



Halifax Fan has a company ethos of quality, reliability and efficiency for every fan it builds. Today efficiency is seen as being every bit as important as the need for quality and reliability. Efficiency has been reinforced by the formulation of EU directives relating to the efficiency of fans driven by electric motors of powers from 0.125kW to 500kW. This falls under the Energy Related Product (ErP) umbrella to reduce European carbon emissions.

Did You Know?

An estimated 18% of world industrial electrical grid power consumption is used on industrial fans

(source DECC)



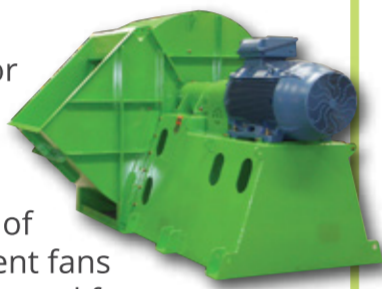
Directive 2009/125/Ecodesign

Requirements for energy related products Ecodesign comes from the European 2020 strategy. This drives the regulations that govern electrical equipment, one being; industrial fans. Regulation (EU) No. 327/2011



EU 327 Fan tiers:

Regulation EU327 stipulates required efficiency grades for industrial fans.



The efficiency grades are weighted for different types of fans ranging from less efficient fans like axial fans and forward curved fans through to the more efficient backward curved and aerofoil centrifugal fans.

Once an efficiency grade has been selected; we have to calculate the overall fan efficiency using weighted formula's stipulated by the regulation. This has to be greater than the efficiency grade for the fan to be compliant.

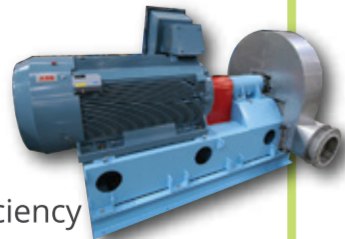
EU 327 Exemptions:

- Applications where the 'specific ratio' is over 1.11 (a static pressure greater than approximately 11 kPa)
- Fans designed to operate in potentially explosive atmospheres (94/9/EC). (ATEX)
- Fans for emergency use only, at short-time duty, for fire safety
- Where operating gas temperatures are greater than 100°C
- Operating ambient temperature for the motor exceeds 65°C
- Annual average temperature of the gas and/or ambient are lower than -40°C
- A supply voltage greater than 1000 VAC or 1500 VDC
- Toxic, highly corrosive, dusty or flammable environments or environments with abrasive substances
- Direct replacement fan to go in the same place as a fan installed prior to 2015
- Hydraulic, diesel, turbine driven
- Installed outside the EU
- Bare shaft fan (supplied without motor)



International Motor Efficiency Standards:

- IEC/EN 60034-30:2008
- Motor IE1 = Standard efficiency
- Motor IE2 = High efficiency
- Motor IE3 = Premium efficiency
- Motor IE4 = Super premium efficiency



IE3 Exemptions:

- Below 7.5 or above 375kW (Until 2017)
- ATEX rated
- VSD rated (IE2 Minimum)

European Conformity:

The CE mark is a declaration that the product meets the requirements of the applicable EC directives.

CE marking cannot be affixed to products which are not covered by or do not meet European Directives.



Example of a Halifax Fan EU327 Nameplate:

Regulation

Overall efficiency

Fan efficiency grade

Inverter note

CE mark shows compliance

halifax fan
www.halifax-fan.com

MADE IN UK
SERIAL N° 2015 68000
SIZE & TYPE 29.5 MEBC

RATED SPEED 3550rpm
INLET TEMP 60°C

EU327/2011
 $\eta_e = 63.4\%$ D,total
 $N_e = 69.3$
INSTALLED WITHOUT VSD

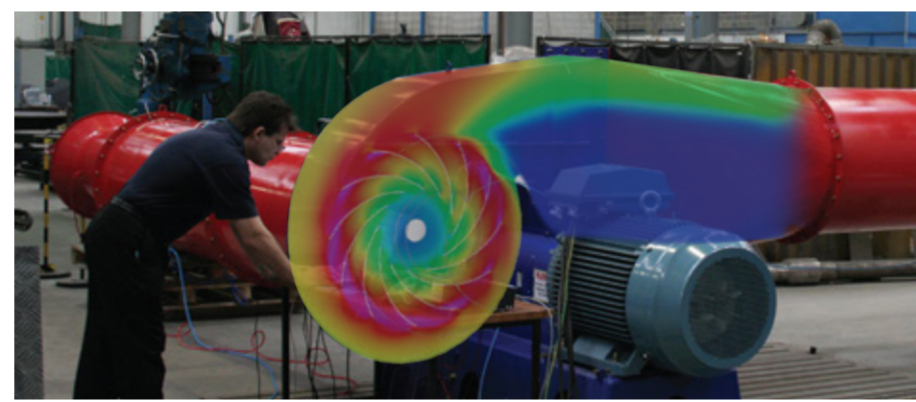
FANS OPERATING OUTSIDE SPECIFIED OPERATING CONDITIONS MAY RESULT IN PREMATURE FAILURE AND WILL INVALIDATE THE WARRANTY

Carbon Footprint:

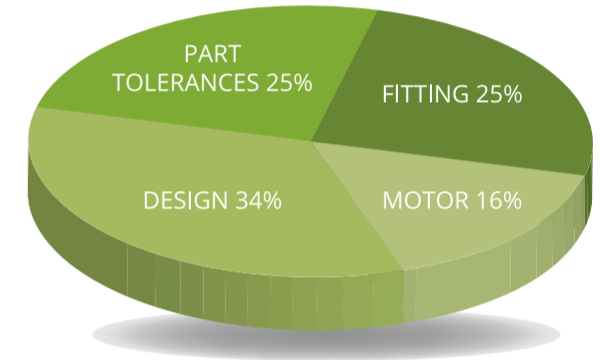
There are several ways to improve efficiency and reduce our carbon footprint.

Continuous investment in R&D:

At the core of our research and design work is improvement in efficiency of our fans. We use Computational Fluid Dynamics backed up by empirical tests. This allows us to drive up our fan efficiencies.



Fan design accounts for 34% of fan efficiency



Correct Sizing:

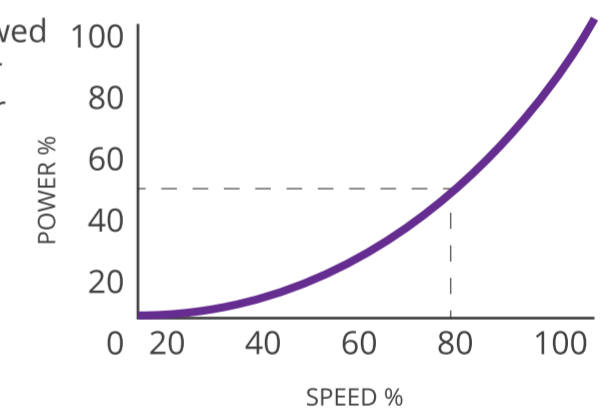
It is typical for cautious customers to oversize fans to ensure they are large enough for the aerodynamic load required, this then leads to a problem on site where typically the oversized fans are controlled on site by dampers throttling to give the application the correct flows.

A better way is initially to work with suppliers like Halifax Fan who can ensure they give you a fan which operates at the performance point required, if the flow is required to be controlled then a variable speed drive (VSD) can be the most efficient solution.

A VSD allows the fan to be slowed down and only uses the power required for the load. However not all applications suit VSD's.

Benefits of VSD's

- Energy saving
- Controlled starting
- Can be linked to the process



20% speed reduction = 50% energy reduction

Fan & Motor Timeline:

Acceptable efficiency grades are increasing. The tiers below represent when the regulations targets become more stringent.

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
FAN TIER 1										
FAN TIER 2										
FAN TIER 2020										
MOTOR IE2										
MOTOR IE3 7.5 kW TO 3.75 kW										
MOTOR IE3 0.75kW TO 3.75kW										
MOTOR IE4										

DATE TBC

Case Study:

Cost, power, and CO2 savings from more efficient fans and motors:



We refined the design of a Halifax Chinook Backward Curved impeller and changed the motor efficiency class, (11kW motor).

Old Design

Fan = 71.3% static efficiency
IE2 motor = 91% efficiency

New Design

Fan = 77% static efficiency
IE3 motor = 92.1% efficiency

Based on 50 weeks X 10 years normal operating at 10p per unit of power.

Saving: £9,492 95MWhr 68.4kg CO2

Life Cycle Cost:

Because we don't believe in built-in obsolescence, our fans are built without compromise. Our spares and repairs department will assist with any fans. We provide options such as fitting new premium efficiency motors and more efficient fans to lower running costs.

Servicing & Maintenance:

Regular maintenance and servicing are critical to ensure the fan is running at its optimum efficiency.

We have skilled, experienced site engineers who perform the following services on all manufacturers fans:

- Troubleshooting
- Vibration analysis
- Performance testing
- Balancing – on and off-site
- Commissioning guidance/assistance
- Alignment of coupling, motor, shaft, and drive belts
- Maintenance / refurbishment of fan equipment of any manufacture



We also offer comprehensive service contracts.

Service line: +44 1484 475123 Email: service@halifax-fan.com