MIDTHERM Engineering Limited

CASE STUDY

Supply, design and installation of new flue and reinstatement of existing fan

AT A GLANCE

Company: Direct Flame Ltd

Industry Sector: NHS Foundation Trust

Solutions and Services:

- Design, manufacture and installation of a new flue system.
- Evening working to prevent downtime.

The Benefits:

- A flue system which operates correctly.
- A flue system that provides resilience should the flue fan fail or require servicing.

> “I personally enjoy projects like this, where there is a puzzle to solve. I do find it remarkable how often we come across systems which have not been properly designed, and this was a good example of how a simple oversight can cause major issues. Once I’d isolated the cause of the problem, it was a relatively simple case of introducing the second flue and sequencing the work to maintain some level of boiler operation for the hospital. Karl did a great job on site carrying out the installation and was focussed solely on delivering our promises – under some pressure too!”
>
> Ian Ford, Technical Director

CASE STUDY

Braintree Community Hospital opened in April 2010. Located in Essex, the hospital provides inpatient and outpatient services including day surgery to the local community.

Initially Midtherm were asked to examine the design and assess why the fan assisted flue system was unable to operate all three boilers simultaneously.

Firstly, a site measure was undertaken, followed by investigation of the existing system design using our new in-house flue design software package. By cross-referencing the flue design calculations against the performance curve of the existing flue fan, it quickly became clear that the fan was simply not capable of handling the full-load duty. In fact, it looked as though the flaw in the design was due to the fan duty not being corrected back to 20°C. Most fan performance curves are given at an air temperature of 20°C, and all flues operate at higher temperatures than this. The amount of static pressure that a fan will generate at a given volume flow at 20°C is significantly different to what it will produce with the same volume at a higher temperature. This simple oversight meant that the hospital had purchased what should have been a system with great resilience, in reality, was unable to perform at peak demand.

As is typical with installations on emergency service sites, during our work we were required to keep part of the existing system operational, and in an already tight boiler room, this added some challenges – just the way we like it!

Flue systems powder coated externally to match existing building aesthetics

A plan was devised to install a new flue which would connect to one of the three boilers, allowing it to be functioning whilst the existing external flue was removed, the fan repositioned, and a new flue installed from the fan to termination.

In the capable hands of our installation engineer Karl Alexander, the work was carried out quickly, diligently and to a high standard, including evening working to carry out the changeover in order maintain service through the daytime.

During removal of the existing flue our concerns relating to the condition of the existing external flue were proven to be correct, there were joints which had never been made correctly during the installation and there had clearly been flue gas escaping from the flue on the positive pressure side of the fan.

The hospital now has a system which not only can operate at full load, but which also provides some resilience if the fan ever fails or is being serviced.

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