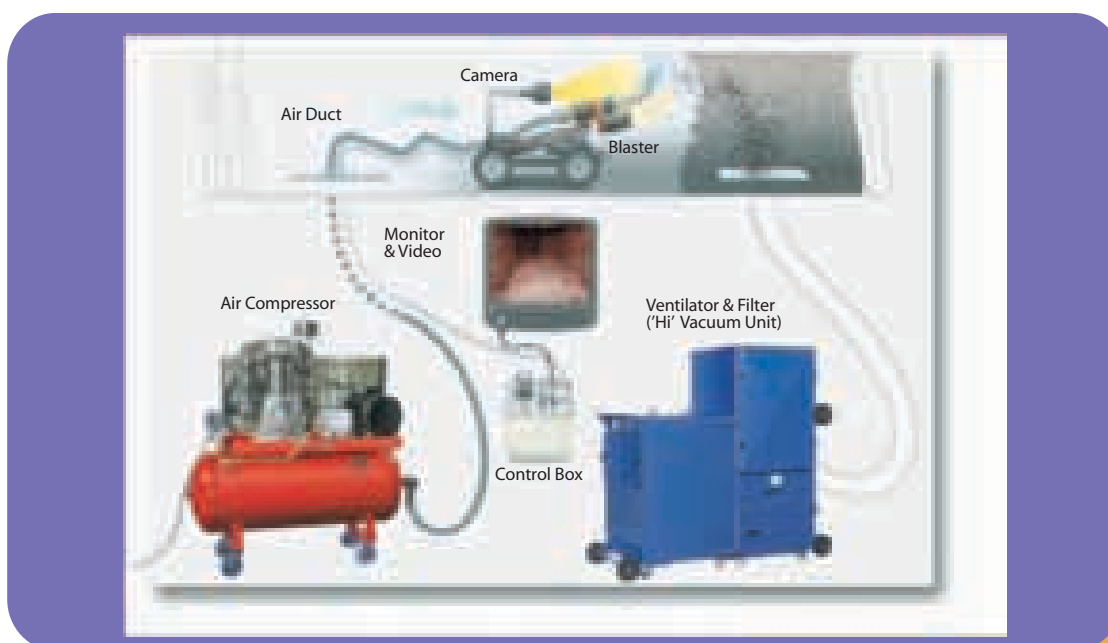


Indoor Air Quality Audit

Before arriving at any conclusion, our IAQ audit examines a range of parameters like temperature, humidity and particulate count. A specially devised instrument monitors the presence of various gases in the air. The readings are then compared with the standard guidelines issued by ASHRAE (American Society of Heating, Refrigerating & Air Conditioning Engineers) and OSHA (Occupational Safety & Health Administration). After analysing the parameters, our team of experts submit a detailed IAQ survey report and recommendations.

Duct Cleaning

Fungus tends to grow in the corners and joints of the airconditioning ducts, which subsequently become a breeding ground for different types of bacteria and moulds. These contaminate the air and can lead to various illnesses. They also tend to clog the air channels, thereby affecting the airconditioning system. Therefore, it is vital to ensure that your ducts remain clean and dust-free at all the times.



Realising the importance of periodic duct cleaning, Blue Star offers duct cleaning services to ensure cleanliness and proper functioning of the ducts, grilles and diffusers. The cleaning equipment also has an inspection system which comprises a video camera and a portable colour TV monitor. With this, you can monitor the condition of your ducts before and after cleaning. Blue Star's duct cleaning services are accredited by the National Air Duct Cleaners Association (NADCA), USA.

Indoor Air Quality Improvement Products

Yet another initiative in the area of indoor air quality is our tie-up with Steril-Aire, USA and Biozone, Finland. We bring to you technological breakthrough products which help substantially improve indoor air quality by destroying viruses and bacteria through ultraviolet energy. These units reduce power costs by improving heat transfer and also increase net cooling capacity.

UVC Emitters use germicidal Ultraviolet-C energy to eradicate both surface and air borne mold, viruses and bacteria.

Biozone Products such as Air Care and Air Purifier are extremely quiet devices that help destroy smoke, viruses, moulds, fumes and other impurities.



Air Balancing and Leakage Detection

Air balancing ensures that there is uniform cooling throughout the room by measuring, adjusting, analysing and documenting airflow (CFM) distribution relating to Air Handling Units, Make-up Air Units, Exhaust Fans, etc. Air leakage detection helps to prevent wastage of treated air.

Energy Management Services

Airconditioning constitutes around 65% of the total power consumption in any establishment. Apart from this, heat load conditions and usage patterns vary over the years with wear and tear, resulting in further power consumption. Blue Star's energy audit can help you stop your electricity bills from spiralling.

Energy Audit Services

Blue Star undertakes a comprehensive energy audit which starts with identifying the consumption, and ends after executing the recommendations that result from the audit. We even audit other energy consuming devices such as lighting, pumping, cooling towers and many more, giving you a one-stop solution. What's more, our audits are backed by guaranteed energy savings, and carried out by Energy Managers and Energy Auditors accredited by the Bureau of Energy Efficiency (BEE).

Our Energy Management Services Also Include:

Variable Frequency Drives (VFD)

Variable Frequency Drives (VFD) is an important energy saving device which can be used in chillers, air handling units, cooling towers, pumps and other motors. Blue Star has partnered with Danfoss, Denmark for providing VFDs. Based on fluctuations in airconditioning demand from the end user, VFD changes the frequency and hence the RPM of the motor, thereby saving energy.



Variable Frequency Drive

Part Load Management

Based on climatic fluctuations and variations in the internal use on account of occupancy, it is essential to understand the quantity of heat used at various stages. This is instrumental in understanding part load behaviour of the chiller, and for planning the airconditioning requirement.

Air Distribution Optimisation

Air distribution and air balancing play a critical role in energy saving, as the airconditioning load is determined by air distribution and air balancing. Blue Star has developed expertise in the area of air balancing, offering devices such as variable air volume systems.

Water Balancing

In any airconditioning plant, condenser water and chilled water are balanced at the time of commissioning only. There is a strong possibility of disturbances in this, on account of manual intervention. Hence it is essential to balance this chilled water and condenser water at periodical intervals to improve the chiller performance.

Facilities Management Services

Facilities Management Services is an internationally recognised specialisation that involves multiple disciplines. It ensures smooth and efficient functioning of the built environment by the comprehensive integration of human resources, systems and technology for delivery of 'non-core' support services to clients. Blue Star has an accreditation from the International Facilities Managers Association (IFMA) and offers Facilities Management Services in areas such as Mechanical & Electrical Maintenance, Support System and Utilities Management.

Superior Service Processes

Blue Star's superior systems and processes help it in delivering the best to its customers. Mentioned below are some of them:

- The Company has ISO certification with accreditation from UL India for the service operations of Central Plants and Packaged Airconditioning systems.
- There is a Service Quality Assurance Group in place for benchmarking the best practices in other service industries, and developing and implementing service delivery standards in conformity with the same.
- The Service Specialists Group handles complex technical problems in the field even through remote supervision or direct intervention, if required. The team is well equipped with various advanced measuring, data logging and diagnostic tools.
- A Certification and Developmental programme for channel partners and business associates is aimed at the development of their infrastructure, manpower resources and capabilities. The programme also includes modernisation and upgradation of service instruments, tools and tackles.
- The National Parts Centre and Regional Parts Centres in various cities, ensure faster availability of service parts.
- A special Call Management service takes care of customer requests from 9 am to 9 pm, 365 days in a year.
- All these differentiated and superior services make Blue Star a preferred name in the airconditioning and refrigeration service business.




BLUE STAR

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