"Modulair"

Forced Air Recirculation Industrial Ovens

Introduction
RDM, ovens have been carefully designed, utilising the very latest computer optimisation and drawing techniques, to represent the current 'State of the Art' in curing, heating and drying oven design. They represent almost thirty years of evolutionary improvement and thousands of RDM industrial ovens are now in daily use Worldwide.

All RDM 'MODULAIR' Ovens are of the hot air recirculation type. With this design, the Oven interior is heated by a fan assisted convection process. The heated air is constantly recycled around the Oven's interior to maintain superb temperature consistency. Fuel consumption is considerably lower than would be expected with the other types of oven (such as Radiant of Infra Red). This is because in normal use, the oven operates at considerably reduced power to simply maintain its internal temperature.

RDM Air recirculation ovens are very flexible. As well as offering a huge standard product range, our modular design concept, also enables us to easily manufacture Ovens to suit specific customer requirements. This concept enables us to offer superb specification and price as well as fast delivery.

RDM Oven systems offer simple and very accurate digital temperature control. A huge choice of more sophisticated control options is also available. The ovens are exceptionally fuel efficient and responsive due largely to our utilisation of the latest burner or heater technology as well as the oven's fully integrated, insulated construction.

RDM Ovens are the safest units currently available. They incorporate electronic over temperature protection, electronic fan sensors, a powered fume exhaust system, an internal safety handle to prevent operator entrapment, a disintegration type Explosion Relief system, an automatic fume purge system and a sophisticated 3-way safety system on our powered door versions.

Applications:
RDM Ovens are intended for all Industrial Drying, Stoving, Curing and Heating applications from 30˚ to 450˚ Centigrade. These include:

- Paint Stoving
- Epoxy/Polyester Powder Curing
- Lacquer Drying
- Hydrosetting
- Battery processing
- Moisture removal
- Plastic Curing
- Rubber softening
- Metal annealing
- Spring stress relieving

Excellent Heat Distribution
A good distribution of heat is vital for successful process Oven design. Indeed, RDM Ovens are often specified in the most critical aerospace applications requiring superb temperature profile stability. To ensure good performance, all RDM Ovens incorporate medium pressure multi vane centrifugal fans complete with scroll casings to provide a very positive and well controlled air movement. This is usually at least four complete air recycles per minute. Large duct work ensures that the high air volume will not disturb the product.

RDM Ovens are produced by using a 'Modular' design concept. The ovens are constructed utilising standardised modules, panels and components. These are manufactured at our modern factory in Manchester, England. A computer assisted design technique optimises the componentry required for any particular oven layout. For this reason unusual sizes and layouts as well as standard models can be simply produced at a competitive price.

Fully Bolted Construction
All of the oven panel work is bolted together during final assembly. For this reason the oven can, if required, be delivered 'Flat Packed' to site to make delivery and positioning on site particularly simple. Furthermore, future modifications to the oven's size or site removals are also much simplified.

Fully Insulated Heated Box and Recirculations Fans
The oven's heat exchanger enclosure incorporates integrated, internal, plug type centrifugal air recirculation fans with external motors. With this design none of the hot fan components are in any way exposed to colder air. Not only does this design offer a clean and smooth appearance to the Oven, but also heat losses from the Fans are virtually eliminated. Furthermore, a fully insulated heater box prevents radiated heat from being projected into the Oven in any uncontrolled manner, as would be the case if the Oven's interior were not properly isolated from the heater box.

Door Safety System
RDM Box Ovens incorporate an internal safety door handle to prevent operator entrapment. On ovens with vertical powered lift type doors, we incorporate, a geared brake motor, a recoil type fall arrester and an internal door wire pull switch. All RDM Ovens with powered doors are fitted with independent emergency 'kick out' Panel(s).

Cool Exterior Surfaces
Great care has been taken in the design and construction of RDM Ovens to minimise heat transfer through the walls and doors, For example, the inner and outer skins are connected by narrow strips of steel and Oven doors are mounted to the Oven faces with external door frames. On Tunnel type Ovens, a minimum amount of Duct work is mounted to the internal walls.

Explosion Relief System
The majority of the Oven roof area comprises of special panel work which is specifically designed to harmlessly disintegrate and vent off to atmosphere should an explosion occur within the Oven. This system far exceeds the recommended requirements under British or C.E. legislation.

Electronic Over Temperature Protection
As a totally independent module to the master oven control system, RDM Ovens also incorporate a thermal sensor mounted within the air heater box, this sensor is connected to an independent electronic temperature controller mounted inside the control panel. In the unlikely event that the heater box temperature should exceed the Oven's design parameters, the heaters are shut down and the Oven automatically switches to fast cool down mode.

Electronic Fan and Pressure Protection
Sensors constantly monitor recirculation fan performance. If for any reason the recirculation fans are not drawing sufficient air volume or air pressure, the heaters are shut down. If the fans should become electrically overloaded, the entire oven is immediately shut down.

All Insulated Galvanised or Stainless Steel Construction
To ensure a very long service life the oven panel work is made up either from high grade galvanised or stainless steels with high density mineral wool slab insulation filling. This is usually either of 100mm or 150mm thickness dependent on the design temperature.

Air Seal System
Efficient air seals are crucial to efficient Tunnel Oven design. The Air Seals minimise the otherwise inevitable heat losses that would be generated by the apertures that must allow the product to enter and exit conveyorised Ovens. The superb RDM 'Airsurround' system has been continuously improved and upgraded on the basis of more than 20 years of on site experience with this industry standard design. In simple terms, hot air is drawn off, just before escaping the Oven by an oversized, slow running multi vane fan system which is plugged into a multi-chamber air box above the apertures. This air is then blown back into the Oven by carefully designed duct nozzles, a short way behind the apertures. The air is blown back all around the product at high volumes and low velocity to prevent disturbing the product.

Fume Exhaust System
RDM Ovens incorporate a powerful and positive, fan assisted, fume and solvent evaporation and exhaust duct system as standard. The exhaust system never relies merely on convection evaporation and it can be adjusted to suit different applications.

Constant Air/Fuel Ratio
To ensure superb oven efficiency at all temperatures, all RDM gas fired ovens now incorporate this recently available feature. The output from an Oven Burner must vary constantly to suit the heat load or to allow warming up. This feature ensures that the combustion air volume is automatically adjusted and balanced to the gas consumption by an electronic damper motor.

Purge and Cool Timers
To ensure a safe start up and shut down sequences all RDM Ovens include an electronic sequence control system. This system ensures that the heater(s) will only switch on once the fans have safely evacuated any solvent or gas fumes that may have accumulated. At the end of a shift, a simple press button initiates the controlled shut down cooling sequence, allowing the fans to cool the heaters properly prior to shutting down fully.

Please refer to the separate Price Guide Leaflets for details of the Standard Product range.

Ovens of any size can be produced.

Customer support: RDM have been successfully providing service and spares since 1951. We employ experienced service and commissioning engineers. Our engineers are based around the country to provide prompt service and support. RDM offer a variety of on site service and routine maintenance programs.

Control Options: RDM design and manufacture all of our control panels in-house. For this reason we employ people who fully understand their operations and customers control requirements. Whatever the nature of your specific control or instrumentation requirements, our electronics specialists will be able to manufacture a control system to suit.

Choice of fuel source: RDM's experience enables us to offer the most varied fuel sources possible. In direct heated ovens the burner fires directly into the recirculating hot air within an insulated heater Chamber. With Indirect, gas or fuel oil the burner fires into a semi-sealed stainless steel heat exchanger over which the recirculating hot air passes. We also offer electric or steam heated exchangers. Here again the elements are plugged into the insulated Heater chamber and the recirculating hot air is positively passed over the heat source to prevent heat stratifcation.

Cruzeburn option: This is ideal for either, superb temperature stability or perhaps a widely varying choice of temperature control range. The system comprises of a sophisticated computer controlled temperature input device and a fully motorised fuel and air throttle on the burner. The input device has twin digital displays, one display shows the actual Oven temperature, the other shows 'set point' temperature. The computer sends a signal to the throttle motor and attempts to balance the infinitely variable heat output to the load required. Within just a few minutes the controller 'tunes' the heat output to the actual oven heat load and then constantly trims the heat output to finely balance any system changes.

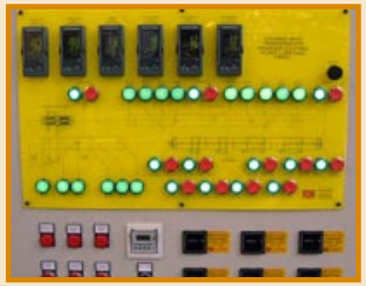
Feature Check list:

- Choice of natural gas, propane, oil, steam or electric heating
- Digital temperature controller
- Accurate and stable heat control
- All bolted construction – easily modified or moved
- Galvanised and Stainless Steel construction.
- High density mineral wool insulation
- Fully insulated heater chambers and fans
- Ample explosion relief panel work
- Airsurround Air Seal System
- Internal door release
- Safe and adaptable control systems
- Electronic over temperature protection device
- External mounted fabricated steel doors
- Infinite range of sizes and options
- Full compliance with safety and environmental legislature
- C.E. Marked and approved
- Full on site installation and support service

Typical Options:

- CRUZEBURN self tuning modulating heater control system
- Process control timer with audible/visual alarm
- Paper or software output process chat recorders
- Programmable ramp up/down control
- 24 Hour 7 Day time clock control
- Humidity reduction via rotating wheel desiccant drier
- Humidity addition via evaporative matrix
- Refrigerated cooling mode system
- Solenoid door locks
- Door open/heater off control
- Powered vertical lift doors with safety brakes
- All Stainless Steel construction
- Insulated floor
- Integral conveyer systems

Product development is continuous and RDM reserve the right to make alterations in specification and manufacture without notice. Products as delivered may therefore differ from that described in this document.



RDM have 1000's of satisfied Oven users.

They include: Hawker Energy (Newport), St Bernard Composites (Farnborough), Ronaldsway Aircraft (I.O.M), Jaguar Cars (Coventry), Aston Martin (Gaydon), Henkel (Hatfield), Portacabin (York), City Group (Hemel), Tenmat (Manchester), Jubaili (Nigeria), Romageco (Kenya), Pilkington (St Helens), Balmoral Group (Aberdeen), CRP (Texas), PCD Products (Hemel), Spirax (Cheltenham), David Brown (Huddersfield), Slingsby Aviation (York), Yuasa Batteries (S. Wales), Dudley Industries (Lytham), Covrad (Coventry), Indutek (Latvia), Terex (Coventry), Supersafe (Barcelona), Spring Active (Portugal), Zot Engineering (Edinburgh), Cummins (Stamford), Contour Aircraft (Cwmbran), Luccini (Manchester), Global Coatings (Saudi Arabia), Goltens (Dubai) Seos (Orlando), MTI (Bremen), Mitras (Northwich), Hi-Tech (Australia).

NEW! Ultra Low CO^2 **CRUZESAVE®** Oven Range

Save around 30% on Energy costs and Carbon Emmissions

These Oven feature:

- Additional 150mm wall and roof insulation
- Fully modulating and digitally controlled heaters
- Invertor controlled circulation fans
- Electronic Fume exhaust controls
- Insulated Floor
- PLC Controlled Auto-Doors on Tunnel Ovens

CARBON TRUST

All RDM Ovens are offered with a comprehensive 12 month warranty as well as our Lifetime Service commitment backed by our 50 years of Engineering Service Excellence. Manufactured to the highest Quality Standard ISO 9001 By: RDM Industrial Services Ltd.

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