



IndustrialFanSystems

An introduction to our full range of bespoke industrial fans.



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Fans to blow your mind

Midtherm design and supply high quality industrial fans, impellers, motors and associated components of all types and sizes. From standard high volume products to bespoke fans designed utilising our state of the art software and manufactured to the highest quality.

We are committed to producing modern industrial fans, with the majority of our products now using highly accurate laser cut components, a CEMB Hofmann Dynamic Balancing Machine, all backed by our coded welders and quality system. These modern industrial systems and designs allow us to provide short lead times and to give the highest standard of build quality with consistent reliability.

Midtherm Engineering offer the full installation service too with our own directly employed highly trained staff. Our company is CHAS, Safe Contractor and Constructionline approved, so no matter what the physicality of the project we can get it done.

We offer not just the fans themselves, but the full range of industrial commercial products and services, all under our insurances and professional indemnity cover.

Optional Equipment

Flexible connectors

Designed to exclude the vibration transmission from fans or ventilating units to the air duct as well as for the thermal distortion compensation within the air duct. A wide range of types and quantities are available.

AV Mounts

These are used to isolate the fan from the system to prevent vibration transfer through fixings or structures.

Keeping the noise down

Acoustic enclosures have the ability of reducing noise levels from 5-15dB (A) depending on the fan type and its operating conditions. Midtherm Engineering will further develop full designs as well as the enclosures themselves in conjunction with our acoustic consultant.

Acoustic/Thermal lagging

Provides a flexible hard wearing cover to reduce breakout noise from machinery such as centrifugal fans, compressors, pumps and ducting.

Silencers

Silencers can either be cylindrical or rectangular. Cylindrical silencers will be used for Axial and Bifurcated Fans. Rectangular silencers will be used on Multivane, Backward Curved, Backward Inclined and Aerofoil Type Fans. Silencers can handle clean air and light dust, these are generally more efficient.

We fabricate Circular Silencers from 250 ID to a maximum of 1500 ID. If you require bespoke please contact our technical team.

Inverters

Electronic devices that provide step-less speed control for an electric motor.

Inlet filters

These stop debris or dust particles from getting into the fan where not desirable.

Shaft seals

They can be added to the housing as an option and should be specified when the fan is used for handling dirty, wet, corrosive or toxic air.

Keeping it under control

We can offer bespoke control panels to operate our fans singularly, as multiples or even in conjunction with other equipment, including sensors that trigger the fan automatically when needed.

Mesh guards

These are filters that offer high levels of air passage while efficiently filtering contaminants.

ATEX product certification

Our fans can be designed to comply to the ATEX regulations and certification, when volatile working environments may be present. This is the check on the design specification of a product in relation to a series of relevant standards laid out under the directive, for full details contact our design team with your requirements.

Fan treatment and finishes

Our fans can be finished in a wide variety of treatments, including hot dip galvanised, shot blasting and zinc metal spraying, with further virtually unlimited paint treatments to suit our clients' needs.



The Full Range of Fans

- Required
- Optional

Type of Fan	Clean Air	Light Dust	Heavy Dust	Material Handling	(mm)		(pa)		(m3/hr)		(°C)		Short	Inline	90° Discharge
					Inlet Diameter	Pressure	Volume	Constant	Min	Max	Min	Max			
									Min	Max	Min	Max			
Axial Short Case	●	●	●	●	315	1400	0	2500	720	55000	150	400	●	●	●
Axial Long Case	●	●	●	●	315	1400	0	2500	720	55000	150	400	●	●	●
Bifurcated	●	●	●	●	250	1400	0	2500	720	55000	300	400	●	●	●
DD Bifurcated	●	●	●	●	250	1400	0	2500	720	55000	300	400	●	●	●
Paddle	●	●	●	●	250	1500	0	11000	720	190000	300	0	●	●	●
Chopper	●	●	●	●	250	1500	0	11000	720	100000	300	0	●	●	●
Multivane	●	●	●	●	250	1500	0	750	720	64600	300	0	●	●	●
Backward Curved	●	●	●	●	250	1500	0	9000	720	255000	300	0	●	●	●
Backward Laminar	●	●	●	●	250	1500	0	11500	720	255000	300	0	●	●	●
Airfoil	●	●	●	●	250	1500	0	10000	720	255000	300	0	●	●	●
High Pressure Blower	●	●	●	●	250	1500	0	35000	720	150000	300	0	●	●	●
Plug Fan	●	●	●	●	250	1500	0	9000	720	255000	800	0	●	●	●

Axial Fans (Long and Short Case)

Axial fans are when the motor sits directly in the airstream, the basic is capable of 70°C (motor dependent). Sizes range from 250mm – 630mm ID fully spun, with cases that are larger than 630mm ID specially fabricated.

If higher temperatures are required, please contact our technical team for a solution.



Belt Drive Axial

The impeller is driven via vee belt drive through a shaft and bearings, both of which are located inside a tunnel isolating them from the airstream, allowing higher temperatures and more volatile products to be handled.

Sizes from 250mm up to 1000mm.

Motors

IE2 motors are used as standard, and we offer IE3 as optional. At a standard IP55.

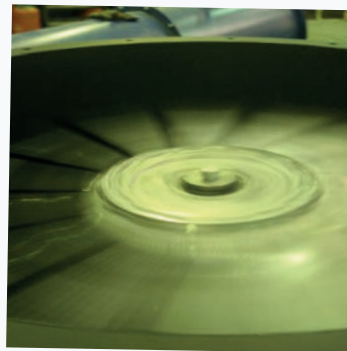
All can be ATEX rated on request for working in areas of a sensitive type.

Bifurcated Fan Range

Midtherm standard bifurcated range has the central section of the fan housing enlarged to reduce resistance to airflow. The motor is then isolated from the air stream. A standard fan is suitable for temperatures up to 80°C. With the addition of a cooling disk mounted on the motor shaft, the temperature range is extended to 200°C.

For temperatures from 200°C up to 250°C, insulation and a heat shield are fitted to the internal compartment housing of the motor, to reduce the heat radiation directly on to the motor. Care should be taken to ensure that there is free air flow through the internal motor compartment to prevent overheating. Midtherm will advise on installation locations if required.

Bifurcated fans without the enlarged central section can be produced to special order, however the central motor compartment restricts the cross sectional area available for air flow, and the increased resistance causes a significant drop in performance, when compared to the standard unit.



Centrifugal

These fans are the most efficient of fan designs. Static efficiencies peak at around 80% and occur around 60% of free delivery. Their performance characteristic curve is stable over a wide range. The fan horsepower curve is non-overloading. The fan design is suitable for all forms of control methods. It is primarily suited for clean air applications but non-sticky dust like particles can be handled. Due to stress considerations, this design is best suited for moderate speeds through class III (up to 13.5 inches w.g.) and moderate temperatures through 400°C.

Types of centrifugal

There are different types of centrifugal fan for different applications; our technical team can select the most appropriate

- Centrifugal Aerofoil.
- Centrifugal Backward Curved.
- Centrifugal Backward Inclined.
- Forward Centrifugal.



High Pressure Blowers

High pressure blower fans are designed for low volume, high pressure applications. We can manufacture 100 mbar and static pressure of 720m³/hour and various equilibrium from this general duty indicator. They can handle light dust loads, as well as air and fume.

These fans have efficiencies in the 60 to 75 percent range and have a higher pressure characteristic than most fans. The KW power curve rises constantly to deliver the highest pressure at the lowest duty. Due to turbulence and the blade shape, these fans can handle contaminants in the air stream. Impellers often incorporate wear protection for longer life. These fans can be modified or designed to accommodate high temperatures.



Plug Fans

Use both Multivane and Backward type impellers for use in ovens where a high temperature requirement is the key, max temp of 650°C. Plug fans are available with or without housings. Insulated plug panels are available for high temperature applications.

Plug fans are usually used for recirculation within oven applications. The casing and inlet are mounted from the inside of the oven. This allows the impeller / plug unit to be withdrawn from the oven without disturbing any equipment and with minimal disruption with regards to maintenance and response.

Industrial Fans - types of application

Types Of Fans	Types of Application								
	Catering	Ventilation	Smoke	Recycling	Furnace Fans	Waste Conveying	Spray Booths	Dust Handling	Air Pollution Control
Axial	—	●	●	—	—	●	●	—	●
Bifurcated	●	●	●	—	●	●	●	●	●
Chopper Fans	—	●	●	●	●	●	●	●	—
Paddle Fans	●	●	●	●	●	●	●	—	—
Backward Laminar	●	●	—	—	—	●	—	●	●
Backward Curved	—	—	—	—	—	●	—	●	●
Multivane	●	●	—	—	—	●	—	●	●
High Pressure Blower	—	●	●	—	●	●	—	—	●
AirFoil	●	●	●	●	●	●	—	●	●
Plug Fan	●	●	●	●	●	●	●	●	●

Impellers

Paddle Blade Impeller

A Paddle Blade Impeller is a type used in Centrifugal Fans that is designed specifically for handling heavily dust laden air and for the pneumatic conveying of wood waste, fibres, paper trim etc. They are a self cleaning impeller, they have a wide range of fan uses and arrangements, plus they can have temperatures up to 750°C.

Chopper Impeller

Chopper Impellers are similar to Paddle Blade Impellers as they can be used for heavily dust laden air and the pneumatic conveying of wood waste, however they can be used to cut tin cans and cardboard for use in recycling industries. They have hardened cutting blades and are fabricated to be extremely strong structurally.

Multivane Impeller

Multivane Impellers are designed primarily for heating and ventilation applications. They can only handle clean air. They are slow-running therefore quiet, and have a forward curve.

Backward Curved Impeller

Backward Curved Impellers are the workhorse fan of the industry; they are capable of handling light dust loads as they are good at self cleaning.

Backward Laminar Impeller

Backward Laminar Impellers are similar to the backward curved type, but can only handle very light dust loads. It has non-overloading characteristics.

AirFoil Impeller

AirFoil Impellers are the most efficient type of impellers, they can only handle clean air due to dust sticking on the underside of the impeller.

High Pressure Blower

High Pressure Blowers are specifically designed for low volume high pressure applications, due to the blade type and turbulence they can handle dust loads and small debris. They have a narrow width and high efficiency.



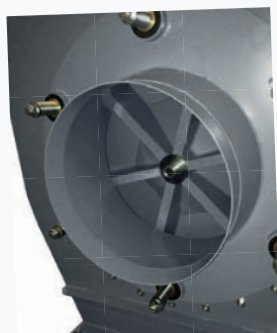
Multivane Impeller



Backward Laminar Impeller



Radial Blade Impeller



Chopper Impeller



Axial Blade Impeller

Dynamic Balancing Machine

The state of the art Dynamic Balancing Machine by CEMB Hoffman is designed to balance rotors of multiple configurations. With two hard bearing pedestals with Piezo – Electric Force Measuring Transducers, to ensure accuracy at lower bearing speeds.

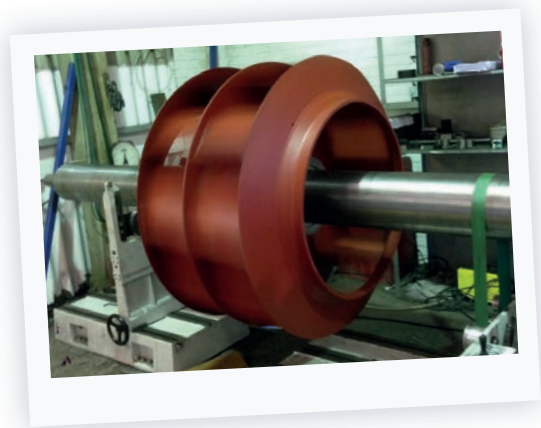
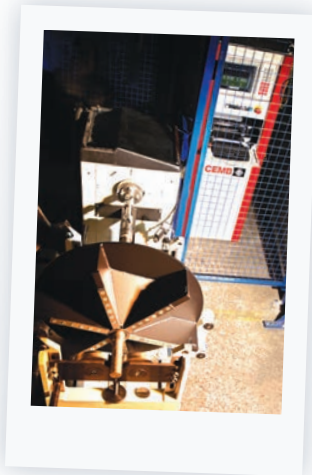
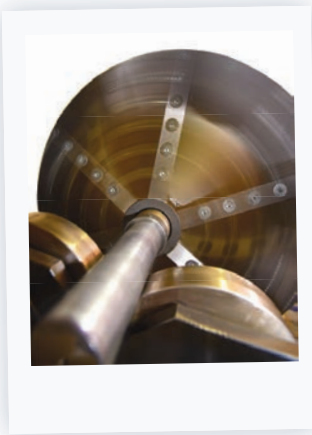
Our production scheduling has now been simplified with this new addition and everything that rotates needs to be balanced precisely to ensure that it gives optimum performance.

Midtherm can now balance a variety of different types of rotors for high tech industries which include Aerospace, Automotive, Power Generation and Petro-chemical.

Components balancing to G6.5 standard and G2.5, depending upon clients requirements.

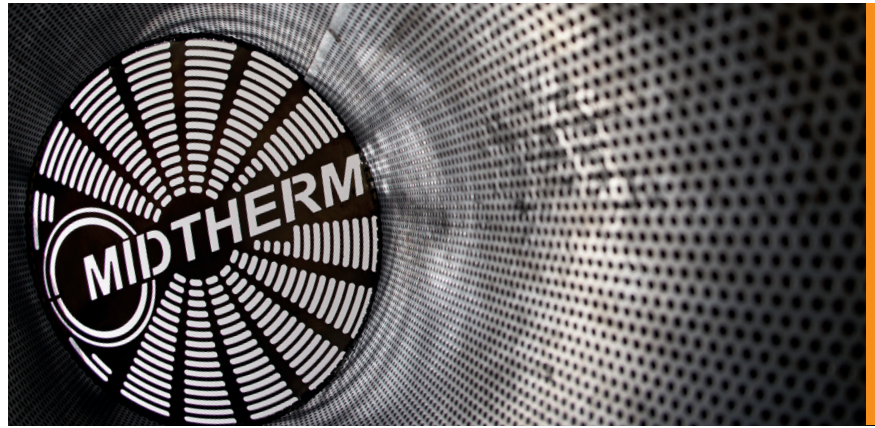
Benefits of Dynamic Balancing

- Minimise noise and fan structural stress.
- The forces produced by unbalanced rotation have to be absorbed by the surrounding structure.
- Minimise operator fatigue and related personal stress levels, as exposure to high levels of vibration and noise affects operator welfare.
- The time between outages can be extended if the machine is running smoothly and hence reliability.
- Increase bearing life expectancy.
- Minimised vibration, especially on machine tools, accurately produces better components.
- Dangers associated with machine or system failure are minimised, increasing personal safety.
- Balanced machines use less energy resulting in greater efficiency.
- Increase machine life.



Materials

Diameter	Max Weight (Kg)	Mild Steel	Stainless Steel	Aluminium	Plastic
<200-1600	3 Tonne	✓	✓	✓	✓



IndustrialFanSystems



Other products available from Midtherm:

Flues Masts and Chimneys

Commercial Canopies

Natural Ventilation Systems

X-Stream Systems

i-Window Systems

Intelligent Controls