

Chimney draught solutions
for optimizing the efficiency of
single and multiple boilers

exodraft

Why some boilers do not work at their best ...

Air

Air is an essential ingredient in the combustion process. It supplies oxygen and also becomes part of the products of combustion or flue gases. The precise supply of air to the burner and the precise exhaust rate from the appliance is extremely important during the process. If not properly controlled, it can cause inefficient combustion, increased running costs, excessive emissions, and reduce life-expectancy of the entire heating system.

Uncontrolled supply of combustion air can lead to starvation of the heating appliance, flame roll-outs or pilot light failures – and in cold climates, even to frozen pipe work.

Air supply affects efficiency

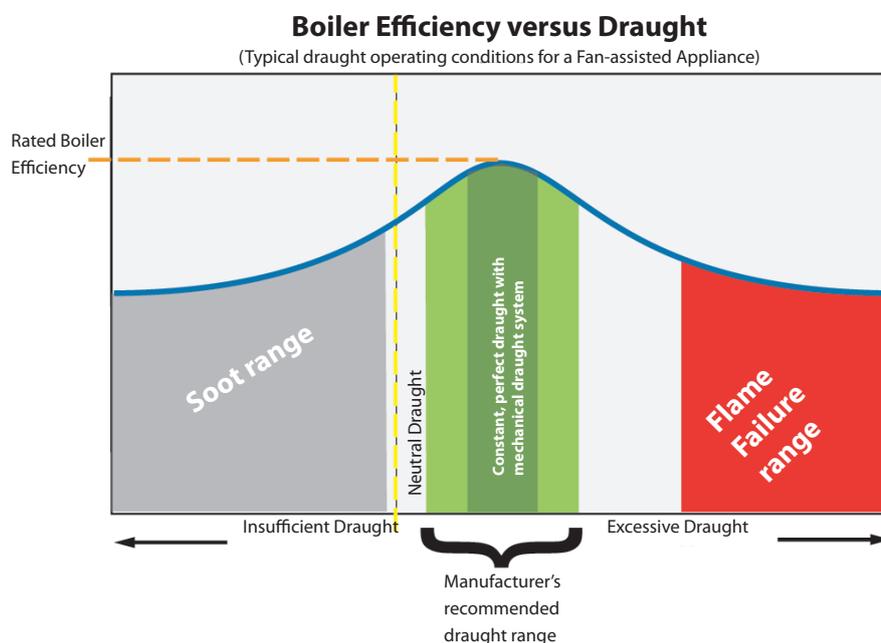
For a heating appliance to obtain maximum efficiency and produce the lowest possible emission level, it must maintain a perfect flame and maximize heat transfer. A perfect flame can only be obtained by maintaining a precise fuel-to-air ratio. Correct air supply and draught control are essential in achieving this.

It is not uncommon to see high-efficiency boilers operating at efficiency levels comparable to lower efficiency boilers. This is purely a result of lack of draught control whereby the additional investment in a high-efficiency appliance is wasted.

Draught is crucial for efficiency

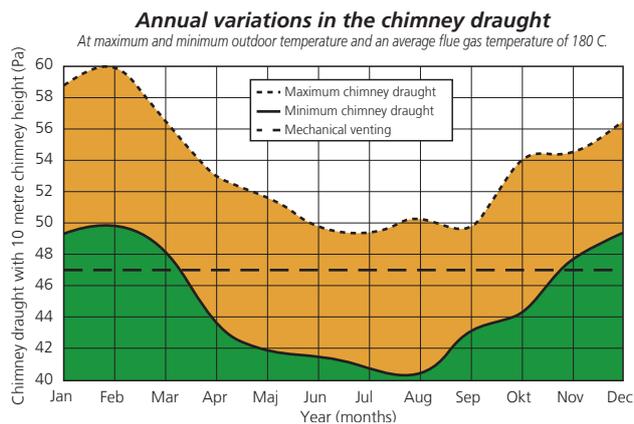
Temperatures and chimney height have the greatest impact on natural draught in chimneys, flues and stacks.

Modular and modulating boiler systems have gained acceptance as an energy-saving concept. Although great energy saving may be achieved, there still is a tremendous amount of energy wasted. More often than not the chimney will be “oversized” during the modulation process, which can lead to potential spillage, downdraught, over-draught, condensation and inefficient operation.



Natural draught is never constant

Natural draught constantly changes as boilers start up or shut down. The draught is also affected by outdoor temperature, barometric pressure and wind. Therefore a chimney is an inefficient draught controller. It is a fact that draught variations due to fluctuations in outdoor air temperature alone can be substantial.



Safety – always a concern

It is required to have all naturally vented heating appliances tested for spillage. As the test only shows the actual draught at a specific moment in time, and the fact that natural draught is never a constant, it is dangerous to rely on spillage tests alone.

Design – always a challenge

Building layouts can put limitations on how combustion air and plant room ventilation is designed. Flue layouts may take up more space than necessary and terminations become aesthetic eyesores. Air grilles take up large wall areas and allow noise to break out from the boiler room.

Building regulations – always an issue

Design and installation is governed by national and European regulations and procedures. This is to assure proper and safe venting. However, unintentionally the building regulations can be so restrictive that natural draught designs become impossible. The solution is very often a fan assisted design that ensures compliance with the regulations and procedures.



What to do about it?

Chimney draught solutions

exodraft helps you to achieve full flexibility in design with enhanced efficiency and guaranteed safety

We do this through:



Design it your way

- Long horizontal flue runs are possible
- Placement of boilers where you want them
- Placement of chimneys where you want them
- Minimal flue size = optimum utilization of floor space



Keeping people safe and buildings operational

- The only system that guarantees safe evacuation of the products of combustion
- Fail-safe operation in accordance with all relevant British Standards
- Constant controlled pressure in entire flue system
- The only purpose designed system
- 3 year warranty against mechanical failure
- 10 year warranty against corrosion



Reduction in your customer's operating costs

- The only solution that guarantees the energy efficiency of your heating appliances
- Improves boiler efficiency through constant optimum output of boilers
- Savings of up to 30% on heating costs can be made
- Modulating fan speed keeps running costs very low
- Cast aluminium fans ensure long life and low maintenance costs



Enabling quick return on investment

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Mechanical chimney draught solutions – with control 'on-demand'

The automated Chimney Draught System is a well-tested concept in mechanical venting of commercial boilers and water heaters. It features "on-demand" control, that maintains a precise draught by constantly adjusting the exhaust rate to meet current needs.

The concept can provide substantial savings over natural draught systems and offers significantly better draught control.

The Chimney fan is installed at the termination point on the exterior of the building guaranteeing an optimum pressure in the entire flue system.

The heating appliances will operate more efficiently and produce a higher output.

- Full modulation and 100 % draught control
- Interlocks 2 appliances (standard) or as many as necessary with relay boxes (optional extra)
- Easy programming of essential functions
– 35 parameters are programmable for customised solutions
- Cast aluminum chimney fan and impeller for use with condensing and non-condensing appliances
- Maintains low emissions, including NOx
- High-temperature TEFC-motor with a Class H temperature rating and direct drive
- Low maintenance and service-friendly design
- Meets BS5440:2000 and BS6644:2005 for fail-safe operation.

Exhaust Unit: RSV or RSG Fan

On chimney or wall:

FR steel chimney flange or PLX, Plenum Box for multiple fan installation

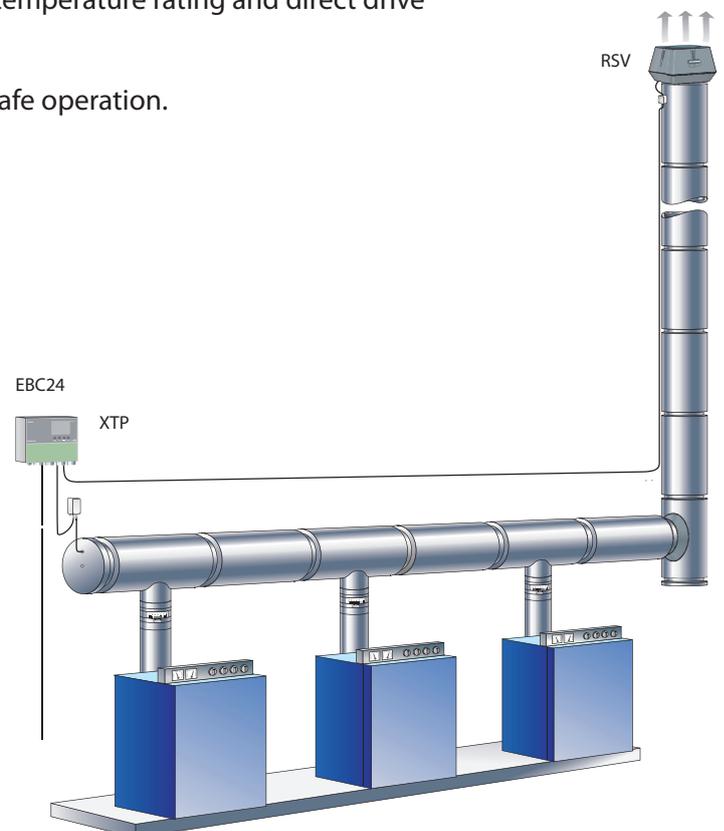
Control System:

EBC 24 – integrated control with constant pressure modulation

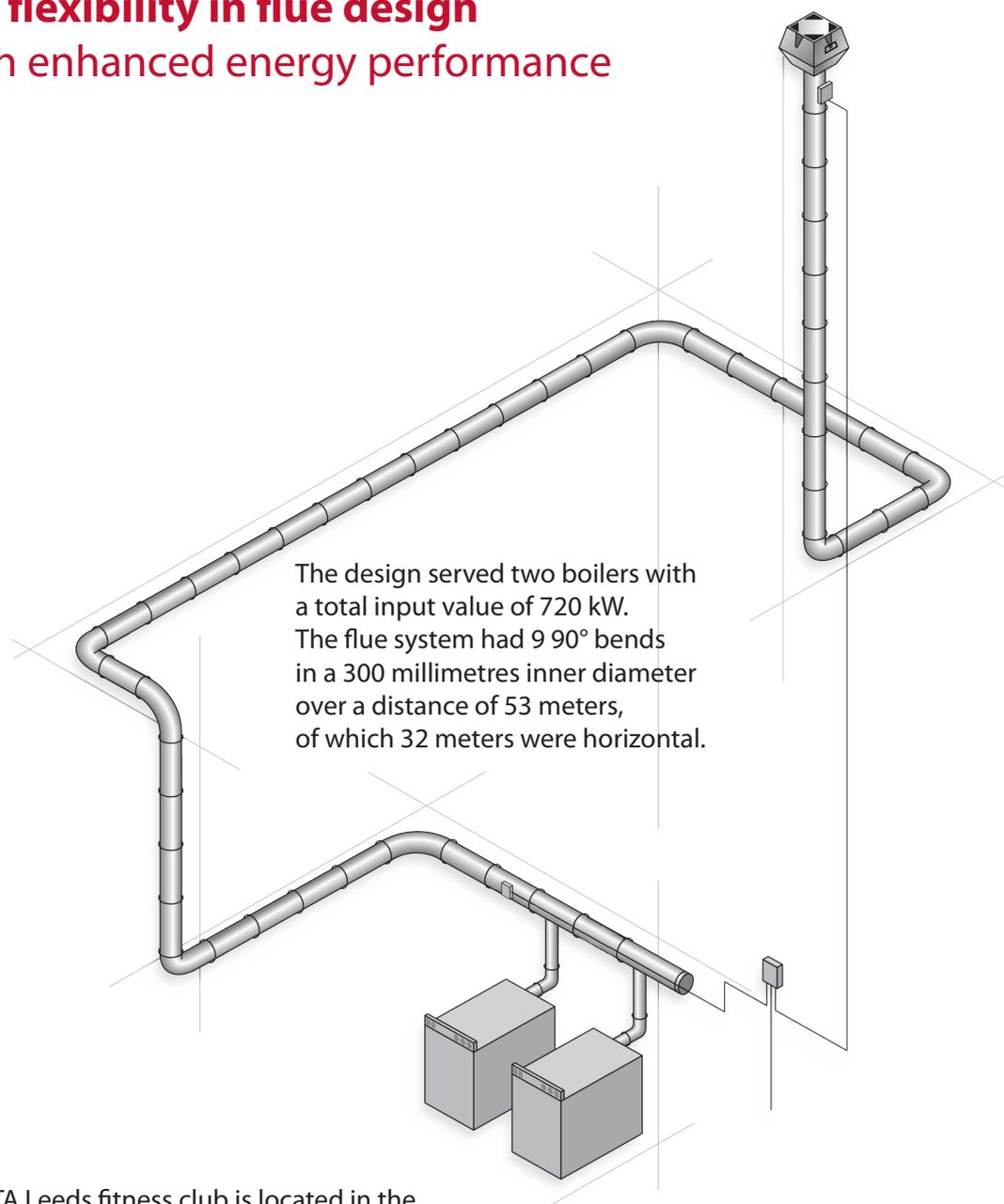
Speed Control:

For 1-phase fans the speed control is provided directly by the EBC control

For 3-phase fans the speed control is provided by a Frequency Converter FRK



Case study of flexibility in flue design combined with enhanced energy performance



The prestigious ESPORTA Leeds fitness club is located in the new city centre leisure development "The Leeds Light".

The project was a mixture of new build and refurbishment and in order to maintain the architectural integrity of the building running the flue outside was not an option.

In conjunction with a local flue specialist, **exodraft** proposed their automated chimney fan system to utilising existing ventilation ducts, eliminating the need to run flue along the outside of the building. This system achieved a constant negative pressure throughout the entire flue thus providing the customer with an enhanced energy efficient and safe system.

"It looked impossible, but the **exodraft** system solved the problem and reduced the cost of flue", says flue specialist, Leeds

System components

Top mounted fans for single or multiple boilers



The **exodraft** RSV fan is installed on top of the chimney. The fan provides a constant pressure in the flue to prevent any spillage from the appliance. Problems with condensation are minimised due to the correct venting of the entire flue system.

The fan type RSV has a powerful vertical discharge column and can be used with domestic and commercial boilers up to 2 MW.

Wall mounted fans for single boilers



The **exodraft** RSG fan is installed on the external wall enabling a gas appliance to be installed without a chimney.

The fan gives a downward discharge of flue gases through secure grilles on the underside of the fan housing.

The fan has a build-in pressure differential switch, which is part of the fail-safe system.

The RSG fan allows for long horizontal flue runs and is suitable for appliances up to 150 kW where regulations allow.

Control units for single or multiple boilers



The **exodraft** Boiler Control Type EBC24 with a pressure transducer (XTP-sensor) is used with chimney fans Type RSV in connection with 1- or 2-step boilers and modulating boilers or, alternatively, with chimney fans Type RSG in connection with water heaters.

The XTP-sensor (pressure transducer) is used for monitoring the correct chimney draught and at the same time supervising the fail-safe function.

The control unit EBC24 also offers an external input option from a pressure switch or alarm sensor as well as having an alarm contact that can be connected to facility management systems or similar.

EBC24 provide fail-safe systems in compliance with BS5440 and BS6644.

The Frequency converter FRK is used for variable speed control of 3 phased motors in connection with EBC24.

- EBC24EU01 Controls for indoor installation.
- EBC24EU02 Controls for outdoor installation.

Flange and plenumbox for single or multiple boilers



The flanges are made of stainless steel. The spigot of the flange FR is inserted into the flue. The fan and flange assembly is located on top of the chimney.

The range offers alternatives to suit any fan model and most flue IDs.

For multiple fan installations a plenum box can be used.

exodraft's extensive product range is based on more than 50 years of experience and knowledge in the field of combustion and chimney draft technology. Our products are known for high safety and quality and we are helping to set the standards and requirements for draft technology.

exodraft products are all fully documented in accordance with current national and international standards and are sold in more than 40 countries – for small domestic fireplaces in private homes to larger commercial and industrial boiler installations.



Solid fuel and wood-burning stoves and fireplaces



Decentralized multiple fireplaces connected to same chimney



Solid fuel and bio-fuel boilers (pellets etc.)



Gas fireplaces



Oil and gas boilers



Decentralized multiple heating appliances connected to same chimney



Bakeries



Industry



Restaurants and pubs

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