Airflow is the leading UK manufacturer of Industrial Ovens. The specification, design, manufacturing, installation and commissioning process is offered as a complete package. Airflow’s Industrial Ovens are ideally suited to a wide range of industrial uses and are available in many different sizes, types and temperature ranges. Our market sectors include Aerospace, Pharmaceutical, Composites, Electronics, Oil exploration and Product Finishing. Our standard range of Box Ovens are available sizes from 1m cube up to 6m cube on quick delivery. Special sizes are available to order from our modular construction system.
OVERVIEW

Airflow is the leading UK manufacturer of Industrial Ovens. The specification, design, manufacturing, installation and commissioning process is offered as a complete package. Airflow’s Industrial Ovens are ideally suited to a wide range of industrial uses and are available in many different sizes, types and temperature ranges. Our market sectors include Aerospace, Pharmaceutical, Composites, Electronics, Oil Exploration and Product Finishing.

<table>
<thead>
<tr>
<th>OUR FULL PORTFOLIO OF INDUSTRIAL OVENS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Airflow Microlab Ovens</strong></td>
</tr>
<tr>
<td><strong>Airflow Drum Heating Ovens</strong></td>
</tr>
<tr>
<td><strong>Airflow Modulus Ovens</strong></td>
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<tr>
<td><strong>Airflow Challenger Ovens</strong></td>
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<tr>
<td><strong>Airflow Premier Ovens</strong></td>
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<td><strong>Airflow Project Ovens</strong></td>
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<td><strong>Airflow AMS Ovens</strong></td>
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<td><strong>Airflow ATEX Ovens</strong></td>
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<tr>
<td><strong>Box Ovens &amp; Batch Ovens</strong></td>
</tr>
<tr>
<td><strong>Conveyor Ovens</strong></td>
</tr>
</tbody>
</table>

Standard temperature ranges from 60°C to 425°C are available to proven standardised designs. Drum heating ovens, are available for internal or external locations with capacities of 2 to 40 drums as well as IBC’s and a temperature range of controlled ambient to 100°C. Acrylic sheet heating ovens, which are mainly used by the vacuum forming industries, are available in manual and automatic indexing versions. Airflow’s sheet ovens have unrivalled temperature uniformity for low reject mass production.

EEExd and ATEX rated industrial ovens are available in all configurations, electrically or steam heated, to provide zoned compliance for use within the chemical and petrochemical oil industries. Conveyor ovens, are available in a full range of temperatures with either flatbed, roller, overhead monorail or chain on edge conveyors. Our expertise allows for our products to be manufacture and installed to the highest standards being ATEX, NAMAS and ISO system accredited.
<table>
<thead>
<tr>
<th><strong>INDUSTRIAL OVENS</strong></th>
</tr>
</thead>
</table>

### AIRFLOW MICROLAB LABORATORY OVENS
- Heating and Drying Ovens
- Vacuum Drying Ovens
- Environmental Simulation
- Constant Climate Chambers
- Sizes from 0.4m x 0.4m x 0.3m

### AIRFLOW PREMIER INDUSTRIAL OVENS
- Close Temperature Uniformity
- Extensive Standard Size Range
- Gas, Electric, Indirect or Steam
- Factory Tested & Data Logged
- Sizes from 1.5m x 1.5m x 2.0m

### AIRFLOW DRUM HEATING OVENS
- Large Standard Size Range
- Steam, Electric or Gas
- Weatherproof Models Available
- Bunded Drum & IBC Racking
- Sizes from 2 to 72 Drum

### AIRFLOW PROJECT INDUSTRIAL OVENS
- Non Standard Sizes
- Temperature 100°C to 500°C
- Batch, Shuttle or Conveyor Styles
- Manual or Powered Door Designs
- Sizes from 1.5m x 1.5m x 2.0m

### AIRFLOW MODULUS INDUSTRIAL OVENS
- Entry Level Prices
- Modular On-Site Assembly
- Extensive Range of Sizes
- Gas and Electrically Heated Options
- Sizes from 1.5m x 1.5m x 2.0m

### AIRFLOW AMS INDUSTRIAL OVENS
- Temperature Uniformity to AMS2750
- Aerospace, Automotive, Marine
- Bespoke Windows Based HMI
- Bespoke Data Communications
- Sizes from 1.5m x 1.5m x 2.0m

### AIRFLOW CHALLENGER INDUSTRIAL OVENS
- Competitive Pricing
- 21 Standard Sizes
- Pre-assembled and Tested
- Strong Structural Frame
- Sizes from 1.0m x 1.5m x 2.0m

### AIRFLOW ATEX INDUSTRIAL OVENS
- Category up to 2GD
- Temperature  T1 - T4
- Electric or Steam Heating
- Stainless/Aluminium Construction
- Sizes from 1.2m x 1.2m x 1.0m
Environmental simulation chambers ensure perfect test room conditions thanks to the responsive steam humidification system and the patented APT.line™ Airflow design.

Vacuum drying ovens from Airflow dry samples completely without residues, scaling or oxidation, everything in overdrive.

Safety drying ovens from Airflow reliably dry up to 350°C and ensure the perfect test result of your solvent-based paints and coating materials.

A material test chamber from Airflow specializes in demanding heating profiles and shows its unique advantages all the more when handling complex tasks.

The wide temperature range of the Airflow heating ovens and heating chambers of 5°C above ambient temperature to 300°C allows short heating up times and large power reserves.

Every Airflow Microlab Laboratory Oven is equipped with top of the line technology making it possible to precisely simulate biological, chemical and physical environmental conditions. The wide range of products from the leading specialist addresses the various requirements in science and industry. It comprises temperature and climate chamber models, material testing and drying chambers as well as environmental simulation chambers. You’ll find the ideal unit for every application here.
OVERVIEW

Environmental simulation chambers from Airflow ensure perfect test room conditions thanks to the responsive steam humidification system and the patented APT.line™ Airflow design. This guarantees exact measurements at any point even when the chamber is fully loaded.

With a high level of standard equipment, the environmental simulation chambers from Airflow are perfectly suited for material testing from -70°C to 180°C. They are absolutely reliable and on the highest technical level.

At Airflow, you always get the perfect environmental simulation chamber, be it for cyclical temperature testing or for complex alternating climate profiles and temperature profiles.

Areas of application:
- Automotive
- Plastics Industry
- Electronics / Semiconductor Industry
- Air / Space Travel, Defence
- Metal Industry / Engineering

Advantages:
- State-of-the-Art Reliability
- User-Friendly Chamber Interior
- Comprehensive Standard Equipment
**OVERVIEW**

Specialists for temperature/humidity/light simulation. A constant climate chamber from Airflow in any implementation is a one-stop solution to easily and reliably manage your stability test or stress test.

The Airflow constant climate chambers of the KBF P series are ideal for norm compliance work according to ICH guidelines and work independent of water supply. Their special feature: climate and light tests can be performed at the same time in one chamber.

With the KMF, Airflow constant climate chambers offers you a broad temperature and humidity range - created for demanding stress testing.

Areas of application:
- Pharmaceuticals Industry
- Basic Research / Research Institutes
- Packaging Industry
- Cosmetics Industry
- Food / Beverage

Advantages:
- Long-Term Stable Test Conditions
- Independent of the Water Supply
- Temperature/Humidity/Light Simulation in One
**OVERVIEW**

Vacuum drying ovens from Airflow dry samples completely without residues, scaling or oxidation, everything in overdrive.

Thanks to the patented APT.line™ preheating chamber technology, the heat is distributed evenly throughout the electropolished inner chamber and the corrosion-resistant expansion shelf carrier made of stainless steel in the vacuum drying oven. This ensures even, gentle drying. The vacuum drying ovens of the VDL series with patented flame protection gasket, overpressure encapsulated instrument panel and controlled heating provide additional protection when working with flammable solvents.

Areas of application:
- Chemicals
- Electronics / Semiconductor Industry
- Plastics Industry
- Surface Technology
- Pharmaceuticals Industry

Advantages:
- Safe Work with One-of-a-Kind Safety Concept
- Fast, Condensation-Free Drying Processes
- Homogeneous Sample Drying in a Vacuum
OVERVIEW

Safety drying ovens from Airflow reliably dry up to 350°C and ensure the perfect test result of your solvent-based paints and coating materials.

Whether drying coating material, car paint or paint: An Airflow safety drying oven ensures absolute temperature accuracy at a high air exchange rate, thus providing a basis for the best quality and reproducible testing results. With the FDL and MDL series, you get high-quality safety drying ovens that meet all EN 1539 requirements and provide maximum work safety with intelligent fresh air monitoring.

Areas of application:
- Chemicals
- Surface Technology

Advantages:
- Defined Solvent Quantity According to EN 1539
- Wide temperature range up to 350°C

SAFETY DRYING OVENS

SAFETY DRYING OVEN
The FDL safety drying oven with silicone-free and dust-free inner chamber and symmetric airflow provides the perfect environment for all specimens containing solvents.

SAFETY DRYING OVEN WITH EXPANDED TEMPERATURE RANGE
The MDL safety drying oven is suited for high-performance temperature testing in chemistry and surface technology thanks to high airflow at temperatures up to 350°C.
A material test chamber from Airflow specialises in demanding heating profiles and shows its unique advantages all the more when handling complex tasks.

All Airflow material test chambers are extremely precise and have a wide temperature range and comprehensive programming options, including customised ramps, profiles and processes. With the FP and M series, Airflow offers you material test chambers with mechanical convection and individual programming for all material testing and aging testing tasks.

Areas of application:
- Metal Industry / Engineering
- Electronics / Semiconductor Industry
- Surface Technology
- Plastics Industry

Advantages:
- The Specialists for Demanding Heating Profiles
- Adjustable High Air Change Rate
- ‘Made in Europe’ Quality
Diversity for all types of thermal: An Airflow heating oven or heating chamber is up to any tasks thanks to its wide temperature range - whether efficient drying, long-term controlled elevated temperatures or sterilisation tasks for homogeneous temperature distribution.

The wide temperature range of the Airflow heating ovens and heating chambers of 5°C above ambient temperature to 300°C allows short heating up times and large power reserves. Whether by gravity or mechanical convection, the high standard of quality and process stability of our heating ovens and heating chambers goes without saying.

Areas of application:
- Basic Research / Research Institutes
- Electronics / Semiconductor Industry
- Plastics Industry
- Human / Veterinary Medicine

Advantages:
- Fast, Even Tempering
- Wide Temperature Range
- ‘Made in Europe’ Quality
The Airflow range of Drum Heating Ovens are available in a vast range of standard sizes from a single drum to 120 drum capacity. Suitable for all types of drum heating and IBC heating, the ovens can be manufactured for internal or external location.

Drum storage in a drum heating oven removes the need for drum heating belts, drum heating bands or drum heating jackets. Heated by gas, electricity, steam or hot water, the range is available in standard or ATEX ratings. Specified features include, drum racks, IBC racks, bunded bases, forklift crash barriers and real time data logging. All Airflow products are backed by a comprehensive 12 month warranty.

We have system design and installation experience with over 30 years know-how from our internal design and manufacturing teams; we have an unrivalled knowledge of these product groups and their application within the UK and worldwide via our vibrant export market. Our expertise within these areas allows for our products to be manufactured and installed to the highest standards offering ATEX and ISO systems accredited.
The new Modulus Industrial Oven range has been designed to meet the needs of customers looking for an entry level oven, with easy on site assembly and an improved return on investment.

The technology behind our ovens is built on over 25 years experience of design and manufacturing for a wide variety of industries.
Airflow Challenger ovens are renowned throughout the process industry. Our Drying Ovens are available in a range of temperatures being pre-assembled, wired and tested prior to despatch.

Heating by natural gas, LPG or electricity is available. All ovens are constructed from high quality components using our unique modular construction method. This system ensures repeatable performance coupled with short lead times.
**AIRFLOW PREMIER - BOX OVENS & BATCH OVENS**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unique high efficiency thermal design</td>
<td></td>
</tr>
<tr>
<td>Superior production results due to very even temperature</td>
<td></td>
</tr>
<tr>
<td>Unique high volume low pressure hot air circulation</td>
<td></td>
</tr>
<tr>
<td>Unique ‘Twin Fan’ air circulation on all larger ovens</td>
<td></td>
</tr>
<tr>
<td>Airflow Ovens are specified by the world’s leading companies</td>
<td></td>
</tr>
<tr>
<td>Ovens supplied to Rolls Royce specification RPS 953</td>
<td></td>
</tr>
<tr>
<td>Aerospace ovens supplied to AMS 2750D standards</td>
<td></td>
</tr>
<tr>
<td>Galvanised steel, alu-dip or stainless steel construction</td>
<td></td>
</tr>
<tr>
<td>Designed for rapid turnaround of multi-batch product</td>
<td></td>
</tr>
<tr>
<td>Pre-assembled, test run, data logged and certified before despatch</td>
<td></td>
</tr>
</tbody>
</table>

**OVERVIEW**

Airflow Box Ovens and Batch Ovens are renowned throughout the process industry as the best ovens currently available.

Available in a range of temperatures up to 425°C our range of Box Ovens are all pre-assembled, wired and tested prior to despatch. Heating by natural gas, LPG, electricity, steam or oil is available. All ovens are constructed from high quality components using our unique modular construction method. This system ensures repeatable performance coupled with short lead times.
Airflow offer project design and project management for critical industrial manufacturing applications. Our in-house experts will work with your company to develop the perfect engineered solution for each application. Once a specification has been agreed our expert team will design, present, manufacture, install, commission and train your personnel to derive the maximum benefit from the system.
New and innovative turnkey solutions are often related to existing production processes. These areas can be improved and automated with relatively little expense. Typical examples include solutions which involve improvements to software processes. Payback times on many projects can be less than 12 months.

Airflow believe that turnkey solutions, by definition, must be able to be devised, developed and prototyped quickly. Modern manufacturing technology is a fast moving business and Airflow is familiar with responding to strict time constraints. An overall project may take several months to become fully operational but the initial concepts and deliverable objectives can often progress to contract formation within a matter of only a few weeks.

Environmental issues and energy efficiency are always considered as an integral and fundamental design criteria in every Airflow manufacturing solution. Airflow lead the way with energy efficient designs to provide highly efficient, low energy industrial process plant.

The ability to find turnkey solutions rests in our teams’ ability to see things from a non-traditional perspective. True innovation is delivered as a standard component of each and every solution. Often, looking at a problem through the lens of tradition and past precedence will not lead to a truly innovative solution.
Please contact our sales department with your requirement for an obligation free quotation. Many composite curing ovens have been supplied to the aerospace and automotive sectors. We are well versed in the required standards for our world class customer base. Our design engineers will project manage your installation and also provide specialist consultation for composite curing applications.

Airflow’s AMS 2750 E composite curing ovens are available for highly critical applications within automotive, aerospace and high technology based industries.

Airflow’s products have a number of AMS ovens in use across the world, as far as the USA and Thailand. We can recommend and supply an oven to suit any of your temperature uniformity requirements. Our ovens are built to your specifications.
AMS or Aerospace Materials Specifications are a number of detailed specifications which cover materials, material tolerances and quality control procedures and processes predominantly within the Aerospace and defence industries.

AMS 2750 is now on its latest revision, revision “E” and this document relates to the industrial processing of high quality materials used in the Aerospace industry.

AMS 2750E specifically covers the pyrometric requirements for thermal processing equipment used for heat treatment. It covers temperature sensors, instrumentation, system accuracy tests and temperature uniformity surveys. All these features are necessary to ensure that parts or raw materials are heat treated in accordance with the applicable specifications being followed by the component manufacturer. Here at Airflow, we have a wealth of experience in the design of industrial ovens to be used in the Aerospace and composite industries. Our ovens are recognised to be the oven of choice for clients wanting to have the best both in terms of design and build quality along with the ability to meet the temperature uniformity requirements of AMS2750E.

The design of an Airflow AMS type industrial oven includes for special air delivery systems which provide exceptionally good temperature uniformity throughout the working envelope and at the temperatures specified by the client, along with bespoke control and data acquisition systems, the package as a whole is an industry leading design!
AMS2750E is predominantly designed for and used within the aerospace industries but the same standards and processing techniques can be used within any industry which requires excellent control of the thermal processing of raw materials and manufactured components. Within the Aerospace industry the standard extends through the thermal processing of all critical materials and can include for:

- Heat treatment and processing of raw materials
- Heat treatment and processing of finished components to specified design requirements
- Drying of paint materials and other coatings
- Composite curing of materials to form components with excellent structural properties along with high levels of dimensional and aesthetic excellence
- Any other thermal process which requires a close level of control to ensure that today’s modern materials offer many years of trouble free service

Many other industries such as automotive, motor racing, sports science, rail, manufacturing and civil engineering can and do benefit from excellent thermal processing systems. Airflow offers solutions to any problem where a crossover exists between the superior needs of the aerospace industry and other up and coming industries wanting to employ similar techniques.
AMS2750E SPECIFICATIONS

There are two AMS2750E specification types relating to Airflow and its offering for industrial oven application; **AMS2750E furnace classes** and **AMS2750E instrumentation type**

AMS2750E is a complex document and for many clients who maybe new to the industry, some of the details and procedures may seem to be a little onerous when applied to everyday processes. The document contains a number of headings, most of which deal with the technical requirements of compliance such as:

- Temperature sensors
- Instrumentation
- Thermal processing equipment
- System accuracy tests (SATs)
- Temperature uniformity surveys (TUS)
- Laboratory furnaces and equipment
- Records and record keeping

There are also a small number of headings such as quality assurance provisions and the responsibility for inspections which are in place to support the system as a whole and ensure that the requirements of AMS2750E are being met.

Two of the main features within AMS2750E are the specifications relating to the instrumentation type and the furnace class of thermal processing equipment and Airflow has both the skills and experience to supply the equipment required to fulfil these specifications.
As can be seen below (left), when defining furnace class the definition is determined by the temperature uniformity required within the working zone.

<table>
<thead>
<tr>
<th>T CLASS</th>
<th>MAX SURF TEMP IN °C</th>
<th>FURNACE CLASS</th>
<th>TEMPERATURE UNIFORMITY °F</th>
<th>TEMPERATURE UNIFORMITY °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>T1</td>
<td>450</td>
<td>1</td>
<td>±5</td>
<td>±3</td>
</tr>
<tr>
<td>T2</td>
<td>300</td>
<td>2</td>
<td>±10</td>
<td>±6</td>
</tr>
<tr>
<td>T3</td>
<td>200</td>
<td>3</td>
<td>±15</td>
<td>±8</td>
</tr>
<tr>
<td>T4</td>
<td>135</td>
<td>4</td>
<td>±20</td>
<td>±10</td>
</tr>
<tr>
<td>T5</td>
<td>100</td>
<td>5</td>
<td>±25</td>
<td>±14</td>
</tr>
<tr>
<td>T6</td>
<td>85</td>
<td>6</td>
<td>±50</td>
<td>±28</td>
</tr>
</tbody>
</table>

From the above (right) we can see that the most stringent furnace class is Class 1 which has a uniformity figure of +/- 3 °C. Intervals for system accuracy tests, temperature uniformity surveys and controlling, monitoring and recording instrument calibrations are based on the combined furnace class and instrument type. Instrument type requirements as shown below denote the number and type of sensor and the types range from A to E with A being the most involved in terms of monitoring.
Airflow is able to offer a solution to any AMS system requirement. Airflow can design and build you an oven to suit any of the six furnace types and use only the best control solutions to satisfy instrument type requirements with controllers and data/graphic recorders from Eurotherm or any manufacturer of your choice to suit your site standards.

### AMS2750E SPECIFICATIONS

<table>
<thead>
<tr>
<th>SENSOR(S) REQUIRED BY INSTRUMENT TYPE</th>
<th>INSTRUMENTATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>One control sensor per zone that controls and displays temperature.</td>
<td>A   B   C   D   E</td>
</tr>
<tr>
<td>The temperature indicated by the control sensor in each control zone shall be recorded by a recording instrument. Alternatively, the recording instrument may be connected to a second sensor contained in the same sheath or holder as the control sensor, and separated from the control sensor by no more than 10mm.</td>
<td>X   X   X   X   X</td>
</tr>
<tr>
<td>At least two additional recording sensors in each control zone shall be located to best represent the coldest and hottest temperatures based on the results from the most recent temperature uniformity survey. It is recognised that certain furnace designs/loading configurations can prevent the location of these sensors in the precise coldest and hottest locations, but these sensors should be located as close as practical.</td>
<td>X   X</td>
</tr>
<tr>
<td>At least one recording load sensor in each zone. During production in multi zone furnaces, empty zones do not require a load sensor. However, a notation must be made to the furnace load record that the zone was entirely empty.</td>
<td>X   X</td>
</tr>
<tr>
<td>Each control zone shall have over temperature protection. The sensor representing the hottest location may also be utilised as the over temperature protection sensor.</td>
<td>X   X   X   X   X</td>
</tr>
</tbody>
</table>
To ensure that compliance with AMS2750E is maintained, regular on site tests need to be carried out by a company such as Airflow who have the skills and experience to carefully assess the needs of each individual client and then respond with a tailored package to suit those needs.

Intervals for system accuracy tests, temperature uniformity surveys and calibrations for controlling, monitoring and recording instruments are based on the combination of furnace class and instrumentation type. For example, it should be made clear that there is a distinct difference between the system accuracy test (SAT) and the temperature uniformity survey (TUS) and AMS2750E lays out quite clearly the defined intervals for each to be carried out. Both the SAT and TUS also depend on whether the system is to process raw materials or parts/components.

Simply described, a SAT is a test of the control, monitoring and recording systems which is usually an onsite comparison of the instrument/lead wire/sensor readings or values, with the readings or values of a calibrated test instrument/lead wire/sensor to determine if the measured temperature deviations are within applicable requirements, and this is performed to assure the accuracy of the furnace/oven control and recorder system.
The TUS is a test or series of tests where calibrated field test instrumentation and sensors are used to measure the temperature variation within the qualified working zone, prior to and after thermal stabilisation. For example, for an oven to comply with furnace class 1 and instrument type A used for processing parts/components, the SAT interval would be biweekly, however at the other end of the scale, for an oven with furnace class 6 and instrument type E, again used for processing parts/components the SAT interval would be semi-annually.

From this we can see the importance in accurately assessing a client’s needs on an individual basis and Airflow has the skills to do this. Similarly, TUS regularity is also dependant on furnace class and instrument type and this can range from monthly for furnace class 1, instrument type A to quarterly for furnace class 6, instrument type E. These TUS intervals can however be extended substantially depending on the number of successful TUS carried out!

Airflow has a number of highly skilled and highly trained service/calibration engineers who are equipped with the latest calibrated testing equipment and is able to give you peace of mind knowing that your oven is not only manufactured by the leading supplier of AMS compliant products, but is also serviced, tested and calibrated correctly to ensure the quality of your produced items throughout the lifetime of the oven.
Choose Prodigy and you will be able to standardise on one software package to accommodate all of your requirements. From cost effective data logging through to comprehensive factory wide manufacturing execution system, Prodigy covers all your needs in one scalable and cost effective package. This saves time learning how to use several different software packages, which in turn saves money and makes it easier for you to integrate your business operations.

**THE PRODIGY SOFTWARE SYSTEM INCLUDES:**

- **Display Builder** - Creates visually appealing and user friendly interfaces
- **Trending Systems** - A comprehensive trending facility for implementing intelligent recording strategies
- **Alarm Functions** - Sophisticated alarm functions that enable operators to react quickly to any faults/problems
- **Mobile Reporting** - Mobile access where alarms and reports can be sent through SMS and Email
- **Sequence Language** - (SLANG) that allows further development to tailor the software to any of your special needs
- **Selective Licensing** - So you only pay for what you need
Touch Screen Support - Larger button sizes, access to right click options and a pop-up numeric keypad are some of the options provided to help with touch screen systems.

Display Replay - Use DVD style controls to pause, rewind and replay the action from any display. This powerful tool can be used to aid fault diagnosis, perform post-mortem investigations or help with user training.

Pop Up Displays - can be used in several ways. They can provide multiple ‘floating’ views of your system for ease of use. They can also be linked into other displays to create a section of display which is shared between any number of other displays. By modifying just one ‘Pop Up’ your changes will propagate to all displays which share the same ‘Pop Up’. This will save you time and ensure consistency.

Toolbars - are used to provide access to the objects used in creating displays and also to tools that allow objects to be positioned relative to one another. All toolbars may be docked or floated over any part of the display.

Operator Interaction - Your own icons can be made into buttons. They can be configured to display forms, set signal values, switch displays, run reports or launch other programs. Prodigy also provides standard Windows buttons including check boxes and radio buttons.

Library - Prodigy Display Builder includes a comprehensive library of plant items that can simply be dropped onto your displays. The library can be extended by adding your own objects, created using Prodigy Display Builder. Library objects can be made into ‘Super Objects’. This means that they contain all of the information required to automatically create the signal database entries when they are placed on a display.

Graphics Support - Display Builder takes full advantage of the latest developments in graphics hardware. It offers true colour, unlimited screen resolution and support for dual-monitor displays. Powerful gradient fills, transparency effects and animation timers make it easy to produce professional displays very quickly.

Thermal Imaging - Prodigy provides extensive support for the capture of data from thermal line scanners and the representation of this data within Display Builder. This includes real time and historic false colour thermal images, thermographs, 3D waterfall displays and sector trends.
Airflow provides advice, design and manufacture of our full range of industrial ovens in ATEX format. Control panels can be oven mounted in ATEX enclosures or remotely sited in safe locations. Heating by hot water, steam or ATEX rated electric heater banks are common options. We are leaders in many industrial applications for the installation of ATEX Ovens.

All Airflow products are backed by a comprehensive 12 month warranty. After sales service and customer support is key to our business success. With our own trained GAS SAFE engineers and qualified electrical engineers covering the whole of the UK the continued optimum performance of your oven is assured. Overseas customers benefit from our dedicated export support team.

We have system design and installation experience with over 30 years know-how from our internal design and manufacturing teams; we have an unrivalled knowledge of these product groups and their application within the UK and worldwide via our vibrant export market. Our expertise within these areas allows for our products to be manufactured and installed to the highest standards being ATEX and ISO systems accredited.
**WHY CHOOSE AN AIRFLOW ATEX DIRECTIVE OVEN?**

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internationally recognised as the leading manufacturer of ATEX ovens</td>
<td></td>
</tr>
<tr>
<td>Unique high efficiency thermal design minimises energy usage</td>
<td></td>
</tr>
<tr>
<td>Superior production results due to very uniform temperature distribution</td>
<td></td>
</tr>
<tr>
<td>Unique high volume low pressure hot air circulation system</td>
<td></td>
</tr>
<tr>
<td>Powerful 'Twin Fan' air circulation on all larger ovens</td>
<td></td>
</tr>
<tr>
<td>Airflow Ovens are specified by the world's leading companies</td>
<td></td>
</tr>
<tr>
<td>ATEX, Rolls Royce RPS 953 Aerospace ovens regularly supplied</td>
<td></td>
</tr>
<tr>
<td>Galvanised steel, alu-dip or stainless steel construction</td>
<td></td>
</tr>
<tr>
<td>Designed for rapid heating of a wide variety of products &amp; assemblies</td>
<td></td>
</tr>
<tr>
<td>Heating composites, ceramics, resins, petrochemicals, metals, plastics &amp; more</td>
<td></td>
</tr>
<tr>
<td>Pre-assembled, Test Run, Data Logged and certified before despatch</td>
<td></td>
</tr>
</tbody>
</table>
The ATEX (ATmosphères EXplosibles) directive is a harmonised European directive which deals with equipment and protective systems intended for use in potentially explosive atmospheres. The directive is formed primarily of two directives, the first one which is 99/92/EC, also known as ATEX137 or the ATEX Workplace Directive. This directive primarily aims to improve the health and safety protection of workers potentially at risk from explosive atmospheres. More commonly referred to as the “use” directive, it is a directive which details that employers must classify hazardous areas where explosive atmospheres may occur. The classification given to a particular zone, and its size and location, depends on the likelihood of an explosive atmosphere occurring and its level of persistence when it does.

The second directive which is 94/9/EC is also known as ATEX95 or the Equipment Directive. This directive deals with the equipment and protective systems which are intended for use in potentially explosive atmospheres.

It is this directive which is important to Airflow when providing compliant systems to clients, as all equipment supplied must comply with 94/9/EC.

Even though 94/9/EC is still in force, it has recently changed and has been replaced with a new directive, 2014/34/EU and from 19th April 2016 this directive will replace 94/9/EC.
ZONE 0 - A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is present continuously or for long periods or frequently.

ZONE 1 - A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is likely to occur in normal operation occasionally.

ZONE 2 - A place in which an explosive atmosphere consisting of a mixture with air of dangerous substances in the form of gas, vapour or mist is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

ZONE 20 - A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is present continuously, or for long periods or frequently.

ZONE 21 - A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is likely to occur in normal operation occasionally.

ZONE 22 - A place in which an explosive atmosphere in the form of a cloud of combustible dust in air is not likely to occur in normal operation but, if it does occur, will persist for a short period only.

For hazardous areas involving dusts then the above classifications are prefixed with a “2”, so zone 1 for dusts becomes zone 21, as below:

EQUIPMENT GROUPS

Hazardous areas can usually be classified into three groups, I, II and III.

Group I - is typically reserved for underground applications such as mines.

Group II - is the most common group and deals with most surface applications.

Group III - is related to electrical equipment intended for used in places with an explosive dust atmosphere other than mines.
**ATEX AREA CLASSIFICATIONS/ZONING DEFINITIONS**

**DEFINITION OF ATEX CATEGORIES**

ATEX categories are categories which are used to define equipment to be used in the various zones as detailed on the previous page.

<table>
<thead>
<tr>
<th>ATEX CATEGORY</th>
<th>TYPICAL ZONE COMPATIBILITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>1G</td>
<td>EQUIPMENT SUITABLE FOR ZONE 0</td>
</tr>
<tr>
<td>1D</td>
<td>EQUIPMENT SUITABLE FOR ZONE 20</td>
</tr>
<tr>
<td>2G</td>
<td>EQUIPMENT SUITABLE FOR ZONE 1</td>
</tr>
<tr>
<td>2D</td>
<td>EQUIPMENT SUITABLE FOR ZONE 21</td>
</tr>
<tr>
<td>3G</td>
<td>EQUIPMENT SUITABLE FOR ZONE 2</td>
</tr>
<tr>
<td>3D</td>
<td>EQUIPMENT SUITABLE FOR ZONE 22</td>
</tr>
</tbody>
</table>

From this we can see that if an oven is to be used in a zone 1 application then equipment suitable for use in category 2 will need to be used.

Another important aspect of correct classification is the determination of a correct “T Rating”. The “T Rating” determines the maximum allowable surface temperature of any item within the potentially explosive area.

**T RATING**

The determination of the “T Rating” is related to the flammable or potentially explosive material being processed and is often related to the auto ignition temperature of the material in question. For example, if the “T Rating” of the system as a whole is determined to be T3, this means that no item in the potential explosive atmosphere can ever be hotter than 200°C and the system and its controls will need to be designed to ensure this compliance.
ATEX AREA CLASSIFICATIONS/ZONING DEFINITIONS

GAS & DUST GROUPS

<table>
<thead>
<tr>
<th>AS GROUPS</th>
<th>DUST GROUPS</th>
</tr>
</thead>
<tbody>
<tr>
<td>IIA PROPANE</td>
<td>IIIA COMBUSTABLE FLYINGS</td>
</tr>
<tr>
<td>IIB ETHYLENE</td>
<td>IIIB NON CONDUCTIVE DUST</td>
</tr>
<tr>
<td>IIC HYDROGEN/ACETYLENE</td>
<td>IIIC CONDUCTIVE DUST</td>
</tr>
</tbody>
</table>

From the table above, it can be seen that potentially explosive materials are grouped together and for example, most paint drying/solvent evaporation applications would be classified as Gas Group IIB. In order to make sense of all the information detailed above, we must now briefly describe the various protection concepts commonly used to ensure that the equipment to be used in the potentially explosive is compliant with the ATEX classification determined by the employer relative to ATEX137 or 99/92/EC. The protection concepts are as follows:

- Ex i - Intrinsic safety
- Ex d - Flameproof
- Ex e - Increased safety
- Ex n - Non sparking
- Ex p - Pressurised
- Ex m - Encapsulation
- Ex o - Oil immersion
- Ex q - Powder fill

Airflow has vast experience of supplying bespoke systems for use within hazardous and potentially explosive atmospheres. The protection concepts employed are usually a combination of Ex d equipment such as flameproof fan motors etc and intrinsically safe equipment. The Ex i concept includes for devices mounted in the main control panel in the safe area. These devices called barriers are used to limit the electrical energy supplied to devices in the hazardous area such as pressure switches, thermocouples, etc. Using all the information above, we can now make sense of a typical ATEX classification as shown here. This classification is for an EC (ATEX) compliant system for surface equipment that has an equipment category of 2 (Zone 1) and is for gasses as opposed to dusts. The protection concept is “d” which is flameproof, the gas group is IIC and the maximum allowable temperature is 200°C.

<table>
<thead>
<tr>
<th>EC Mark</th>
<th>Equipment Category</th>
<th>Protection Concept</th>
<th>Temperature Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ex</td>
<td>II</td>
<td>2</td>
<td>G</td>
</tr>
<tr>
<td>Exd</td>
<td>IIC</td>
<td>T3</td>
<td></td>
</tr>
</tbody>
</table>

Equipment Group  | Gas Group  | Gas | Temperature Rating |

Ex i - Intrinsic safety
Ex d - Flameproof
Ex e - Increased safety
Ex n - Non sparking
Ex p - Pressurised
Ex m - Encapsulation
Ex o - Oil immersion
Ex q - Powder fill
ATEX CAPABILITIES

Airflow as a company has vast experience of providing industrial heating solutions into ATEX determined areas. We are the leading manufacturer of industrial ovens in a number of fields and the engineering expertise that Airflow has relating to the difficulties sometimes posed by ATEX applications is second to none.

When an Airflow oven is designed for an ATEX application, not only do we consider the mechanical design and aesthetic aspects of the oven but we have a team of specialist systems engineers and control panel building experts who have the ability to specify, design and build ATEX compliant control systems for any application. We only use high quality components and assemblies which in turn lead to reliable and accurate control systems. Please see the list of equipment supplied below:

<table>
<thead>
<tr>
<th>ATEX Certified Fans</th>
<th>Control Panel Hardware</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure Switches</td>
<td>I.S. Barriers</td>
</tr>
<tr>
<td>Control Panels</td>
<td>Controllers/Graphics Recording</td>
</tr>
</tbody>
</table>

All control panels are built in house to ensure a top quality product such as you would expect from such a specialist ISO registered company. All control panels built by Airflow are designed for safe area with connection to the oven/hazardous area via suitable cables and ATEX glands. Airflow is able to provide company contacts for assistance with the assessment and determination of a potentially explosive atmosphere due to the fact that this must be driven by the employer/end customer who should produce the appropriate risk assessments which in turn should be carried out on site relative to products and processes.

Once the ATEX classification has been determined and supplied to Airflow, we will be able to advise the best way forward with recommendations on oven design, materials of construction, control philosophy, suitable fuels etc.

Generally, most ATEX compliant ovens are heated by electricity as by its nature it is very easy to control temperatures accurately, however ATEX ovens could be supplied as steam, hot water or hot oil and Airflow has the expertise and experience to help in all applications.
**ATEX INDUSTRIAL APPLICATIONS**

As the leading supplier of ATEX compliant heating systems and ovens, our products are used in many industries which both want and need the best possible capital plant with which to build their businesses and support growth.

Airflow excel at design, customer support and partnership and has provided ovens into many ATEX applications including:

<table>
<thead>
<tr>
<th>Component drying</th>
</tr>
</thead>
<tbody>
<tr>
<td>Powder drying and consolidation</td>
</tr>
<tr>
<td>Solvent evaporation</td>
</tr>
<tr>
<td>Raw material/bulk heating</td>
</tr>
<tr>
<td>Composites</td>
</tr>
<tr>
<td>Aerospace components processing</td>
</tr>
<tr>
<td>Lubricants processing plants</td>
</tr>
<tr>
<td>Glue drying</td>
</tr>
<tr>
<td>Spraying/painting plants (wet &amp; powder)</td>
</tr>
<tr>
<td>MOD based suppliers</td>
</tr>
</tbody>
</table>

This is not an exhaustive list and Airflow can and will design around your bespoke needs and applications. Many industries have challenges to overcome, many are unsure about the need for ATEX compliance and others have much experience of safe management of potentially hazardous areas, whichever type of organisation you belong to, Airflow can help as we are without doubt the number one in the field.