Specialists in the design and manufacture of air intake systems
Contents

Company Profile 4-5

Industry sectors

Oil and Gas 6-7
Power Generation 8-9
Marine 10-11
Transport 12-13
HVAC and Cooling 14-15

Veotec products

Horizontal weather louvre 16-17
Single stage moisture eliminator 18-19
Two stage moisture eliminator 20-21
Multiple stage moisture eliminator 22-23
Heated/Cooled moisture eliminator 24-25
<table>
<thead>
<tr>
<th>Section</th>
<th>Pages</th>
</tr>
</thead>
<tbody>
<tr>
<td>Core Eliminator</td>
<td>26-27</td>
</tr>
<tr>
<td>Silencers</td>
<td>28-29</td>
</tr>
<tr>
<td>Filter housings and spares</td>
<td>30-31</td>
</tr>
<tr>
<td>Engine ventilation</td>
<td>32-33</td>
</tr>
<tr>
<td>Veotec services</td>
<td></td>
</tr>
<tr>
<td>Offshore condition surveys and installation</td>
<td>34-35</td>
</tr>
<tr>
<td>Computational Fluid Dynamics - CFD</td>
<td>36</td>
</tr>
<tr>
<td>Structural Analysis - FEA</td>
<td>37</td>
</tr>
<tr>
<td>Customer feedback</td>
<td>38</td>
</tr>
<tr>
<td>Contact details</td>
<td>40</td>
</tr>
</tbody>
</table>
Veotec Group has offices and fabrication facilities in the UK, Europe and the USA, with partner companies and agents in Italy, South Korea, Germany and Singapore.

It offers a custom design and fabrication service to its customers.

Veotec specialises in the design and fabrication of equipment used in a wide range of industries including Power Generation, Oil and Gas, Marine and Transport.

Primarily, Veotec’s products are used to protect and extend the life of equipment including diesel and gas turbine engines, HVAC systems in the harshest conditions from Arctic cold to desert heat and sand.

**Background**
Veotec was established in 2007 and offers a full range of products to suit your needs. The directors have more than 75 years of experience in air intake systems.

Since 2007, Veotec has supplied a number of major companies, in all of the industry sectors it supports – with air intake systems to protect against the ingress of water and salt. Veotec’s products have also been applied in other industries including commercial buildings and the nuclear industry.

Our organisation has the experience to offer an exceptional level of support and technical assistance in the design of systems to meet our customer’s specific requirements.

We have developed a number of unique products and solutions to help our clients achieve the results they require.

**Facilities**
Veotec Group has custom fabrication facilities throughout Europe and the USA with long histories of supplying equipment for offshore and gas turbine businesses.
As well as fabrication, Veotec can offer:

- CFD capability
- Structural analysis
- Simulated Shock Testing capability

**Research and Development**
Veotec is strongly committed to the use of cutting-edge technology and product optimisation. The UK facility also houses a state-of-the-art filter test facility. The testing facilities allow Veotec to continuously improve the existing product range, benchmark other products and develop new solutions. Through its US facility it also has access to industry approved external independent test facilities.

**Global Scope**
In 2012 Veotec expanded into the US and opened an office in Burnsville, Minnesota. The US office is able to offer local technical support, product selection and fabrication.

The principals within the US office have many years of experience in air intake design and manufacture. Combined with the full support of the UK office it can therefore offer the same high standard of technical assistance to its clients, and product innovation tailored to the US market conditions.

Veotec also has representation in the Middle East, Far East and several European countries, enabling Veotec to offer its clients global support and assistance.

**Quality and Environmental**
Veotec has achieved UKAS approved accreditation for both ISO9001 and ISO14001 and is continually striving to improve its systems in both these key areas of the business.
Often the oil and gas industry operate in some of the harshest environments in the world, from the sand and heat of the Middle East to the frozen north of Russia. Air intake systems protecting equipment and personnel in these conditions can produce unique problems and need engineering experience and knowledge to achieve the most economic and efficient solution.
Veotec, with its wide range of products and engineering experience, can offer solutions to all the problems faced in these difficult conditions.

From a simple single stage intake to a complex filter housing for a gas turbine, Veotec can design and manufacture all your intake requirements.

We have a range of unique products, for example; a trace heated vane separator, which has been successfully tested down to minus 40 degrees Celsius. This product has been installed on a number of projects throughout the world to prevent the problem of snow and ice potentially blocking an air intake.

Often space is a premium on an offshore facility – again, with its design and engineering experience

– Veotec can assist in offering a solution to the most complex problems, for example combining its own design of silencer within an intake to save space, money, and achieve the best acoustic performance possible.

Whether the project is for new build equipment or to upgrade/refurbish an existing installation, Veotec has the expertise to design and manufacture all the components required for a successful installation.

With UKAS approved quality and environmental standards, you can be sure Veotec will meet even the most demanding of project specifications.
The power generation industry throughout the world is demanding ever greater levels of protection from the air intake system to protect the compressor and turbine in order to maintain the highest efficiency of power output and reduce maintenance costs.
Veotec is at the forefront of new designs to achieve these goals and offers a custom engineering and design service tailored to the particular customer and environmental conditions.

Whatever the environmental conditions; from extremes of cold, heat, dust and other pollutants – Veotec can design a filter house to minimise any contamination of the air entering the compressor and turbine therefore reducing the need for time consuming and costly compressor washes with the associated loss of performance.

By not being allied with any one particular type or manufacturer of filters, Veotec can offer the solution best suited to the customer’s requirements.

We have a number of unique products to offer the marketplace including a patented trace heat design, which will not only prevent snow and ice build up on the front of the filter house but also increase the air temperature to reduce dramatically the need for anti-icing, thus saving money and increasing the output available for power generation.

Veotec can offer new build or retrofit solutions to solve particular problems. From replacing all or part of the intake to improve the efficiency of the intake system we work with the customer to achieve their objectives.
The marine environment is often the most challenging as the requirements are obviously of salt and water ingress protection but the conditions can be at the most extreme. Engine intakes as well as general air conditioning need a very high level of protection which must not only be efficient but have a long and economic service life.
With its extensive knowledge of air intake systems, Veotec can design and manufacture equipment for the most complex of arrangements, from a gas turbine intake on a navy vessel to a simpler jalousie on a cargo ship.

Each intake is designed to meet the requirements of the vessel and the system it will be protecting. Veotec can offer specialist products and services such as trace heated intakes for the harshest environments and EMC filtration for radar protection.

Different types of vessel require different solutions and at Veotec we can design and manufacture them all. These include aesthetic properties as well as the functionality required for a super yacht or cruise liner, the extremely robust and compact design for military shipping, or economic design for merchant vessels.
The road and railway industry offers a unique set of challenges. With intakes used to draw air into both carriages and engine compartments, protection from water and particulate ingress is of special concern. The intakes also need to form part of the aesthetic feature of the vehicle and form an integral part of the design.
Intakes for this industry are unique as they have to operate successfully at both high and low speeds.

When the vehicle is stationary or moving at speed, the intakes need to offer the same level of protection against water and airborne particulate ingress.

The design of the intake also has to take into account the shape of the actual vehicle itself as it forms part of the overall structure.

Veotec’s directors have many years of experience designing and manufacturing intakes for the transport industry for either rolling stock to protect the air conditioning systems or engine intakes to protect electrical systems.

We can help design the most suitable and economical intake for a particular requirement based on the space and design parameters of the vehicle.
Within HVAC and cooling systems, ingress of moisture can be a common problem. This can occur within a system due to condensation or from the environment. Due to the type of application and industry, different solutions are required.
Veotec Group has a number of products for applications within the HVAC and general industrial markets.

We can design and manufacture intakes to prevent water ingress for all types of air intake or exhaust systems.

Other industrial markets as well as HVAC systems include EVAP coolers and chillers.

With a unique range of products to suit the application we can offer a custom designed solution for each application.

HVAC systems require solutions that are of robust construction but offer greater flexibility of design.

Veotec has designed a number of products specifically for the HVAC and cooling industries combining high efficiency with low pressure drop in a wide variety of materials. The products can either be used for new build applications or for retrofit where moisture ingress has been indentified as a problem.
Horizontal Weather Louvre

The Veotec WL1 unit is a basic weather protection device for removing corrosive rain water and some fog from air intakes and exhaust applications.

Veotec WL1

It is of robust construction, manufactured from galvanised steel, marine grade aluminium or stainless steels.

With a low pressure drop and low maintenance it makes the ideal first stage protection for HVAC systems or engine air intakes.

It is available in any size to suit the customer requirements and can be fitted with bird and vermin guards, if required.

The WL1 can be used as the first stage in a multi-stage unit.

If required, the WL1 can be fitted with a manual closing mechanism to close the blade.
As an option, Veotec is also able to design and manufacture water or weather tight hatches to enable the louvres to be closed off. These can be supplied with a number of different hinge and closing mechanisms to suit customer requirements or project specifications.

Generally supplied in a natural finish, a powder coated or wet painted finish can be applied according to client specification.
Veotec SE1

SE1 removes sea spray, rain, bulk water, salt and other fine deliquesced aerosol debris from air intakes and is typically used to protect HVAC equipment, ventilation systems and diesel engine air intakes.

The design of the SE1 offers:

• Aerodynamically optimised at 6m/s face velocity
• Compact size and light unit weights
• Robust construction
• Removes almost all water droplets
• Excellent bulk water removal through its operating range
• Low pressure loss
• Available in sizes to suit customer requirements
• Constructed in marine grade aluminium and high grade stainless steels. Vanes are also available in PVC plastic.
• Low maintenance
• Water drainage options including slot drainage, U tube, ANSI flanged stub pipe

The Veotec SE1 air intake separator is designed to be used within demanding applications such as those found in offshore, coastal, marine, cruise and navy ship environments.
Available with ancillary equipment

Typical installation arrangements are:

- Mounting on bulkhead
- Insertion through bulkhead
- Double flanged

Flanges can be made to customer requirements or to industry standards such as ISO15138.
Two Stage Moisture Eliminator

Veotec SE2 air intake separators are designed to be used in demanding installations such as those found in all offshore, coastal, marine and navy ship environments.

Veotec SE2

SE2 is a two stage filter system generally comprising inertial vane separator (SE1) and filter coalescer. The SE2 tends to be the first stage of an air intake, where it removes sea spray, rain, and bulk water and gives a high output/efficiency against salt aerosols and other fine deliquesced debris.

The SE2 typically protects HVAC equipment, ventilation systems, diesel engines and can be used as part of a gas turbine filter system.

SE2 is available in two configurations:

1. Normally used as inertial vane separator (SE1) / filter coalescer.

2. Optionally the SE2 may be filter coalescer / vane separator (SE1).

Veotec offers various filter coalescer options and can define the optimum SE2 system for customers' installations.

The design of the SE2 offers:

- Aerodynamically optimised at 4m/s face velocity
- Compact size and light unit weights
- Robust construction
- Removes almost all water droplets
- Excellent bulk water removal through its operating range
- Low pressure loss
- Available in sizes to suit customer requirements
• Constructed in marine grade aluminium and high grade stainless steels. Vanes are also available in PVC plastic.

• Low maintenance

• Water drainage options including slot drainage, U tube, ANSI flanged stub pipe

• Available with ancillary equipment

Typical installation arrangements are:

• Mounting on bulkhead
• Insertion through bulkhead
• Double flanged

Flanges can be made to customer requirements or to industry standards such as ISO15138.
Multiple Stage Moisture Eliminator

For the most extreme conditions or where a very high level of efficiency is required, such as critical air intake systems.

**Veotec SE3**

The SE3 combines all the benefits of a SE2 with a third stage additional vane separator.

This allows for higher velocities up to 6m/sec whilst maintaining the high level of salt and moisture removal required for air intakes in offshore and coastal environments.

The IPX6 classification means the intake is protected to a very high level which allows other equipment installed downstream to not require such a high level of protection, saving money and space.

At 4.0 m/sec the SE3 has been tested and certified to meet IPX6 classification.

**Veotec SE2F**

The SE2 is combined with bag type filters to achieve efficiencies to client specifications, but typically F7 – F9 for HVAC intakes, up to H10 – H12 for gas turbine intakes.

By combining the filtration into one package there can be a considerable space saving and easier maintenance access.

The filter holding frames are manufactured to provide a very cost effective method of refurbishing an existing system. For example to replace a
current single stage intake system with a multi stage intake system offering a higher level of protection in the same space.
Heated / Cooled Moisture Eliminator

As oil and gas are being found in ever more extreme environments, new solutions are required. Veotec can offer two solutions for snow and ice protection.

Veotec SETH (Electrically Trace Heated)

SETH is already used in some of the most challenging environments in the world to prevent snow and ice build up on air intake systems.

It was specifically designed and tested to operate at the same velocity as non-heated products so can be easily retrofitted in an existing system.

Independent testing has proved the efficiency and pressure drop are not compromised by the trace heating.

Each vane is trace heated giving a uniform temperature rise across the whole area. We can supply individually thermostatically controlled units or there can be a central control. The system can be safe or hazardous-area rated to suit the client requirements.

Veotec SEFH (Fluid System)

SEFH fluid heated air intake louvers combine the superior water removal efficiency of SE1 vane separators with heat exchanger technology to de-ice the inlet and heat or chill the air stream.

The anti-icing properties effectively remove snow, ice, hoarfrost, drift, fog, mist, and rain from the air stream.

Due to the unique design the SEFH not only protects
against snow and ice but can also substantially increase the air temperature entering an intake system. This can provide protection for the filter system therefore no anti ice rake would be required. Or in an HVAC system provide an initial temperature rise reducing the required duct heaters or heating coils.

Used in combination with heating coils SEFH can mean a smaller more compact coil is required saving space and obviously cost. SEFH can also be used to chill the air on an intake system again reducing the requirement for other equipment and saving space and cost.
Core Eliminator

The core products offer flexibility, cost savings and increased performance.

Core Vane Eliminator

Veotec Core Eliminators are designed to offer a unique, cost saving and flexible solution to a range of droplet elimination applications.

Veotec has many years experience, supplying spray and drift elimination products to a variety of applications such as cooling towers, HVAC, air inlets, evaporative coolers, coils, ventilation, and nuclear. Our vanes and louvres have been tested to some of the highest industry standards and have been approved by many OEMs.

The Veotec Core Eliminator is available as a standard profile or with optional trace heat. Veotec Core Eliminators can be delivered to your door, fully assembled to your specified dimensions or as a kit of parts for assembly. Typically vane packs are delivered within a short period from order placement.

Benefits:
- Super Compact - core depths from 67mm
- Low weight
- Easy to clean
- Very high efficiency
- Simple installation
- No cutting or assembly of vane packs
- Short lead times

Materials:
- Stainless Steel 316L
- Aluminium
- PVC
- Special Order
- PPTV

Note: this product is a vane pack only and doesn’t include a case, it is an OEM product.
Silencers

By using a combination of our industry experience and state-of-the-art R&D facility, Veotec has developed a unique design of high performance silencer product.

Silencing solutions

The Veotec XR silencer range comprises duct mounted silencers, and offers exceptional levels of attenuation when compared against traditional silencing products, saving both weight and money.

Our silencers are available as either a stand-alone duct mounted silencer or in combination with any of our SE range of spray eliminators, giving a very compact intake solution.

The Veotec XR silencer can be manufactured from stainless steel or aluminium to suit the operating environment and is designed with the total exclusion of any loose fixings, to eliminate any risk of damage to rotating equipment.

All of our silencing products can be manufactured without the use of any potentially combustible materials, to ensure that they meet the stringent
requirements for use in offshore environments.

As all silencing requirements are different, Veotec does not offer a standard ‘one size fits all’ silencer product, instead all of our products are specifically designed to meet the functional requirements of the installation.
Filter housings and spares

With many years experience in filter house design and manufacture Veotec Limited can offer a custom design tailored to suit particular environmental requirements or project specifications.

**Filter housings**

Using our own in house design capability and wide ranging industry knowledge and experience, Veotec can design and manufacture a filter housing to meet the most demanding of environmental or project specifications.

Whether the filter house is to be situated offshore or onshore, in the desert or the Arctic, Veotec has a solution, which will provide unrivalled protection for the equipment downstream.

Our equipment can be integrated into an existing design to improve efficiency or form part of a new build project.

We often work with strategic partners combining our unique technologies to offer the best complete solution.

**Filter solutions**

Veotec offers an industry-leading range of inlet air filters for power generation, oil and gas, diesel generators, offshore production and drilling platforms, ships, and HVAC applications. Our filter products include proprietary custom solutions and product pairings from our strategic partners.

Our filters efficiently protect your machinery from the hazards of salt, sand, dust, hydrocarbons, mist, fog, rain, and snow in extreme coastal, offshore, marine, desert, arctic, and inland environments. These OEM and replacement spares include static (non-pulsing) and self-cleaning (pulse) cartridge elements, rigid pocket filters, mini-pleats, multi-v
panels, deep pleats, prefilter wraps, and plastic or beverage board frame panels.

We specialize in high performance salt removal, watertight, coalescing, and dust collection solutions using field-proven blended, synthetic, glass, nano-fibre, or PTFE media options ranging from G3 to HEPA efficiency levels.

We can provide reliable filter solutions to meet your performance needs, extend your maintenance intervals, improve your profitability, and solve your filtration problems.
Engine ventilation

The marine environment is often the most challenging as the requirements are obviously of salt and water ingress protection but the conditions can be at the most extreme.

Engine ventilation

Engine intakes for engine room ventilation as well as general air conditioning need a very high level of protection which must not only be efficient but have a long and economic service life.

With its extensive knowledge of air intake systems, Veotec can design and manufacture a system for the most complex of marine air intake protection, from a gas turbine intake on a navy vessel to a simpler jalousie on a cargo ship.

Each intake is designed to meet the requirements of the vessel and the system it will be protecting. Veotec can offer specialist products and services such as trace heated intakes for the harshest environments and EMC filtration for radar protection.
Different types of vessel require different solutions and at Veotec we can design and manufacture them all. These include aesthetic properties as well as the functionality required for a super yacht or cruise liner, the extremely robust and compact design for military shipping, or economic design for merchant vessels.
Veotec has safety-certified personnel able to carry out on site surveys. A full condition survey of existing equipment can be carried out with reference to ensuring equipment is functioning correctly and still meets the client’s requirements. Suggested improvements can also be made to improve the efficiency, maintenance and running costs of equipment.

For example by upgrading a gas turbine intake we can improve significantly the protection of the turbine, extending the interval between costly services and reducing downtime.
Often by talking first hand to the operatives in the field, particular problems can be identified and resolved.

We can then prepare a detailed report of our findings and recommendations.

This enables us to design equipment which we know will fit into the available space and identify potential installation problems.

The cost of this service can be offset against future orders as a result of this work.

We can also then supervise the installation of equipment we have manufactured to ensure correct operation and help with commissioning.
Veotec Services

Computational Fluid Dynamics (CFD)

As part of its ongoing commitment to product development and customer service Veotec has an in house CFD capability.

This means that not only can we prove our existing products meet the most demanding of specifications but also test new ideas and designs.

We have, using this capability, designed complicated ductwork and intake systems and proven they will perform as required, measuring airflow patterns and resistance figures. This can then be adjusted quickly and the new results seen.
When designing a new intake system or retrofitting an upgrade to an existing system, Veotec can offer the in house ability to carry out structural analysis. This can be used to calculate load bearings or for shock test analysis, for example when designing a system to be used by a navy warship.

Veotec is committed to using the latest technology to improve its service to its customers and for product development.
An order was recently received to retrofit the second frame 9FA turbine inlet at Medway Power station in the UK as the operator was so pleased with the improved performance of the first retrofitted unit.

I was telephoned by our customer Shell, Qatar regarding the recent coalescer equipment supplied, he telephoned specifically to say how good the product quality was in comparison to competitor products.

The job was completed in 6 days offshore, the noise before was excruciating, the difference the Veotec units made was breathtaking to hear. So quiet at low load you don’t know the engines are on.
Clients and End Users

Apache
Alicat Workboats
BP
Canadian Coastguard
Chevron
ConocoPhillips
Exxon Mobil
Harland and Wolff
Mitsubishi

ROK Navy
Royal Navy
Scottish & Southern Seadrill
Shell
Siemens
South Boats IOW
Total
Tyco
Vantage Drilling

Certification

Veotec is certified to ISO9001, ISO14001 and FPAL