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Case Study:

*HVAC new installation  
and refurbishment*

# The Ship | Plymouth



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## The History

The Ship used to be home to The Herald and Western Morning News but in recent years it has been left empty and was even being considered for demolition until a leading city property development company, Burrington Estates, acquired the building.



Built in 1993, this stunning building won recognition from the British Construction Industry, the Royal Art Commission Building of the Year, the Structural Steel Design contest and the RIBA prize in 1994 reflecting the quality of the design and the build of this fine structure.

The parent company, Daily Mail Group proudly housed their HQ here with, at its peak, 1,700 employees resident until they relocated in 2013.

## The Vision

Burrington Estates is renowned for sympathetic development of historic sites in the region and plan to breathe new life back into the building and see it become a major hub for business in the area.



Now The Ship is being restored to its former glory, it has been aptly named Spirit of Enterprise with hundreds of jobs being created by the businesses that will take up residence.

## JCW's Mission

### What we offered

Burrington Estates invited us to submit a bid as part of a competitive tender process. After benchmarking, we were selected because of our turnkey approach and manufacturer partner programmes that allow us to offer extended 7 year warranties.

We demonstrated our ability to offer preconstruction guidance and support and promoted a 'can do' attitude through what would be a tight programme. We also have a proven track record in being able to work in harmony with other contractors from a multitude of industries.

### Historical problems



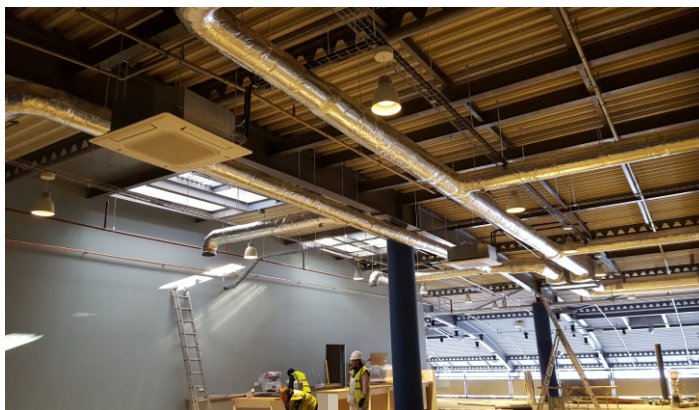
The building historically had an extremely poor energy rating, partly due to the inadequate heating and ventilation system in place. With its huge glass paneled frontage, it was hard to cool in the summer and just as hard to heat in the winter. Regulating the indoor temperature was extremely costly.

JCW always like a challenge and were delighted to have been chosen to be part of pre-construction and design team and install and maintain a new heating, ventilation and air conditioning system. A system which needs to provide a regular temperature, even with the architectural challenges of the building. A system that can be easily controlled, provide the best energy efficiency and be sustainable.

## JCW's Mission continued

### System choice

We worked within our partnership agreement with Mitsubishi Electric for this particular project who provided us innovative support to ensure the most suitable system was chosen that best meets the needs of our client and the future residents of the building.



We chose this range of VRF as it has a multi and direct expansion type air conditioning system where by one outdoor unit can be connected with multiple indoor units. The amount of refrigerant can be regulated freely according to the load on the indoor unit by the inverter driven compressor in the outdoor unit. Zoning in a small office is possible with a small capacity indoor unit. Energy conservation is easily handled because individual indoor units can stop and start their operation as needed.



## Key Facts

|                      |  |
|----------------------|--|
| Manufacturer Chosen: | Mitsubishi Electric  |
| System:              | VRF City Multi & Split Systems   |
| Equipment:           | 12 No. Condensers<br>Enhanced efficiency to incorporate primary pipework length requirements<br>89 No. Ceiling Ducted Fan Coil Units with localized control sensors, interfaced with the Building Management System<br>4 No. Split Systems<br>Additional AHU Installations<br>Electric Re-heat Batteries |
| Existing Equipment:  | Removal of obsolete chiller system and LTHW pipework<br>Refurbishment of existing AHU's  |
| Timescale:           | 10 Weeks   |
| Handover Date:       | 10th February 2017   |
| Value:               | In excess of £500,000  |



## The Challenges

### Deadline

A project of this size is not new to us, however, we would normally expect the timescale for completion to be 3 - 4 months, we were given 10 weeks. Not only this, the client needed us on site just 7 days from the date of receiving the purchase order.



To ensure we could fulfil this tight deadline, we utilised engineer resources from a number of our offices including Royston, Leicester, Bristol and a little later Cardiff. This not only meant that we could meet the target set but it also gave us the opportunity to promote a team purpose as our engineer's work in different industry sectors within our organisation.

### Other Trades

As the whole building was under refurbishment it was imperative that we could work alongside a large number of trades people and engineers from shop fitters, life system installers to window cleaners and mural artists! We all have worked in harmony with the only item distinguishing one from another being the logo on our high vis jackets.



### Existing Equipment

Working around existing equipment has also been a challenge with regard to integrating systems and negotiating new pipework around old. The shape of the building and also the positioning of the plant has added to the challenge with some units being fed through over 150 metres pipe runs, putting added pressure on the system. This needed to be taken into account when selecting the appropriate equipment.

## The Challenges continued

### Last Minute Change



A change of plan just after Christmas also meant that circa 20 units needed to be moved, however, this didn't dent the momentum and we remained on track to complete the project within the given timescale.

### Words from our Engineer

Speaking on site to our Senior Engineer, he explained that in all the years he has been an engineer for JCW, he has worked on many prestigious projects but this one is close to the top when it came to challenges. It has also been one of the most rewarding.

*He concluded 'I'm so happy to have been involved with this project, I like a challenge and with the time constraints we all really had to pull together. I can also proudly say to my friends, family and colleagues that I was one of the JCW engineers that worked on The Ship project, it will be talked about for years!'*





## The Environment

It was important that environmental considerations were made when choosing the most suitable equipment. The system uses R410A which is a more efficient refrigerant and can allow for smaller pipe sizes, longer pipe runs and reduces the volume of refrigerant within the system. This was a major factor when concerning safety and environmental requirements in the design, manufacture, installation, operation, maintenance and eventual disposal of this system.

The energy unit is in compliance with the RoHS Directive, Restriction of Hazardous Substances: Lead-free soldering is used to avoid Lead Groundwater Contamination on the print board. The amount of refrigerant in the unit has also been reduced to enhance environmental care.



## Energy Rating

When tasked with this installation it was clear that reducing the buildings energy consumption was of paramount importance.

The energy rating will drastically improve immediately. The system installed offers heat recovery technology which uses just two pipes. The design is to provide effective, simultaneous heating and cooling which can offer substantial savings on the annual running costs.

The efficiency of this type of system comes from the ability to use the by-products of cooling and heating to transfer energy where it is required, thus acting as a balanced heat exchanger achieving up to 20% cost savings over a conventional heat pump system.

## Next Steps

### Handover & Training

A full detailed commissioning programme with commissioning drawings will be provided at the time of handover, as well as user training, in line with CIBSI (Chartered Institute of Building Services Engineers) guidelines.

### Future Maintenance

A complete planned preventative maintenance programme has been prepared to run alongside the defects period and 7 year warranty, in line with the manufacturers recommendations and our approved status.

## Conclusion

You cannot immediately appreciate the beauty of the building as you approach it, it is only as you pull into the turning and follow the driveway up that you feel its presence. Its unusual style stands out from the everyday office blocks in the area and you can't help but appreciate the thought that has gone into the design and construction.

The Ship's next phase will include the completion of the restaurant and gymnasium for the use of the staff within the offices. And finally, the amazing Board Room with its spectacular views.

We are so proud to have been part of The Ship's refurbishment and look forward to being part of its future as we prepare for the next phase of the installation and a strategy to maintain the building to ensure that it now runs more efficiently, providing the new era of inhabitants a comfortable and exciting place to work and play.



## Testimonial

### Rob Munro | MD | Burrington Estates

*“When we first decided to buy The Ship we knew that the existing HVAC system was in parts obsolete with the remaining just inadequate and the whole system would need upgrading. New tenants were keen to move in so we also had limited time in which to make the drastic changes that were required. We needed a company that would be able to design, install, commission and maintain a far more energy efficient and sustainable system and be able to do this in a very short space of time.*

*JCW Energy Services was a perfect fit. To finish a project of this size in the tight timescale given, I applaud their speed, organisation, engineering team and work ethic.”*

## Other Resources

**View Aerial Footage of The Ship**



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## 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 nearly 200 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.

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