

Supply, design and installation of a multiflue chimney at Ricoh Arena, Coventry

AT A GLANCE

Company: Eurosite Power

Industry Sector: Tertiary
(recreation)

The Challenge: To design, construct and install a new flue system which would be aesthetically pleasing and comply with the existing planning permission.

Solutions and Services:

- Photo realistic visualisation
- Surveying and site investigation
- Structural and Civil design works
- Design, manufacture and installation of new flue systems and multiflue chimney
- Pressure Testing

The Benefits:

- A flue system which meets legislative requirements
- A robust and attractive solution to a complex engineering problem.
- A flue system which complies with Local authority Planning permission.



CASE STUDY

The Ricoh Arena is located in the heart of England, the complex includes a 32,609-seater stadium, which is largely used by the Wasps Rugby Union Club, but the venue has also hosted many other events including Britain's Got Talent, and concerts for some of the biggest names in Rock and Roll, Hip Hop, R & B and Pop such as The Rolling Stones, Bon Jovi and Rihanna.

Not only does the venue host such prestigious events but it also has its own 6,000m² exhibition hall, hotel, casino and arena park shopping centre.

Like many other projects, Eurosite Power working alongside the Ricoh Arena asked Midtherm Engineering to offer design solutions due to issues with an existing non-compliant flue system as well as the need to introduce a new independent flue. The concept was extremely challenging as it required specialist insight to help produce an aesthetically appealing solution, sympathetic to the original architectural concept whilst still meeting current Local Authority planning permission.

The existing planning permission issued to the Ricoh Arena permitted installation of a single flue system rising to above roof level.



Photo realistic visualisation of our proposed multiflue chimney

However the project required installation of two separate flues, one serving an existing generator and one serving a new CHP unit.

To overcome this Midtherm Engineering proposed installing an oval shaped multi flue chimney to enable installation of two individual flues meanwhile creating the illusion that a single flue system had been installed. Using our photo realistic visualisation software we created a photo realistic visualisation of our proposal which was approved by the client.

“On the surface this project may not look like one of our most impressive undertakings however this belies the complex nature and many disciplines required to achieve the original brief. The development and feasibility study was over a year in development with many doubting that the project was realistic. Midtherm Engineering persevered and following many site attendances, late nights, design meetings and sanity checks, we were able to achieve something that all who were involved are extremely proud of. If any project demonstrates our capacity as an all-round engineering company, this is it.”

Adam Slipanczewski
Estimating Manager
Midtherm Engineering Ltd

CASE STUDY

The project kick started with Midtherm supervised trained engineers completing ground investigation surveys, civil and structural design works, all prior to an order being placed for the supply and installation of the flue systems and multi flue chimney.

Crucial to the feasibility and development of this project were the foundations for the chimney. The location was dictated by factors beyond our control which forced us to look at a foundation base located tight to the existing building and spanning over main drainage and services including a large service chamber. We developed a solution which essentially sited two pile caps either side of the services running into the building with a reinforced ground beam connecting the two pile caps which the chimney would bear onto. This also contained our pre-fabricated holding down bolt cage which was tied into the reinforcement with millimetre precision to enable the chimney to be installed and connected to the fixed points on the steelwork bracing above roof level. To achieve all this, our ground investigation works, analysis and services surveys were crucial to gaining confidence that our concept would be feasible.

Multiflue chimney being craned into position on site



Multiflue chimney being craned into position on site

Once the foundation design had been finalised we began producing our installation drawings for approval, these drawings would detail the entire flue runs including 5m of 350mm /dia x 500mm o/dia flue which would serve the existing diesel generator and 21m of 250mm i/dia x 300mm o/dia flue which would serve the new 425kWt gas fired CHP Unit, each system would then rise within the 30m high flat-oval multi flue chimney.

Following several weeks of intense design, planning and manufacturing Midtherm Engineering attended site on a typically rainy day in March to carry out the incredibly challenging final part of the installation, this intricate task would involve threading the approx 1m wide, 30m high multi flue chimney through one of the arenas iconic structural roof steelwork trusses. The chimney was connected at high level back to new steelwork, cantilevering from roof level and at ground level to our holding down bolt frame which had been precast intricately into the new foundation block.

For Midtherm Engineering, this project highlights our wide range of design and engineering capabilities; it showcases our ability to accommodate many, sometimes almost impossible, project parameters and site constraints. This project demonstrates one of the many reasons why we are a market leader in our field and can be trusted to undertake the most difficult of projects with determination to see a project through to satisfactory completion.

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