



A Guide to HVAC Project Planning

*A free guide to planning your
next HVAC installations project*



Contents

Introduction	3
Preparation	5
Service Provider Selection	10
Undertaking the Project	15
Equipment Maintenance	19
Customer Feedback	23
Conclusion and Next Steps	25

Introduction

JCW Energy Services has been installing complex HVAC, through to simple air conditioning systems, for over 25 years and have gained an **enviable reputation** within this field for technical expertise and professional service.



Our customers trust and expect us to be able to provide them a system with a bespoke design, **full project management**, exacting time management, minimal disruption, the longest warranties, full after sales service and ongoing maintenance regimes.

Is this what you would expect?

Well, you should and JCW strive to deliver all of this and more, to ensure our customers will remain loyal and recommend us to others. But what goes on behind the scenes to deliver this seemingly seamless service?

Read on to find out more about:

- How you can prepare for your next installation project
- Service provider selection considerations
- Read a few tips and interesting facts
- Gain a little insight into how your service provider, provide their service



Thank you for downloading, we hope you find our guide useful, please do not hesitate to [contact us](#) should you require any further information.

Disclaimer

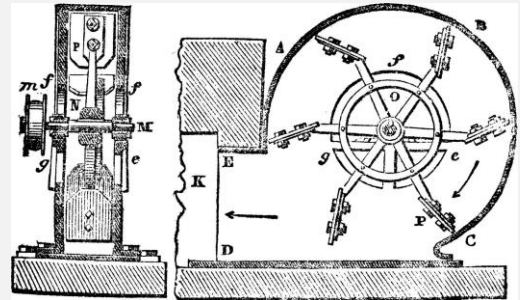
The information provided within this eBook is intended to be non-technical and is for general informational purposes only. While we try to keep the information up-to-date and correct, there are no representations or warranties, express or implied, about the completeness, accuracy, reliability, suitability or availability with respect to the information, products, services, or related graphics contained in this eBook for any purpose. Any use of this information is at your own risk.

Interesting Facts

The Ventilator

In 1736, the English House of Commons was cooled by a seven-foot, hand-cranked “blowing wheel,” which acted as a giant fan. The man at the helm of the crank was called the Ventilator.

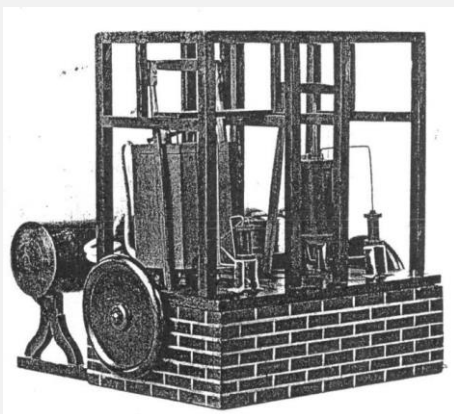
The principles of Mechanical Cooling were first explored back in 1758 when Benjamin Franklin and John Hadley experimented with the principle of evaporation to rapidly cool an object. They confirmed that evaporation of highly volatile liquids could drive down the temperature of an object past the freezing point of water.



Franklin concluded “From this experiment one may see the possibility of freezing a man to death on a warm summer's day”.

The Evils of High Temperatures

In the 1840's, physician and inventor Doctor John Gorrie from Florida, proposed the idea of cooling areas within the cities to relieve the inhabitants of ‘the evil of high temperatures’. Gorrie believed that cooling was the key to not only avoiding diseases such as malaria but will also make people more comfortable. However, his rudimentary system for cooling a hospital room for example, required ice to be shipped to Florida from the frozen lakes in northern United States.

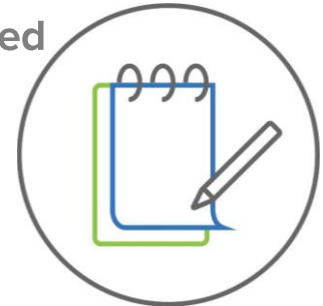


This logistical challenge was expensive and time consuming, so Gorrie started experimenting with the concept of artificial cooling. In 1851 he designed and patented a machine that created ice using a compressor powered by a horse, water, wind driven sails or steam.

Although Gorrie was unsuccessful in bringing this technology to the marketplace, his invention laid the foundation for the modern air conditioning and refrigeration systems we use today.

Preparation

It is a rule of thumb that generally the **better prepared you are**, the more likely a better job will be completed. Looking at and analysing the nuances of the work required from the outset can avoid unnecessary and **frustrating delays**.



This couldn't be truer when planning your next installation project. Here are some considerations that need to be made from the beginning, of course this list is not finite, each project is different, but it gives an overall view:

1. Use of space

Will the use of space differ to how it is currently being used or set up? Even if the use of space will be the same, the number of people or amount of equipment within the space may have increased or reduced.

All of this can have an impact on the heat load. Another important consideration is the amount of ventilation the space currently benefits from.

2. Ventilation

Following the recent pandemic and the spread of Covid19, the importance of adequate ventilation has been highlighted even more. Consideration needs to be given to ensure there is enough ventilation to exchange the air inside the building. Fresh air should be utilised as much as possible to help reduce the risk of spreading viruses, such as Covid19.

When considering installing or replacing ventilation systems it is essential that you refer to the most recent recommendations from governing bodies.

[Click here for guidance from the HSE for Coronavirus advice for workplaces.](#)

[Click here to view the CIBSE Guides for ventilation, ductwork, air conditioning and refrigeration.](#)

Preparation (continued)

Ventilation (continued)

It is a known fact that the transmission of Covid19 can commonly occur in enclosed indoor spaces. Air should not be re-circulated, instead a steady flow of fresh air should be circulated through mechanical ventilation systems. The general guidance is to supply as much outside air as reasonably possible. Avoid concentrating people in small areas but maintain or enlarge the social distancing between persons (2-3 m minimum) to encourage the ventilation cleaning effect. To this end they have recommended that central re-circulation is avoided.

2.1 Airflow Management

While research and studies are still ongoing regarding how the Coronavirus spreads via air, evidence suggests that measures to change indoor airflow patterns could play a role in reducing transmission. Three principles apply:

- Encourage a vertical laminar, rather than turbulent airflow.
- Ensure a slow, steady air speed.
- Direct potentially contaminated air out of rooms and away from people.

Next, design stages and consideration for installing or replacing HVAC systems:

- Install variable-speed fan motors to enhance the control of airflow and allow for a minimum setting that produces lower speed airflow.
- Introduce sophisticated airflow-control systems, such as those that are sensitive to pressure, to allow for smoother adjustments of air flow.
- Install high-performance air-purification systems.

3. Energy Efficiency

How energy efficient is the space currently? Accessing the current Energy Performance Certificate (EPC) is paramount to then be able to judge how this can be improved upon.



Preparation (continued)

4. Noise

Does the space require minimal noise? Is confidentiality an issue? The noise aspect is important regarding where equipment is located and if confidentiality is a high priority, then it is important that ventilation shafts are located where noise cannot travel to inappropriate areas.

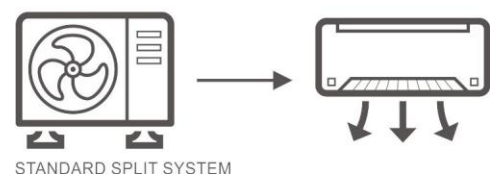
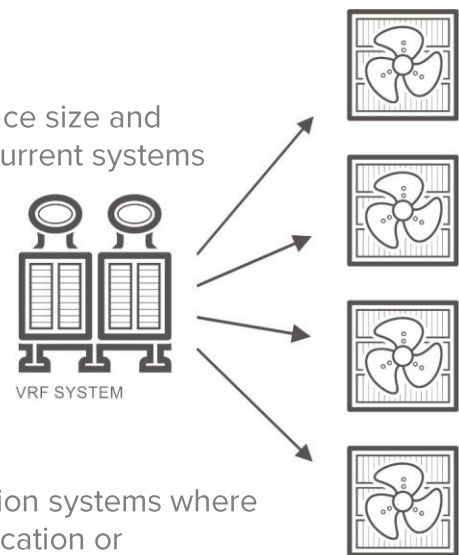
5. Which System

There are a range of systems available to suit all space size and usage. Your service provider can inform you of the current systems that are available and how they will suit your requirements.

These can range from VRF systems where multiple indoor units can be connected to one outside condenser, to standard split units where one indoor connects to one outside unit.

AHU's may be more appropriate for use on full function systems where temperatures are critical and also require dehumidification or humidification.

Your provider needs to have a diverse knowledge and ability to install any of these systems to ensure the correct one is utilised and that the size of the unit fits the space and usage.



6. Budget

Of course, we all want the best, most energy efficient, attractive and up to date system available. However, your budget will often play a major part when a decision is being made with regard to the most suitable equipment, it must be affordable also.

You may consider hosting a tender process. This can be conducted whether you already have an incumbent company or preferred suppliers list in place. Healthy competition is common in this industry and gaining prices from at least three companies is normally recommended. As long as each company is quoting like for like, you can ensure you are receiving a fair price.

Preparation (continued)

7. Controls

All modern systems provide a varied element of temperature and time control, this is an important part of the setup of any system to ensure that the equipment is only being utilised when needed and is providing a consistently comfortable environment.

Some may require more control of the systems they need installing. A Building Energy Management System (BEMS) is a more sophisticated method of controlling the system and also monitoring the usage. These systems may also incorporate the control of a variety of other aspects of the building.

8. Future Maintenance

One area that is sometimes given little thought at this stage is the ongoing maintenance of the system. How the system can be maintained should form part of the original plan regarding the design and location of the equipment. Planning now for maintenance activity can save in the future regarding time required which in turn can affect the ongoing costs.

9. CDM (Construction Design and Management) Regulations 2015

These regulations were updated to aim to improve overall health and safety for those working in construction. These regulations offer a very broad definition and depending on the installation project, CDM Regulations may or may not apply. The six main objectives include:

- Work safely by carefully planning the project so that any risks are identified from the start and managed until the end.
- Ensuring that the correct person is doing the correct job at the correct time.
- Effectively co-operate and co-ordinate tasks with relevant people.
- Make sure that the right information about the risks and how they are being managed is available.
- Clearly communicate relevant information with everyone who needs to know it.
- Effectively consult and engage with workers about any risks they may be subject to and how those risks are being managed.

JCW can provide further advice if CDM is deemed necessary.

Preparation (continued)

We have now looked at how best to plan for your **installation project**, we hope that this has given some ideas on how best to prepare to ensure the project is completed smoothly with as **little disruption** as possible.

In the following page we will look at the considerations you may want to consider when it comes to selecting your **Service Provider**.



Lightening the Load

It is possible to enhance the energy efficiency of your system by reducing the size of the job it has to do. This can be achieved by improving the building or reducing the internally generated loads such as:

- Increase insulation levels of the building
- Shade windows and reduce air leakage
- Unplug unneeded/unused electrical appliances, lights and equipment
- Try to use heat generating appliances during cooler times of the day
- Utilise fresh air for cooling effect
- Use Energy Star products/appliances

Service Provider Selection

As a heating, air conditioning and ventilation installation company, we can tell you in detail about the **variety of systems** we have installed, the **extensive client list**, the fantastic warranties we can offer.



Are we telling the truth or is this just a good story?

Read on to find out more about the qualities and experience you should be looking for in your service provider:

1. Advice & Design

You may be experienced in setting up a new installations project for heating, air conditioning and ventilation equipment and know what you are looking for and from whom. With new rules and regulations regarding refrigerant gas it is always wise to still seek advice and ensure you are completely up to date with systems available on the market today. Also, looking long term, ensuring that the equipment installed today will meet with future regulations while being as energy efficient as possible.

Companies like JCW are in constant contact with their business partners/equipment manufacturers and can ensure that you are advised on the latest available systems.

Some service providers may not have in-house design capabilities and use outside sources. Often this arrangement works well, however, the company installing the equipment and providing the maintenance service will have an in-depth knowledge of the system recommended and how it may be best placed.

Companies with in-house designers can work together seamlessly ensuring that the design meets the requirements of the building and the equipment being installed to best effect.

Service Provider Selection (continued)

2. Price vs Quality vs Service

Which is most important to you?

Companies who are about to embark on an installation project will generally have a Cap Ex budget. They will want the best quality system available, fitted to the highest standard, for as little as possible.



Sometimes a compromise needs to be met and if you are using a well-informed, experienced service provider, they should be able to find this compromise and still offer suitable equipment with an exceptional service, regardless of your budget restrictions.

3. Experience

Referring to the point above regarding Price vs Quality vs Service, it is easy for companies to suggest they offer all of this, but can they?

Your service provider should be able to provide you with case studies, client testimonials, evidence of the support and training they have received from their business partners/manufacturers such as Daikin, Mitsubishi or Toshiba. Do they have advanced certification such as Mitsubishi Diamond Quality Partner or Daikin D1 Plus Business Partner status?

Nothing should be taken at face value and references should always be sought as to the validity of the company's experience. Also, their relationship with the manufacturer whose equipment being used to ensure the most comprehensive warranty is available.

The company's accreditation certificates also prove they are trained, experienced and adhere to health and safety regulations and should hold BESA, Safecontractor or an equivalent approval.

Insurance cover must always be checked also. For example, JCW have public liability cover from £10 million up to £50 million which is required to work on sites such as airports and other high risk, critical environments. Checking the necessary documentation should form part of any due diligence when choosing your service provider.

Service Provider Selection (continued)

4. Equipment Choice

In this day and age, we are used to having choice, regardless of what we are buying. In some cases, we have too much choice and it is hard to make a decision. The same goes for air conditioning equipment. Not only are there various types of systems, as mentioned earlier but once a system is decided upon, the choice of equipment available by various manufacturers is vast.



JCW works with many different manufacturers, each have their own 'niches' and understanding the company and their products give us an advantage in that we will know which manufacturer is better suited to which type of system and individual requirements.

In a lot of cases, a number of manufacturers could fit the bill, then it comes down to price and the warranties provided. We have long standing relationships with these manufacturers and have discount agreements in place based on the amount we spend and can offer our clients quality products at more affordable prices.



Companies such as ours have the ability to provide customers not only choice but also be able to guide them to which system would be most suitable.

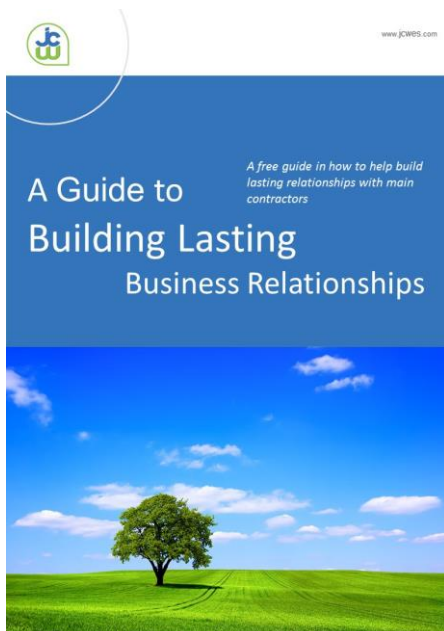
Service Provider Selection (continued)

5. Supply Chain

Not only is the service provider's relationship with their manufacturers of paramount importance, so are the relationships built with their supply chain such as sub-contractors. For us, the majority of the installation work we complete is with our own qualified workforce, however, we do sometimes need to call on the experience of subcontractors where the work is maybe more specialist or where our clients have specifically requested it.

Sub-contractors and how they complete their work should be treated as an extension of the employed workforce. They need to hold the same insurances and health and safety policies as well as proof of their experience and accreditation within their own fields.

We will only use sub-contractors who have been formally approved and who hold the relevant qualifications and insurances. When documents reach their expiry, we always request renewals to ensure they can remain as a preferred contractor.



Sub-contractor relationships also need to be nurtured. Regular performance meetings should be held and two-way feedback requested to ensure they are providing the best service but also to make sure they are being supported and the relationship continues to be mutual.

To find out more about how to [build lasting business relationships](#), click the image to read our eBook.

Service Provider Selection (continued)

6. Tailored After Sales Service

At installation stage, the ongoing maintenance programme may be down the list of importance. How frustrating is it when you have had equipment installed that fails and the installing contractor has no after sales services, such as emergency response call out facilities, or may even be unable to actually maintain the equipment themselves.

This can be extremely frustrating for you, therefore, it is important to consider, when choosing your service provider, can they provide the after sales service should something go wrong? Can they maintain the equipment to ensure that warranties remain in force? Do they have a 24-hour emergency service available when you need it most?

A company, like ours, who can offer it all would be ideal. Installs clients become future maintenance clients. Your service provider should plan maintenance visits to keep warranties active and ensure that equipment continues to run efficiently.

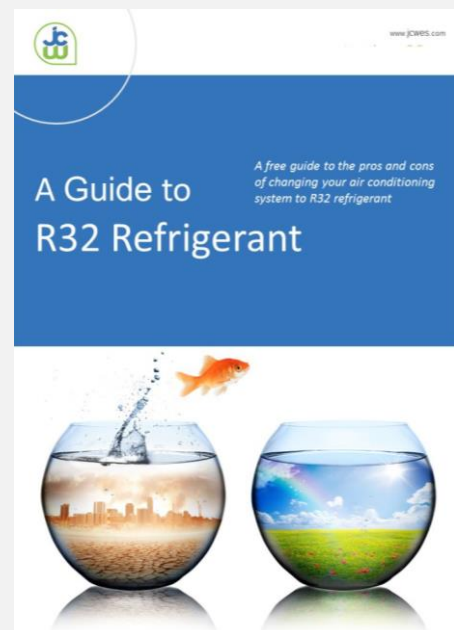
Also, the support of 24/7 Service Desk, providing around the clock emergency response service when it is needed most, is the very least you should expect.

Environmental Considerations

It is well documented that air conditioning systems have a negative impact on the environment both through the electricity the systems use to operate, the refrigerant used as a coolant to the recyclability of the units themselves.

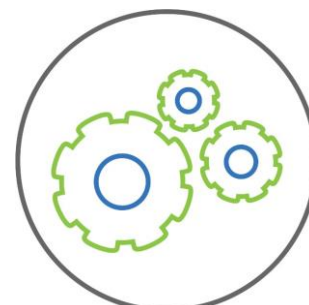
Manufacturers continually research new systems to ensure they meet with future legislation and understand the need for their systems to be less harmful to the environment, safer and more economical.

Choosing the most up to date systems will negate any future need for replacement as the European phase-down of HFC's has already begun in earnest. Click the image to download our eBook about the next generation refrigerant.



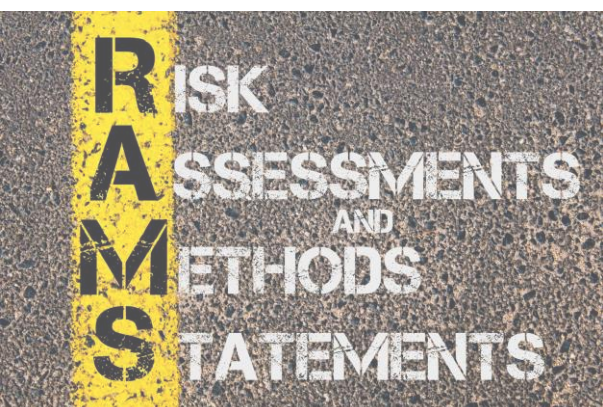
Undertaking the Project

A plan is in place, a **service provider** has been chosen and **suitable equipment** decided upon. What can you **expect** from your service provider now?



Every customer requires a different level of information once the project is underway. Some will have a representative on site, others will put their trust in the installer and only inspect the work on completion. Here is what we assume should be offered to customers as normal procedure:

1. Pre-Contract Work



Your service provider will need to have a clear understanding of the project, what the expectations are and timescales. A plan will be put in place regarding how the project will be completed, in what phases, workforce required, supervision and the all-important health and safety issues that need to be covered.

Method Statements and Risk Assessments will be completed and only engineers with the relevant qualifications to conduct the work will be utilised.

2. Integration

Often the installation of air conditioning equipment is a small part of a larger project, perhaps a complete refurbishment or construction of a new building. Having an overall understanding of the larger picture is important to ensure that your service provider can integrate seamlessly with other contractors. This knowledge comes through experience of previous projects and also an affinity with the client, understanding what their expectations are, timescale and the final article.

Undertaking the Project (continued)

3. Flexibility

Working with service providers who have directly employed engineers will provide the client with a much more controlled service. If for some reason an engineer is unable to conduct the work, there are experienced, available alternative engineers, with the same qualifications and covered by the same health and safety rules and insurances.

4. Manufacturer Training

Working with service providers who have engineers trained by the manufacturers themselves ensures that the equipment is installed correctly, set up to work most efficiently and are able to train staff on the use of the equipment confidently. This will aid the longevity of the life of the systems as staff will not try to misuse or abuse the equipment, knowing more about how it works and what they can expect.

5. Making Good

When installing equipment into a new build, the need for making good of the area on completion is less likely required. However, when conducting a replacement programme and adding equipment to an existing building, it is important to know that the area where the work has been completed will be left clean and tidy.

An element of fabric work may be needed such as replacing ceiling tiles. Again, working with contractors who have an experienced network of tradesmen will help ensure these works are completed to the highest standard and with as little disruption as possible.



Undertaking the Project (continued)

6. Hand Over

You are now the proud owner of new air conditioning equipment. The contractor has done an excellent job, the area has been left clean and tidy when they left. What happens now?

A detailed handover is the least you should expect. All equipment should be tested and instructions on its use provided. Advice on how best to set up the controllers for optimum usage and efficiency will ensure that you achieve the best out of the system.

Detailed Operation and Maintenance Manuals should be provided, again with instructions on their use and where they should be kept.

7. Aftersales & Training

Staff who will be authorised to use the systems installed should receive suitable training in the usage of the equipment. This training should include:

- How to change the setup of the controller
- How to gain and control the optimum temperature for the area
- Fault awareness
- Maintenance schedule
- Who to contact in case of breakdown or failure

You may have experienced excellent service while your new system was being installed but the after sales service you receive is just as important. Your service provider should be able to provide you with full details of the maintenance schedule for the equipment. The minimum should be to ensure that the warranty remains in force but the usage of the system should also be taken into consideration regarding servicing intervals.

Please see the next section to find out more about maintaining the equipment to achieve optimum efficiency.



Undertaking the Project (continued)

What Should an O & M Manual Include?

The accuracy, relevancy and timeliness of a well-developed, user-friendly O & M (Operation and Maintenance) Manual is becoming increasingly more important. The goal is to effectively support the life cycle of the equipment and reduce the risk of unplanned shutdowns, therefore reduce life-cycle costs.

A comprehensive O & M Manual should include:

- Physical Descriptions
- Functional Descriptions
- Troubleshooting
- Planned Preventive Maintenance Procedures and Schedules
- Reactive Maintenance Repair Requirements
- Parts Lists
- Operational Drawings



Maintaining the Equipment

There are many highly regarded air conditioning installers who can provide an **excellent service**. However, they may not have the resource to provide the ongoing maintenance required for the system. These companies will no doubt be able to recommend **qualified engineering companies** to carry out this work for you.



There are also companies, like JCW, who can provide the full service from design, to installation through to the ongoing maintenance, all carried out by their own, experienced, qualified in-house engineers.

Reasons Why Equipment Maintenance May Lapse

Maintenance of the equipment can sometimes lapse, here are just some reasons why:



- The system appears to be running without fault
- The system has not been used
- Lack of funds or budgeting restrictions
- Lack of knowledge
- Change of staff

Maintaining the Equipment (continued)

Every company differs in their approach to the maintenance of air conditioning equipment. For some the environment in which their staff work or their customers shop is of paramount importance. Ensuring that the inside climate is clean and regulated will be a top priority and the maintenance of the equipment is essential in providing this.

For others, budget is the driving factor. In this economic climate, all companies are money conscious and savings have been made through cutting planned maintenance schedules to meet budgetary requirements. These companies rely more on emergency response services to fix problems as they occur. It can be argued that this 'plan' is self-defacing and that in fact, over a period of time can be more costly.

JCW, as an experienced mechanical maintenance company, understands and abdicates for planned maintenance. Here are just a few advantages that should be considered:

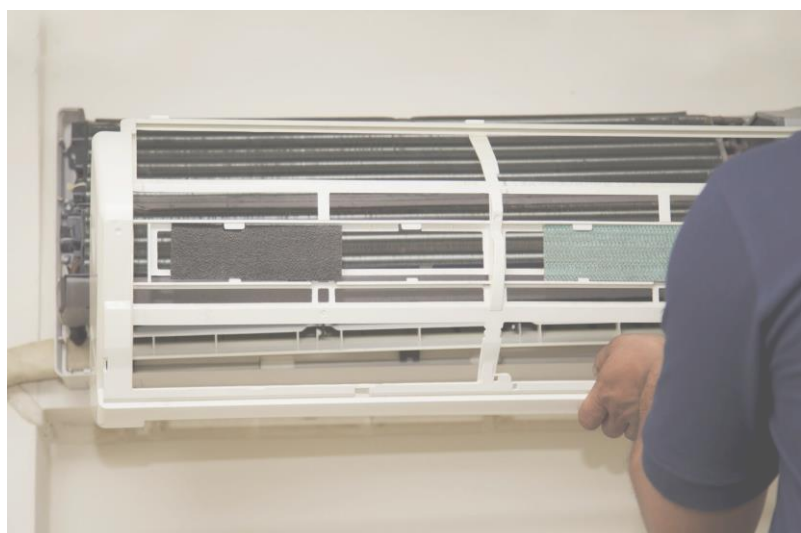
1. Keeping Optimum Efficiency

The fact is, regular maintenance of any mechanical equipment will ensure that the system is running to its optimum efficiency. Regular cleaning/replacement of filters, as per manufacturers recommendations will enhance the systems performance by keeping the level of air flow.

2. Regular Service Intervals

Many companies follow the guidelines as set out by the SFG20 specifications which provide a standard for the maintenance of building services equipment. At the very least, the manufacturers guidelines should be adhered to, to ensure that the warranty remains in force.

If the equipment is used more regularly or is situated in harsher conditions, then an increased level of service visits maybe recommended.



Maintaining the Equipment (continued)

3. Avoiding Premature Failure

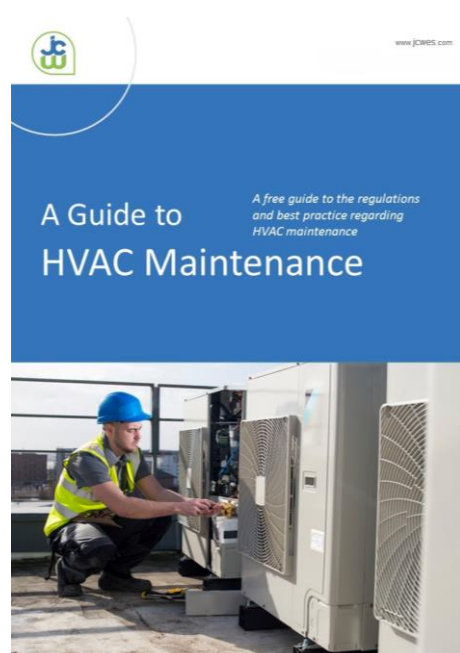
Regular servicing of the equipment can aid the longevity of the system and will lower the risk of premature failure of components. If a fault is found during a service visit it is highly likely that this can be resolved during the visit which will negate the need for an emergency call out should the system fail altogether. This in turn, reduces the overall maintenance cost to the company.

4. Upholds Warranties

We have mentioned this several times already, but it cannot be stressed enough that to retain the warranty on the new equipment, the equipment must be maintained to a standard as set out by the manufacturer. This minimum standard should be clearly explained to you by your service provider at time of installation.

5. Accredited Contractor

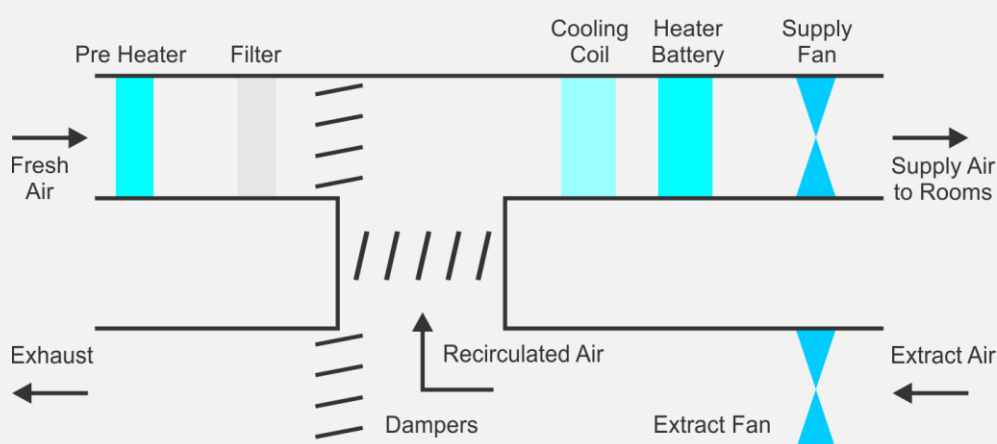
It goes without saying that if you use a maintenance provider that employs engineers who are trained directly by the manufacturer then your equipment will automatically be serviced to that manufacturer's standards. Always check your service provider's accreditations to ensure that you are being provided with the most suitable service!



If you would like to find out more about the regulations and best practice surrounding HVAC maintenance, read our [eBook - A Guide to HVAC Maintenance](#), click the image to download your free copy.

Maintaining the Equipment (continued)

Know Your System



Knowing how your system works may help you understand the process and be aware of the components involved.

A typical air handling unit system receives fresh air as it enters through the building. If this air is cold, it is preheated to protect the system from frost damage. The air then passes through filters to safeguard the system and the occupants from dust, dirt and pollutants. Depending on the internal requirements either heating or cooling takes place and fans then move the air through the ducts.

Separate air ducts draw exhaust air from these areas into the extract system. Dampers here restrict or redirect the air flow. To reduce the amount of heating or cooling required, some exhaust air can be redirected into the incoming air stream.

Mutual Appreciation

Finally, after **careful planning** and selection of a **suitable service provider**, your system has been **installed**.



You fully understand the workings of this system and how to keep it running efficiently, as do your staff. You have your maintenance schedule agreed and in place and you are ready to move onto the next project on your desk.

Just stop there a minute!

1. Importance of Customer Feedback

When you began this project, and were looking into the various service providers, no doubt you read their references, case studies or testimonials? This insight into their experience and what their existing customers thought of the service they received would have helped you form an opinion on the company.

Customer feedback forms an essential part of any service provider's sales armoury. Companies with 5-star ratings and strong references are far more likely to win work against those companies who do not have this history. Your opinion matters.

Your service provider may have a standard document for you to complete for your feedback, please spend a little time on this, it does make a difference to their business. Even if they have not asked for feedback and you are happy or even unhappy with their service, Again, spend a couple of minutes on an email detailing your experience with them and how you would rate them.



Mutual Appreciation (continued)

2. Value of Testimonials

At JCW we value every testimonial we receive and know the positive effect this can bring with regards to future business from our potential customers.

We often prepare case studies, where our customers agree, detailing more about the project we completed and always ask for comments from the customer to support these.

The time spent by our customers who write our testimonials is always appreciated.

3. Regular Communication

Looking after facilities, be it a single building or multiple units across the country, can be a varied, busy and stressful role. Once one project is completed, you are soon moving onto the next.

Many service providers would like to stay in regular contact with yourselves. We know you are busy people but ensuring that you continue to be satisfied with the system and the service that you are provided with is essential to us.

Some companies prefer regular performance review meetings, others would like something less formal. Whichever your preference, please let us keep in regular communication. This way we can pre-empt any possible performance issues and rectify as soon as possible, ensuring your system continues to work to its full potential. Also, ensuring that you, the all-important customer, remain satisfied with the service and would recommend companies like us to others.



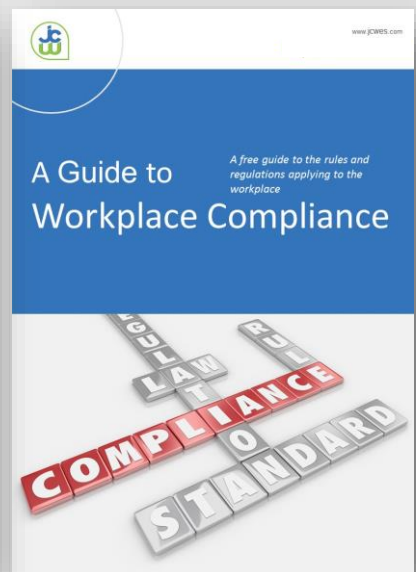
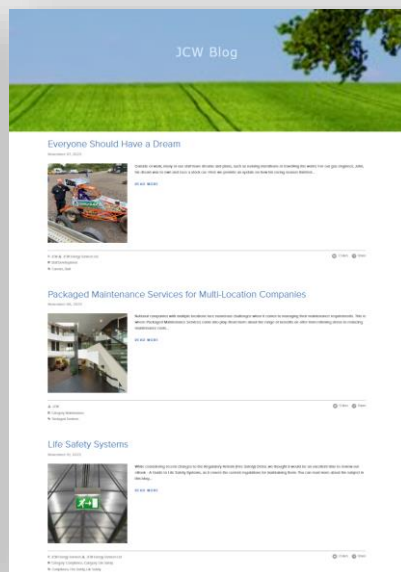
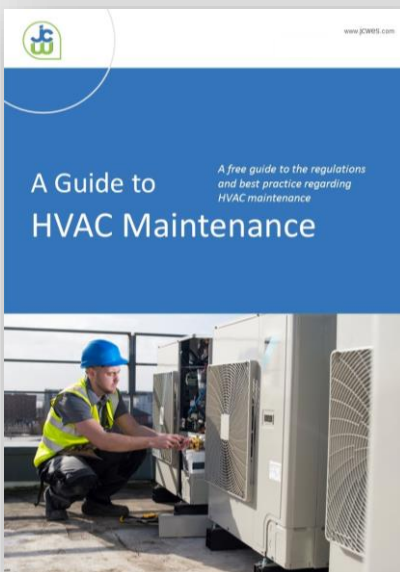
Conclusion

We understand that planning and implementing an HVAC project requires time and attention and that it can even be pressured and stressful at times. We hope that this guide has provided some helpful points to consider and useful tips in ensuring that you make the right decision with the service provider you choose and the system you install.

If you do require assistance, at any stage of your project planning and installation process, feel free to get in touch with us and benefit from our extensive experience in this specialist field.

Contact us now to discuss your individual requirements

You may also want to read...



About JCW Energy Services Limited

We provide complete project management, installation, in house maintenance and tailored managed solutions to a broad range of clients across the UK.

We are a national mechanical and electrical building service provider, offering integrated planned preventative as well as reactive maintenance services across all property portfolios.

Although JCW Energy Services Limited in its current form is a relatively new company, the group has history within the industry dating back to 1903.

Today JCW is in a unique position where it not only employs over 250 dedicated staff but also can offer mechanical and electrical services with an equal amount of engineers within each discipline. This means that we can self deliver hard services nationally through our mobile engineering workforce as well as provide full project management and installation services through our network of six offices.

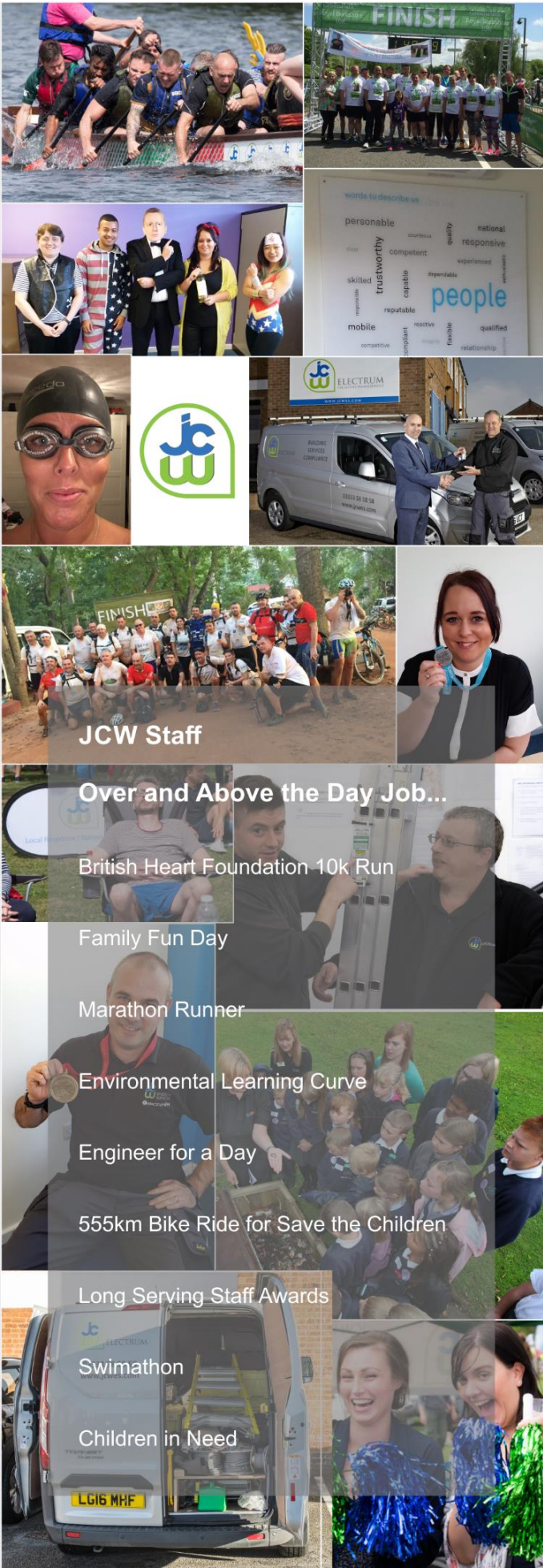
Our offices are strategically placed and take ownership of their areas customers to provide a fast, reliable, local service. Our engineers are fully qualified, have a wealth of experience, are accommodating and genuinely care about the work they conduct and the service they provide.

Contact us

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JCW Staff

Over and Above the Day Job...

British Heart Foundation 10k Run

Family Fun Day

Marathon Runner

Environmental Learning Curve

Engineer for a Day

555km Bike Ride for Save the Children

Long Serving Staff Awards

Swimathon

Children in Need