Get in touch

Visit us in Rochdale to see our vertically integrated manufacturing facilities. We manufacture burners, control panels, boosters and package plant rooms on site.

Dunphy House,
Queensway,
Rochdale,
OL11 2SL

+44 (0)1706 641 297

sales@dunphy.co.uk

Dunphy

Engineering Tomorrow's Environment

Burner Range 2025

High-Efficiency Solutions from 100kW to 80MW

Hydrogen

Biofuels

Ultra Low NOx

High turndown

- Hydrogen Ready
- Ultra Low NOx
- High Energy Efficiency
- Made in Britain

World leaders in high efficiency industrial burners

Founded in 1964 by Malcolm Dunphy, we are a UK-based manufacturer specialising in burners, plant rooms, control systems, and boosters for heat and steam generation.

With over 60 years of experience, our focus remains on delivering high-quality, energy-efficient equipment designed to meet the evolving needs of our customers.

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Burner Range

Suitable for use on all types of gas heat, steam and incineration boilers, furnaces and for process applications from 100kW to 80MW

Since Malcolm Dunphy patented the first axial airflow burner in 1971, Dunphy have been world leaders in energy efficient combustion technology. Our range of burners offer high efficiency, low emission solutions to any industrial application.

T-series axial airflow burners are designed for single or multi fuel use with all liquid and gaseous fuels and are suitable for applications between 100kW and 14MW.

With a Mechanical design studio on site, we can provide a solution to any industrial application. These solutions can include sluice, start-up and auxiliary burners.

Bespoke **B series** burners are designed for a wide range of high output applications up to 80MW.

Achieve maximum efficiency with a turndown of up to 12:1

Hydrogen ready

We are the first burner manufacturer in Europe to be UKCA and CE certified for a range of hydrogen burners.

Low NOx head

All T series burners are fitted with low NOx combustion heads as standard

Turndown ratio

Burners can achieve up to 10:1 turndown ratio on gas, 4:1 on oil and 8:1 on oil fired steam/ air atomisation

Digital modulation

Digital modulation is fitted as a standard, providing high accuracy of control.

ATEX approved

Our mechanical and electrical designs can be built to meet ATEX requirements (Zone 1 and Zone 2)

Low noise

The axial airflow design allows us to encapsulate the motor and fan within the casting, resulting in reduced noise.

Dunphy burners are available with a wide range of fuels making them highly flexible and suitable for many applications

- Hydrogen
- Biogas
- Natural Gas
- Liquid gas (LPG, LNG)
- Fuel Oil, Diesel, HFO's
- Towns Gas
- Producer Gases

T Series Burners

Dunphy's T Series burners are based on an axial airflow design originally patented by Malcolm Dunphy in 1971. Our unique design has the motor located within the air flow, offering 100% heat recovery from the motor and excellent acoustic attenuation.

The axial airflow design is unique in its ability to produce uniform air distribution to the burner head at all levels of firing, including low fire operation.

The virtually perfect air distribution achieved means there is no requirement for energy consuming and noise generating vanes and splitters.

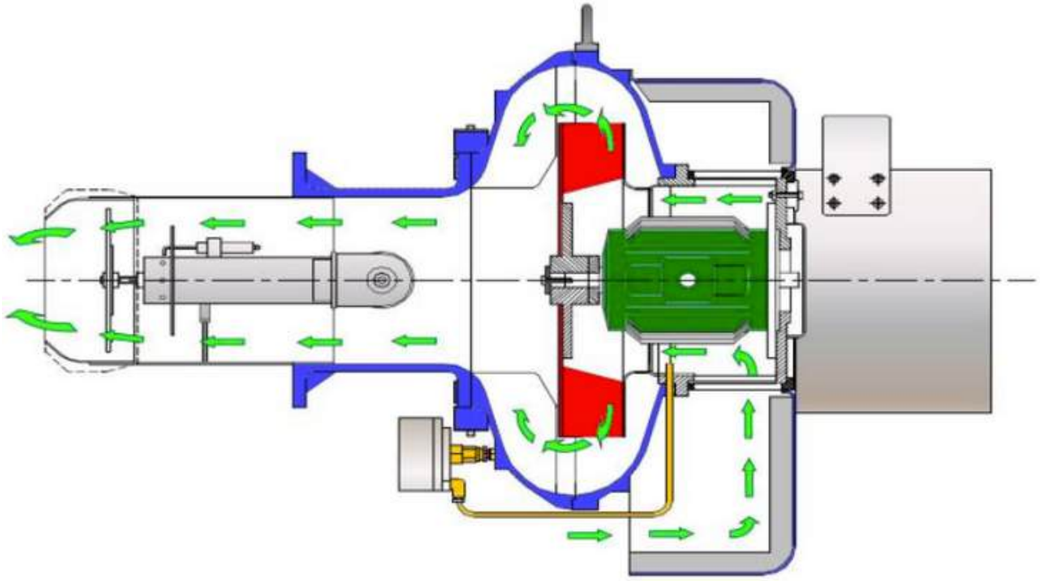


Fig.1 axial airflow burner design

Axial airflow design offers many benefits compared to gun type burners

- High efficiency across a wide turndown range
- Lower fuel consumption
- Inherently low NOx
- No peaks or troughs of air distribution as the burner turns down the modulation range
- Accurate fuel air mix due to symmetrical design of air flow
- Air flow is laminar and does not turn 90 degs in the burner head

Our T series burners typically come in 4 variants

1 Gas burners

For use with all gaseous fuels with a CV ranging from 3 to 30kWh/m3. Burner components can be made from stainless steel for use with corrosive gases.

2 Gasoil burners

For use with liquid fuels up to a maximum viscosity of 5.5cSt at 40°C

3 Dual fuel burners

For use with any combinations of oils and gases fired simultaneously or independently

4 Heavy oil burners

Our heavy oil burner range is suitable for fuel oils up to a maximum viscosity of 40 cST at 100°C.

Hydrogen burners

Dunphy's UKCA and CE rated hydrogen burners are effective across the full burner range, from 100kW to 60MW and can burn 100% hydrogen and any blend of hydrogen and natural gas, including admix (80% natural gas and 20% hydrogen)

Leading the industry with hydrogen

UKCA and CE rated

The first burner manufacturer in Europe with full UKCA and CE rating

NOx mitigation

NOx levels can be mitigated down to 50mg with the addition of flue gas recirculation

Zero carbon emissions

Burning 100% hydrogen will result in zero carbon emissions, helping to minimise scope 1 emissions

Trail blazing

In 2022, we were the first manufacturer to run a consumer goods plant for 8 weeks entirely on 100% hydrogen.

Proud history

We installed our first hydrogen burner at Malay Sino in Malaysia in 1998.

Versatile fuel mix

Able to fire hydrogen and natural gas independently and simultaneously in varying quantities from 0-100% with both fuels

We are at the forefront of adoption of hydrogen in industrial applications across Europe

Hydrogen trials with Unilever and Progressive Energy

In 2022, we collaborated with Unilever and Progressive Energy on pioneering hydrogen combustion trials. The trials demonstrated that our combustion equipment is fully capable of operating effectively with hydrogen, either as a pure fuel or blended with natural gas, across a complete range of conditions - from 100% hydrogen down to a blend of 80% natural gas with 20% hydrogen by volume.

Using 100% hydrogen to run the ovens at Kellogg's

In August and September 2024, Kellogg's at Trafford Park successfully operated their ovens on 100% hydrogen for three consecutive weeks using our dual-fuel burners. This trial only stopped due to supply limitations, highlighting the reliability and capability of our technology in real-world scenarios.

B Series Burners

Our B Series burners comprise a separate fan and motor and are the standard design on burners above 13MW or bespoke applications above 60kW ranging all the way up to 60MW. They are typically used for preheated air, incineration, ducted air, foul air, sluice gate utility burners.

We have a number of B series burner models to meet operational and emission levels

HL Models provide simple 2 stage high low control where only basic controls are required.

MP Models are air/fuel ratio control via an air lead ratio valve providing 4:1 turndown ratio.

ME Models provide air/fuel ratio via electronically controlled servo motors. Accurate control provides excellent combustion efficiency and turn down ratio of 6:1 .

SC Models allow any of the other models to be supplied with VSD control to increase turn down.

Understanding how to specify a B Series

B series burners are available in single, duel or triple fuel options. Available as either pressure jet or air/steam atomising along with preheated air options.

H B DG F 9400 ME Q

- Q — Gas train size
- ME — Modulation mode
- 9400 — Maximum firing rate
- F — With/without flue gas recirculation
- DG — Fuel type
- B — Burner series
- H — With/without pre heated air

They have a wide range of fuel types

D	= Dual fuel	**G**	= Gas	**H**	= Heavy oil
L	= Light oil	**DG**	= Dual gas	**AD**	= Gas and air atomised oil
AH	= Air atomised heavy oil	**AL**	= Air atomised light oil	**AHD**	= Gas and air atomised heavy oil

Process Burners

Dunphy process burners are designed to handle demanding industrial environments, from incineration and hazardous waste disposal to chemical and petrochemical refining.

They excel in high-temperature or pre-heated air applications (typically up to 300°C), providing precise combustion control for processes such as fluidised operations, kilns, and thermal treatment systems. By tailoring each burner to the specific fuel, temperature range, and emission requirements, Dunphy ensures reliable, efficient, and compliant performance for virtually any industrial process.

Advantages of retrofitting air pre-heat systems to boilers

Our air pre-heat burners are designed to enhance efficiencies and save fuel and can easily be retrofitted to most types of boiler.

As an example, a low temperature, hot water boiler fitted with a Dunphy gas burner, economisers and an air pre-heat system will condense around 1,150 litres of water per hour.

Some of this water can then be sprayed back into the burner air stream. This, in turn, improves the heat transfer rate of the boiler.

Zone 1 and 2 compliance

Dunphy has wide experience in manufacturing, assembling, commissioning and maintaining high efficiency, low NOx industrial energy centres.

Whether specified for internal or external sites, Zone 1 or Zone 2 compliance, CHP or waste treatment processes, our engineering solutions deliver consistently high fuel performance and low emissions.

Burner technologies

We offer advanced technologies across our burner range to help increase efficiencies, reduce NOx and generate system savings.

O_2 trim

O_2 trim is a system that allows you to adjust the fuel/air ratio to allow you to keep excess oxygen to a minimum, and can provide consistent combustion figures of around 2-2.5% oxygen across the turndown range to account for varying calorific values of fuel, temperature and pressure.

CO trim

CO trim continuously reduces the air supply so that the burner sits on the break point of CO creation and can enable the burner to run safely at sub 1% oxygen levels

Flue Gas Recirculation

Ultra low NOx emissions of less than 30mg/Nm^3 on gas and less than 100mg/Nm^3 on oil can be achieved through the use of flue gas recirculation

Multi Nozzle Head

Burners can be fitted with a duel or a triple fuel head which will allow them to burn multiple fuels both simultaneously and independently

Air atomisation

Air atomisation is available on all Dunphy liquid fuel burners.and gives the added advantage of higher turndown ratios and the ability to burn higher viscosity fuels on heavy oil burners.

Variable speed drives

Variable Speed Drives control the speed of the burner fan motor by adjusting its electrical input. They allow the motor to operate at variable speeds depending on the load requirement. They offer:

- enhanced control and improved air/fuel ratio precision
- energy savings through reduced motor power consumption by operating at lower speeds during reduced loads
- reduced wear with less mechanical stress

Customer success stories

Customers from across all industries have seen significant benefits through installing Dunphy

Hydrogen firing at a food manufacturer

A food manufacturer ran one of their drying processes on 100% hydrogen for 4 weeks in August and September 2024.

Solution: We provided 2 TDG2 hydrogen ready burners with digital modulation allowing them to fire any combination of hydrogen and natural gas from 0-100% both independently and simultaneously

Additional benefits:

- Zero carbon production process supporting reduction in scope 1 and 2 emissions

Reburnering at chemical plant

The burners on site were running with high excess oxygen levels resulting in poor boiler efficiency and were exceeding the emissions requirement of <100mg/Nm^3 on gas and <200mg/Nm^3 on oil.

Solution: We provided 2 TD5.800 burners with digital modulation and a system 5000 boiler control system

Additional benefits:

- A reduction in NOx levels to ~70mg/Nm^3 on gas
- Ultra low excess oxygen levels of <2% with O_2 trim
- 10:1 turn down on gas

Reburnering for biogas at a brewery

The site generates biogas from an effluent treatment plant which is insufficient to maintain full rated output of the system.

Solution: We used natural gas as a base fuel to supplement the available biogas and provided 6 TDG5 burners with digital modulation, simultaneous firing software and boiler control panels.

Additional benefits:

- Utilising biogas that would have otherwise been flared saving £35k per year on this alone
- Total savings of more than 11% per year
- Sequence control to efficiently manage the steam load

Reburnering at a UK Hospital

The burners on site were outdated and performing poorly with high excess oxygen and poor efficiency, and exeeding the Medium Combustion Plant Directive emissions requirements

Solution: We provided 3 TDG5 burners capable of running on both oil and natural gas

Additional benefits:

- A reduction in NOx levels to ~70mg/Nm^3 on gas
- 10:1 turn down on gas
- Full burner management with oxygen trim and CO trim
- Integrated boiler controls
- Insight, our boiler sequencing software

Product specification data

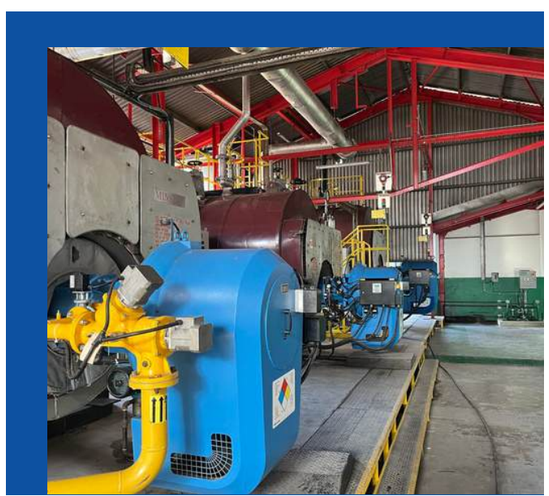
T Series

Suitable for applications between 80kW and 14MW

Burner Type	Firing rate (kW)	
	Min	Max
T02.12	45	120
T02.26	90	250
T03.34	140	340
T03.45	140	450
T04.65	100	600
T05.100	160	1100
T2.100	160	1000
T2.115	200	1115
T2.155	400	1550
T3.200	450	2000
T3.220	500	2200
T3.290	570	2950
T4.450	600	4500
T4.550	800	5300
T4.650	1200	6200
T5.800	1250	8000
T5.1000	1500	9800
T6.1200	1800	12000
T6.1400	2200	14000

Each burner type has a number of models with outputs that vary according to different features, including:

- Application resistance
- Fan motor size
- Pump motor size
- Gas volume (for gas or duel fuel burners)
- Use of digital modulation
- Introduction of a Variable Speed Drive



B Series

Suitable for applications between 83kW and 68MW

Burner Type	Firing rate (kW)	
	Min	Max
B1.50	83	500
B1.70	117	700
B2.100	167	1000
B2.150	250	1500
B3.250	417	2500
B3.330	550	3300
B4.400	667	4000
B4.650	1083	6500
B5.800	1333	8000
B5.1100	1833	11000
B5.1400	2333	14000
B6.1700	2838	17000
B7.2200	3667	22000
B7.2400	4000	24000
B7.2800	4667	28000
B8.3200	5333	32000
B8.3600	6000	36000
B9.4000	6667	40000
B9.4800	8000	48000
B9.5200	8667	52000
B10.5600	9333	56000
B10.6000	10000	60000
B10.6400	10667	64000
B10.6800	11333	68000