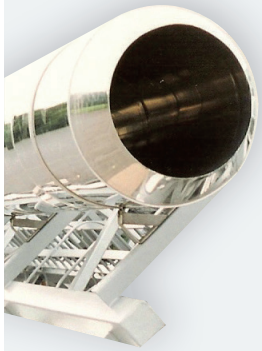
MIDTHERM
Engineering Limited



FluesMasts&Chimneys

An introduction to our range of flues, masts & chimney systems for use with modern commercial heating appliances.

Contact us on:
01384 455811

Visit us at:
www.mideng.net

Email us at:
sales@mideng.net

Why choose Midtherm?

Our diverse range of flues are suitable for all types of plant, from commercial heating boilers, CHP Units and generators to pressurised air movement and chemical extract systems.

Midtherm Engineering offers an extensive range of flue systems in addition to our Natural Ventilation products and Commercial Kitchen Ventilation Canopies.

What makes us unique is our understanding of good individual client and company relations, our focus on the needs and requirements of the project team, which allow the transfer of this knowledge into the design process. This approach has enabled our design team to complete many technically challenging projects that meet the range of current British, European and International standards where appropriate or stipulated.

Introduction

Midtherm Engineering has over 30 years experience in the design and installation of industrial and commercial flue and chimney systems.

Our design engineers pride themselves on their up-to-date technical knowledge and expertise in new legislation, and they are capable of delivering design and technical information based on a wide range of industrial and commercial applications. Armed with this solid technical backup, our sales team have consistently achieved success in securing major projects from large scale flue dilution systems to complex freestanding lattice support structures. Clients include independent commercial companies, hospitals, schools and other local authority institutions, as well as numerous prestigious international projects.

This wealth of knowledge and experience is backed up by our Professional Indemnity Insurance, a sure sign that your faith in our expertise is well grounded. Midtherm are well versed in a whole host of current legislation and regulations, in particular:

- BS6644.
- IGE UP3.
- IGE UP10.
- The Clean Air Act Memorandum.
- The Environmental Protection Act, Including D1 Calculations.
- Local Air Quality Management & Dispersal Modelling.

In addition

- All of our flue products are fully compliant with BSEN1856.
- Our flue products are 4-hour fire rated to BS476 where applicable.
- Our freestanding chimneys are designed in accordance with BS4076 and BSEN1993 where applicable.
- Our products, design and contracting procedures are in line with ISO9001.
- We are approved by CHAS, Safe Contractor and Contructionline.

Demonstrably a solid, dependable specialist whose prime concern is satisfying the client's needs whilst ensuring standard compliance and safety to all involved.

Masts & Chimneys

If you require a flue system on a larger scale, our MIDTEC mast-supported chimney system provides the ideal solution.

The MIDTEC system is designed and fabricated to comply with all associated regulations and is fully functional and aesthetically pleasing from an architectural point of view. It is not unusual for a MIDTEC system to be used as a focal point, and it places no additional load on the building itself.

We pride ourselves on being able to offer the full service, incorporating:

- Design calculations and specification for the structure, including consideration of wind excited oscillation.
- Design calculations for the structural foundation base.
- Assistance in seeking local authority approval for the installation during the design stage.
- The early supply of holding down bolt cage for casting into the base by the civil contractor.
- Fully detailed drawings for the base, the structure and the whole flue arrangement.
- Manufacture of the structure including NDT testing, weld maps, moterol certification all furnished with standard paint colours across the BS and RAL range.
- Full on-site installation including craneage of the structure onto the base via contract lifting to LOLER regulations.

With over 30 years experience, our renowned reputation is the result of many successfully designed and planned installations that have been achieved by fully engaging with all HSE & BSEN regulations and standards.

Design & Installation

Our flexible approach to flue design and installation has enabled us to undertake projects ranging from conventional, freestanding mild steel chimneys, to specialised flue dilution systems where a chimney is not practical.

Each project is examined closely by our in house design team and all design and emission calculations are made using our FlueCalc software, ensuring that we are able to offer a fully-designed solution at the time of initial quotation, giving our clients the design and competitive edge in the market place at the out set.

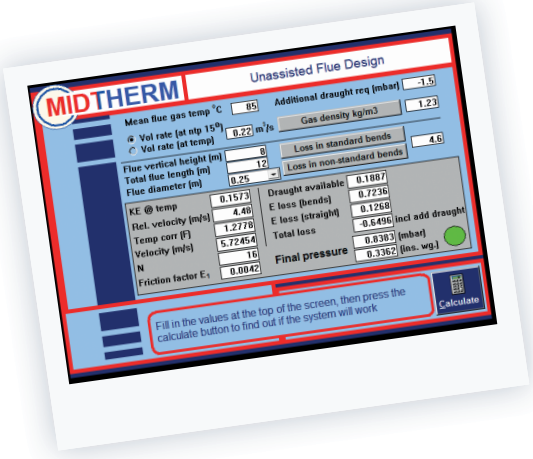
Meeting the Latest Standards

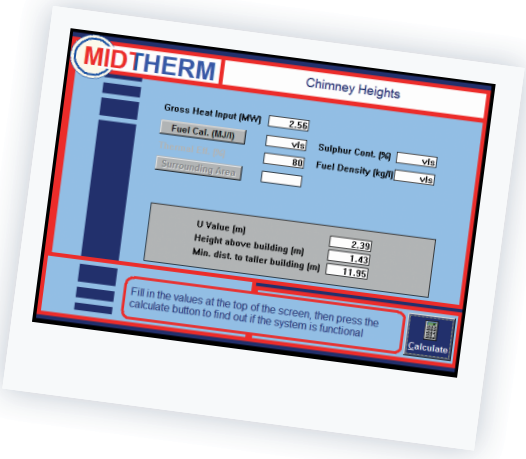
We consider on-site safety of paramount importance to our business. In the case of freestanding chimneys, all of our systems are designed in accordance with BS4076:1989 and approved according to building regulations. Open and lattice masts are designed to BSEN1993-3-2 where applicable and wind loadings for all structural calculations are taken from BS6399-2:1997.

Safety First

Our installation engineers are company time-served personnel and deliver passion and expertise in their field. The team has thousands of installations under their belts, they take a genuine pride in each and every project they install, and it has long been a Midtherm mantra that you are only as good as your installers. Our entire complement of on-site engineers hold the relevant safety accreditations including:

- Abrasive Wheels.
- Asbestos Awareness.
- CSCS.
- Confined Spaces.
- JIB Cards.
- Fire Awareness.
- First Aid at Work.
- Height and Harness Awareness.
- IOSH Working Safely.
- IPAF - PAL.
- PASMA.
- Rescue After Fall.
- SSSTS.
- Risk Assessment.





Flue Products

The energy industry is constantly evolving, and our selection of products has always done the same. Our core flue products are:

MF

An ideal product for the modern high efficiency and condensing boiler market, it is also suitable for biomass installations as well as most oil-fired boiler plant. It features:

- Light gauge 316 grade stainless steel inner liner.
- Light gauge 304 grade stainless steel outer skin.
- 25mm rockwool insulation.
- Elastomer joint seal, rated to 1000Pa @ 200°C.
- 4 hour fire rating.

PS & PS Lite

The PS system is used where temperatures and pressures are higher, therefore it is ideally suited to CHP engines and diesel generators. It features:

- PS - 1mm thick 316 grade stainless steel inner liner.
- 0.7mm thick 304 grade stainless steel outer skin.
- PS Lite - 0.7mm thick inner and 0.5mm outer.
- Insulation thicknesses of 25, 50, 75, 100 and 150mm in order to comply with BSEN1856 in relation to surface temperatures of outer casing.
- The insulation medium can be altered to suit specific requirements.
- High pressure flanged joint, rated to 16,600Pa @ 600°C.
- 4 hour fire rating.

We find that these two products are suitable for the vast majority of applications. Additionally the flexibility of the PS product means that in its single wall form it is also ideal for flue dilution systems.

Both ranges are CE marked in accordance with BSEN1856:2009, fire rated to BS476 and comply fully with BSEN1443:2003.

The recent surge in both small and large CHP installations has seen the use of the PS product grow significantly. This is in no small part due to the requirements of IGE UP3, in particular the statement that on all gas-fuelled spark ignition and dual fuel engines “all joints should be either screwed or flanged”. This means that, whilst standard push-fit systems may meet the operating temperatures and pressures of smaller CHP units, because of the initial pressure spike on start-up to way beyond the operating pressure, a fully flanged high-pressure exhaust system should be used.

Product Testing and Designations

PS is type tested to the specific requirements of BS EN 1856-1:2003 and the general requirements of BS EN 1443:2003 and complies with the relevant clauses. It also complies with BS 4543, parts 2 & 3:1990 and holds a four hour fire rated certification BS 476-Part 20 for stability and integrity.

Flue Dilution Systems

A flue dilution system is normally installed where difficulties are encountered in the provision of a conventional flue, or indeed where savings can be made if the only other alternative is a high rise chimney.

Flue dilution is a handy solution where there is no acceptable route for a conventional chimney. It is only suitable for VLS (very low sulphur, i.e. <0.04%) fuels up to a total combined gross heat input rating of 6MW.

How Does It Work?

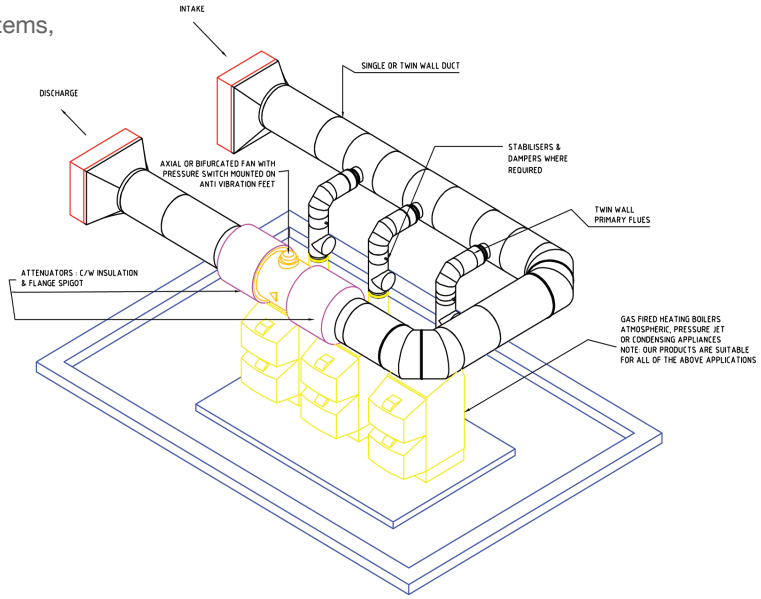
The general principle is to mix ambient air from outside the building with the flue gas in order to dilute the CO_2 content to less than 1%. Traditionally this has meant that only natural gas and LPG are suitable, however the oil industry is making great strides to reduce the sulphur content of gas oil and it will not be long before the VLS benchmark of the Clean Air Act is reached. It is worth pointing out that flue dilution does not remove the smell inherent with a particular fuel, hence it is likely that any VLS oil-based fuel when used on a dilution system may still create significant odours at the point of discharge.

The location of the discharge must be compliant with the Chimney Heights Memorandum of the Clean Air Act (also now shown in BS6644 and IGE UP10). In common with all flue and chimney systems, local authority approval must also be sought for a flue dilution system. Indeed it is not uncommon for certain areas to have their own policy on flue dilution systems, particularly where noise is a concern.

> **"Clean Air Act compliant low level discharge"**

The shift in the commercial boiler market, largely driven by government ERP regulations, towards condensing units, has a significant evolutionary effect on flue dilution. The flue gas temperature from these very efficient appliances is far lower than traditional atmospheric and pressure jet boilers, and as a result condensation is created within the flue. By then mixing this warm, moist gas with cooler air, the mixed gas temperature is reduced further, creating more condensation. There are a few critical considerations in this situation:

- Material of flue system – we only ever use 316 grade stainless steel on condensing applications and flue dilution systems.
- Capability of the flue system to handle condensation in huge quantities – for this reason we only use our PS flanged system.
- Pluming at the discharge – the suspended water molecules in the diluted flue gas will be discharged out through the louvre to atmosphere. In cold ambient temperatures this can often be significant and can cause a genuine nuisance to local residents and building occupants. Therefore careful consideration of the discharge position is of the utmost importance, as is control of system drainage.



Principles Of Flue Dilution

Each system is designed on the principle of diluting the vented products of combustion sufficiently to reduce the CO_2 content to the required level of below one per cent (BS 6644:2005+A1:2008) and less than 100ppm for carbon monoxide.

The Clean Air Act dictates that this type of system can be fitted to gas-fired appliances rated at up to 6MW. The principle being that fresh air and products of combustion from the boilers are drawn into a duct by a fan and consequently diluted, thus guaranteeing the low CO_2 and carbon monoxide discharge levels.

With over 30 years experience in this type of installation, we can ensure compliance with the Clean Air Act, D1, BS 6644:2005+A1:2008 and IGE/UP/10 Part 1, Edition 2. Advice is also offered on noise reduction methods in conjunction with our acoustic consultant where necessary.

Our technical design team carefully analyses each system on its merits, taking proper consideration to comply with the Clean Air Act regulations as well as Environmental Health Noise Control requirements. Regulations dictate that only very low sulphur fuelled appliances are used with this type of system design.

In accordance with the Clean Air Act, combustion products and air from the inlet are mixed by the fan in the centre of the system until the required dilution of less than 1% CO_2 is achieved. The diluted flue gases are then exhausted through the outlet.

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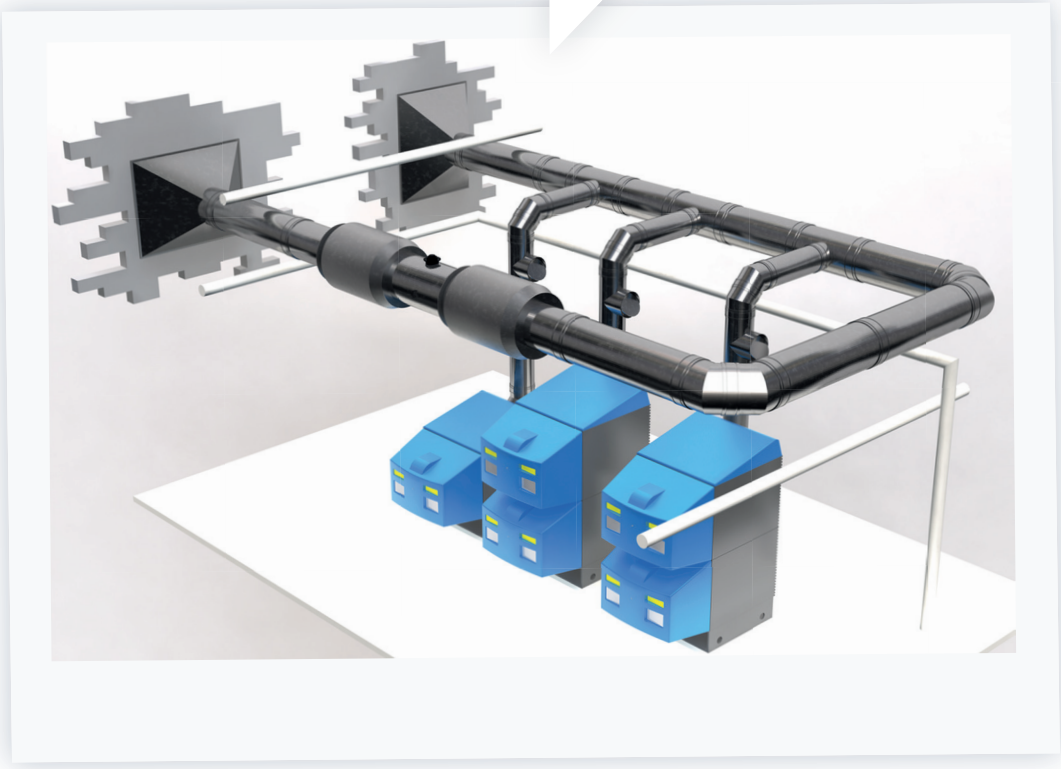
Intake & discharge louvres result in a minimal visual impact to the building appearance.

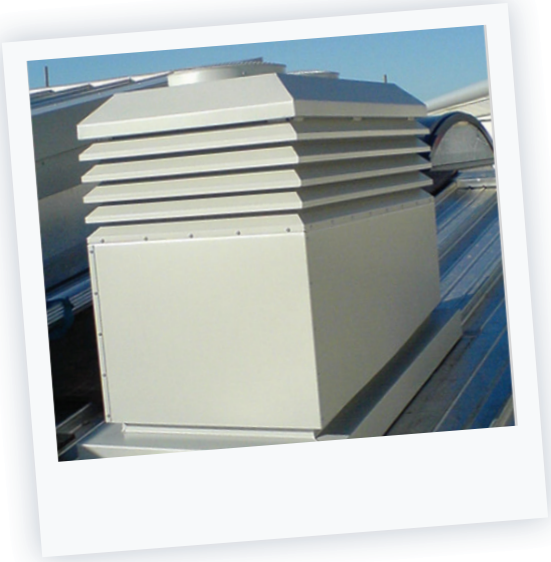


Combivent System

The Combivent terminal provides combined high and low level ventilation for plant rooms devoid of an external wall.

Where boiler house ventilation is difficult or where the aesthetics of the flue gas discharge must be minimised and in keeping with the building, the Combivent terminal provides architects and consulting engineers with an economical and efficient solution. The Combivent terminal is designed to allow the vertical discharge of flue gases through a roof mounted unit, fitted with louvres on all sides providing high and low level ventilation requirements in accordance with BS 6644:2011. These units are internally divided into quadrants and the whole assembly passes from roof level down uninterrupted to the interface with the plant room ceiling. The terminals are manufactured in high grade aluminium for square, rectangular or mitred designs and circular systems from fire retardant GRP. We are also able to supply bespoke designs to meet with architectural requirements.

The Combivent principle eventually gave rise to our Natural Ventilation range which today forms an integral element of our ecological range of products. This is another example of our ongoing policy of evolving and expanding our existing product range whilst looking for new areas where we can apply our knowledge and skills. This evolution is what keeps us at the forefront of our field.



“The Combivent provides an aesthetic solution where conventional ventilation requirements prove difficult to achieve”

Inspection Surveys

As well as our design and installation service, we also provide essential assistance to clients, consultants and contractors in assessing existing installations and their suitability for ongoing use.

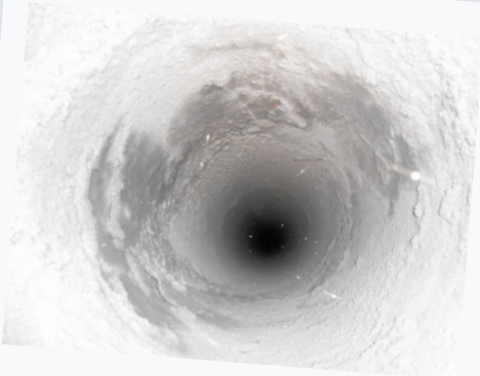
We regularly carry out CCTV camera surveys of existing flues and chimneys. We find this is an invaluable aid when looking to either re-use an existing flue system, or install a new liner in an existing chimney stack. Using our HD survey kit we are able to produce a video showing the internal condition of a flue or chimney, highlighting any obstructions or other areas of concern, ultimately assessing whether the required liner can be installed given the constraints. This service is best carried out during the initial design stage and once the appliances have been selected we can design the flue system definitively. This is generally carried out prior to the general tender process, and therefore we are usually employed either directly by the client, or their consultant. Naturally, if there are issues preventing the original concept and installation then alternative solutions are explored. This ensures that once the project goes to tender, our element of the work is both feasible and designed, avoiding any last minute issues which otherwise would have been problematic.

We are also able to provide pressure testing of flues and exhausts in accordance with DW143. This is another useful tool when looking to retain existing systems for new plant. Our new installations are guaranteed to function as specified. This is especially important on high pressure CHP and generator exhausts, where any weakness in the exhaust system will soon result in very dangerous leaking of gases.

In addition to chimney surveys and pressure testing we are able to offer structural analysis of existing steel chimneys or masts, together with their foundations. This is often in conjunction with steeplejack high level inspections, allowing full and reliable assessment regarding removal and renewal, or for insurance assessments on existing structures.

CCTV Camera

Chimney System Under Inspection



Internal View

Naturally Driven Installations

Midtherm Engineering's in house trained engineers offer skilled design and contracting services of the uppermost quality. Our installation team fit a wide range of company products whilst maintaining the highest industry standards at all times.

Burj Khalifa Tower over 828m high featuring 6 separate major flue systems supplied, delivered and installed by Midtherm Engineering.

Health and Safety

Safety is our overriding concern on all projects, both that of our own employees and of those working with and around us. For this reason we have a committed policy of ongoing training for all engineers including on site and office.

Our installers are:

- CSCS approved.
- SSSTS (for supervisors) trained.
- PASMA trained.
- Asbestos Aware.
- Trained in height awareness and use of harnesses, plus fall rescue.
- Multiple test specific trained and tool use.

Our contract engineers are also well versed in health and safety, trained in PASMA, harnesses and asbestos awareness, as well as ongoing training in Risk Assessment and Method Statement writing (RAMS). Our in house health and safety co-ordinator is fully trained to IOSH, with our directors also attending courses to ensure its ethos of safety is truely of paramount importance to Midtherm Engineering. We also have an external health and safety consultancy to keep us up-to-date with legislation changes and advance the successful integration of health and safety within our daily business practice.

The training of our engineers is constantly monitored using our Training Matrix, which ensures that refresher courses are taken prior to the previous course expiring.

Many of the larger construction contractors have given very positive feedback on the presentation and content of our RAMS documents and this is a great help in securing high value, prestigious contracts.

We actively support health and safety campaigns by encouraging our engineers to report near misses as well as any accidents that they see. When things do go wrong, it is essential to react in the correct way and properly report analysis of events. Only then is future safety achieved.

This dedicated approach to health and safety, with full insurance cover, coupled with a wealth of technical expertise, highlights how Midtherm Engineering can fully accommodate your flue and chimney requirements.

CHAS
CONTRACTORS HEALTH & SAFETY ASSESSMENT SCHEME
Accredited Contractor

SAFEcontractor APPROVED

Constructionline
A UK GOVERNMENT CERTIFICATION SERVICE

MIDTHERM
Engineering Limited

FluesMasts&Chimneys

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Other products available from Midtherm:

Commercial Canopies | Industrial Fan Systems | Natural Ventilation Systems | X-Stream Systems | i-Window Systems | Intelligent Controls