

 AIR COMFORT

AIR TREATMENT

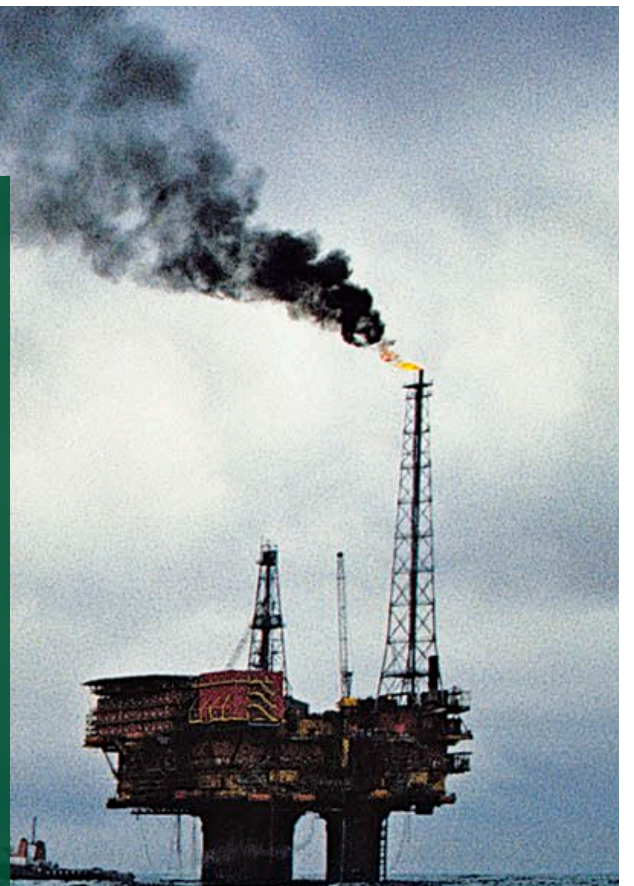
AIR TREATMENT IN EXPLOSIVE ENVIRONMENTS



Save energy, economy and environment with Fläkt Woods.

Energy optimization is an important aspect of ventilation solutions and an area in which Fläkt Woods have acclaimed expertise. We use the symbol e³ to highlight products and solutions that are particularly effective and with the purpose of saving both your long term economy and our environment.

>> flaktwoods.com/energy



When air becomes explosive

When air is not just air but a mixture of air and combustible substances...

Adding a source of ignition such as an electrical or mechanical spark, or heat from friction for example, poses a major accident risk – with consequences that could be anything from minor to devastating!

The function of an air handling unit is to transport air; it is therefore vital that the unit has been designed so that it does not risk igniting that air if it is explosive. On its way through the unit the air passes filters, heat exchangers and fans – components that must be incorporated in an explosion-proof manner. This must be taken into account early in the design stage.

Examples of ignition sources include mechanical sparks, heat, friction or electrostatic discharge. Preventing these from occurring is one of the most important principles in the design of such units. The character of the air and potential risks in the environment vary with each application. Fläkt Woods has a project department that handles the supply of products that have customer-specific requirements. The application in question is reviewed and analysed, after which a customised product is developed. This means that a safe solution can be offered for each unique installation.

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TYPICAL FIELDS WITH A POSSIBLE RISK OF EXPLOSION:

- The mining industry
- Waste management & recycling
- The chemical & petrochemical industry
- Laboratories
- Grain silos
- Marine & offshore environments
- Industries that handle fibre



Risks in different environments

An explosive atmosphere can occur during normal operation or in the event of an accident or incident. It can occur during normal operation in which combustible substances are stored, transported, processed, filled, decanted, used for cleaning or generated in the production process.

For example it can occur where adhesives or paints dry out, in proximity to fermentation tanks, or if there is an accident involving leakage or spillage. The responsibility for safety in the facility lies with the owner and operator of the facility and he needs to meet the requirements of the user directive.

Risks need to be identified to prevent a potentially hazardous environment becoming a danger to people and property. Identified risks must be assessed and managed in the best possible way. A risk assessment must be undertaken and the outcome of this is assessed in a risk management system that will describe what steps need to be taken.

ATEX

Various remedial measures can be taken, depending on the situation, risk and consequences, to prevent the explosive mixture igniting. The legislation and standards that must be followed vary depending on where one is in the world.



RISK ANALYSIS

The requirement related to the level of protection varies and is defined according to a number of different criteria which in turn impose different demands on the product. Part of the risk analysis involves defining the level of protection and determining which ATEX class is required. Protection principles in order of priority. A product manufacturer can influence the second and third levels.

1

Primary protection:

Prevent a hazardous environment arising.

2

Secondary protection:

Prevent accidents occurring.

3

Tertiary protection:

If an accident occurs, limit the adverse effects

In Europe explosive atmospheres are governed by the ATEX Directive, in force since 2003, which consists of two parts:

- *User Directive (99/92/EC); for users and operators*
- *Product Directive (2014/34/EU); for manufacturers placing products on the market*

These two parts constitute the entire ATEX Directive, governing the measures that must be taken to avoid hazards by specifying the basis of design, implementation and operation.

ATEX is an acronym for the French "Atmosphères Explosibles" – Explosive Atmosphere.



FLÄKT WOODS SCOPE OF DELIVERY – ATEX COMPLIANT eQ

Equipment					Explosion group			Temperature class	
group		category			Gas				
I	II	1G	2G	3G	IIA	IIB	IIC	T1-4	T5-6
Not available									*
		1D	2D	3D	Dust			Specific temperature	
		Not available	Not available		IIIA	IIIB	IIIC	>100°C	<100°C
									*

* On request and with special conditions

Classification

Air handling units are subject to various directives, such as the Machinery Directive, Low Voltage Directive and EMC Directive. In addition, a unit must conform to the ATEX Directive if an explosive atmosphere can occur in the area in which it is located, or if such an atmosphere is transported inside the unit.

The final classification of the air handling unit depends on its location, whether it is inside or outside an Ex Zone, the type of “fuel” and the occurrence of this fuel (according to the classification plan that forms part of the explosion protection document that must be drawn up for the facility). It is also important to know how the equipment will be installed/used in the facility – to know if there is a risk of back draught for example.

Fläkt Woods has experience of developing solutions for both gas and dust in categories 2 and 3, explosion class A, B and C. We have a thorough process for this.

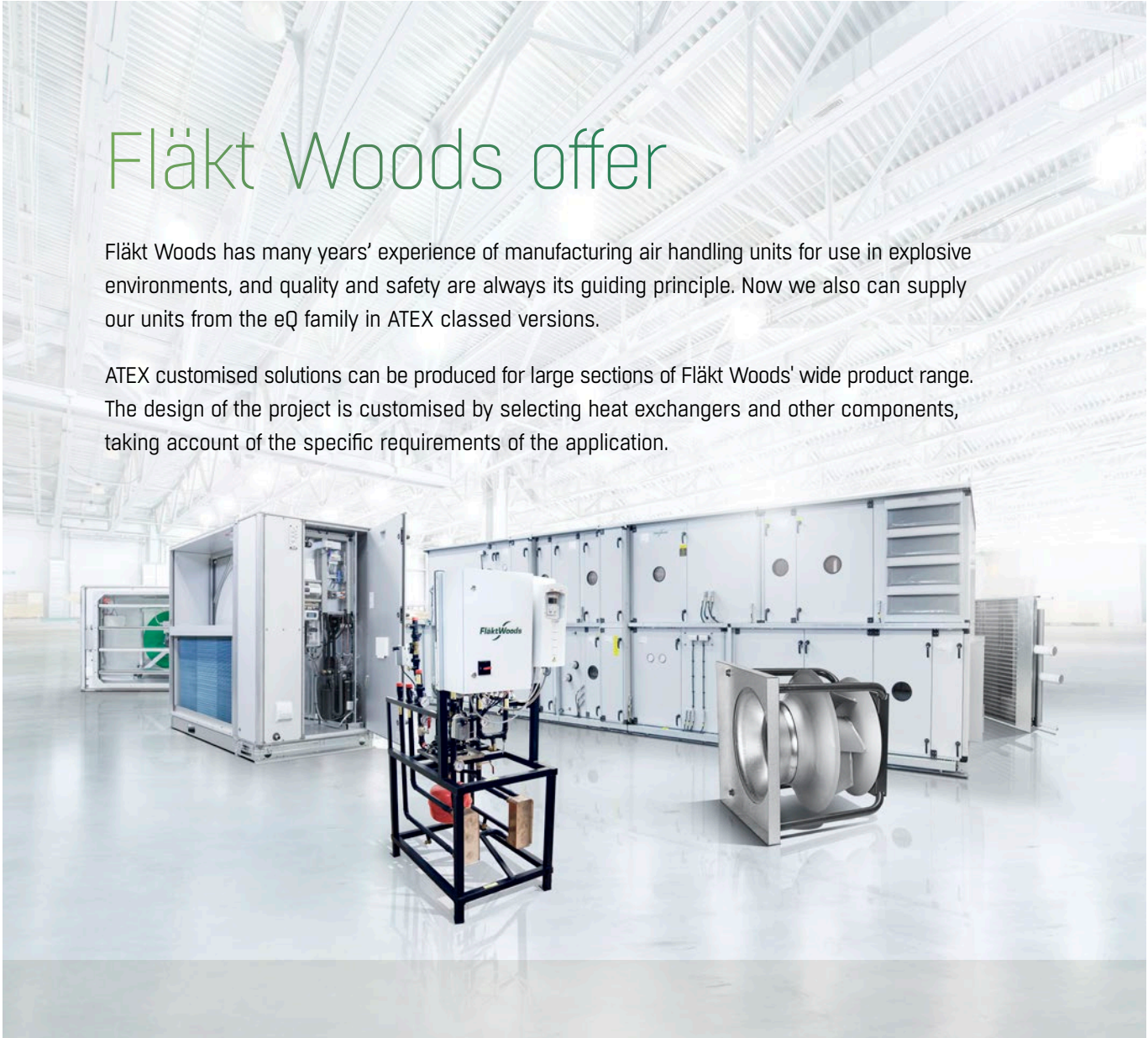
An important part of the process is to ensure the best overall solution; this may mean that we suggest alternative solutions so as to achieve the best end solutions for our customers.



Fläkt Woods offer

Fläkt Woods has many years' experience of manufacturing air handling units for use in explosive environments, and quality and safety are always its guiding principle. Now we also can supply our units from the eQ family in ATEX classed versions.

ATEX customised solutions can be produced for large sections of Fläkt Woods' wide product range. The design of the project is customised by selecting heat exchangers and other components, taking account of the specific requirements of the application.



THE PROCESS

Delivery to ATEX classified environment is at Fläkt Woods always implemented in multiple stages, in which the application in question is analysed and the design of the unit is customised.

1

Review: Scrutiny of the specification and identification of risk in the application in question.

2

Risk Analysis: Identifying the needs of the application as specified.

3

Customising design: Customising the design and selecting components.

Production: Each unit is produced with special requirements related to function and installation.

4

Type approval: If necessary the product can be certified by an external test institute prior to delivery.

5

Documentation: Each unit is supplied with the necessary documentation, along with instructions for special procedures during installation.

6

WE BRING **BETTER AIR**[™] TO LIFE

With over a century of innovation and expertise to share with our customers, Fläkt Woods is a global leader in air technology products and solutions. We specialise in the design and manufacturing of a wide range of products and solutions for Air Movement, Air Treatment, Air Distribution, Air Management and Air Diffusion with focus on two major benefits – **Air Comfort** and **Fire Safety**. With market presence in 65 countries we are in a unique position to be a local supplier and an international partner in our customer's projects.

Our product brands such as eQ[®], eQ Prime[®], JM Aerofoil[®], JMv Aerofoil[®], RegAsorp, Econet[®], Veloduct[®], Optivent[®], Optimix[®], Econovent[®] and Cleanvent[®] are well known and trusted by customers all over the world to deliver high quality and energy efficient solutions.

» To learn more about our offering and get in contact with your nearest sales representative please visit www.flaktwoods.com

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