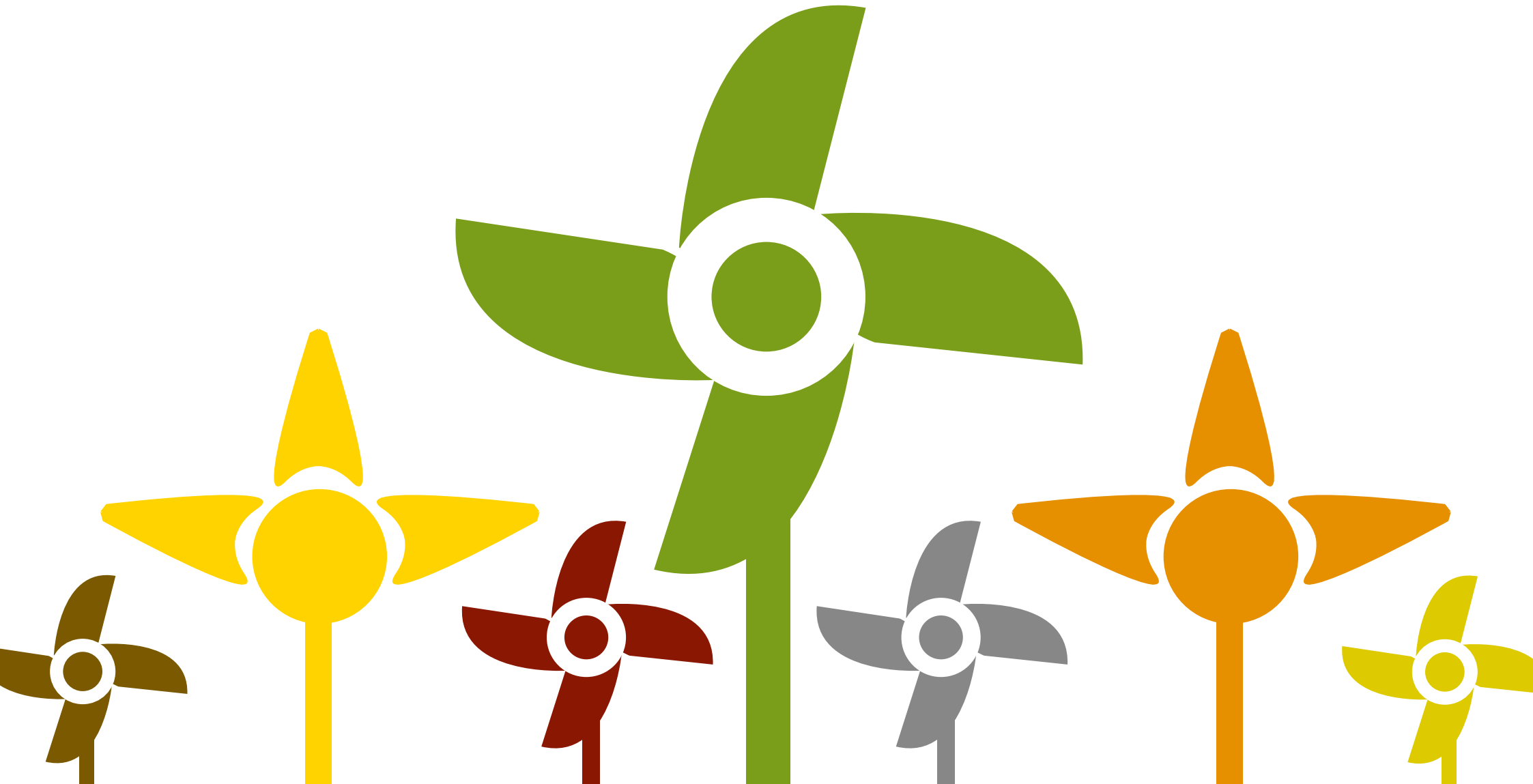




Sustainable Natural Ventilation and Daylight Systems



## Company Profile

GDL Air Systems Ltd is a privately owned manufacturer and supplier of air distribution products including grilles, louvres, diffusers, dampers, natural ventilation and solar shading, servicing the construction industry. We employ over 60 people at our manufacturing sites based at the head office in Glossop, Derbyshire and at our manufacturing facility based near Sheffield. We also have regional sales offices in London and Bristol.

GDL offers a vast wealth of experience in technical, manufacturing and product development fields, ensuring our customers are supplied with the choice of products most suited to their requirements, manufactured to the highest quality. We are fully focused on ensuring 100% customer satisfaction, as recently acquired and internationally recognised accreditations such as ISO 9001 and ISO 14001 demonstrate that this remains the case.

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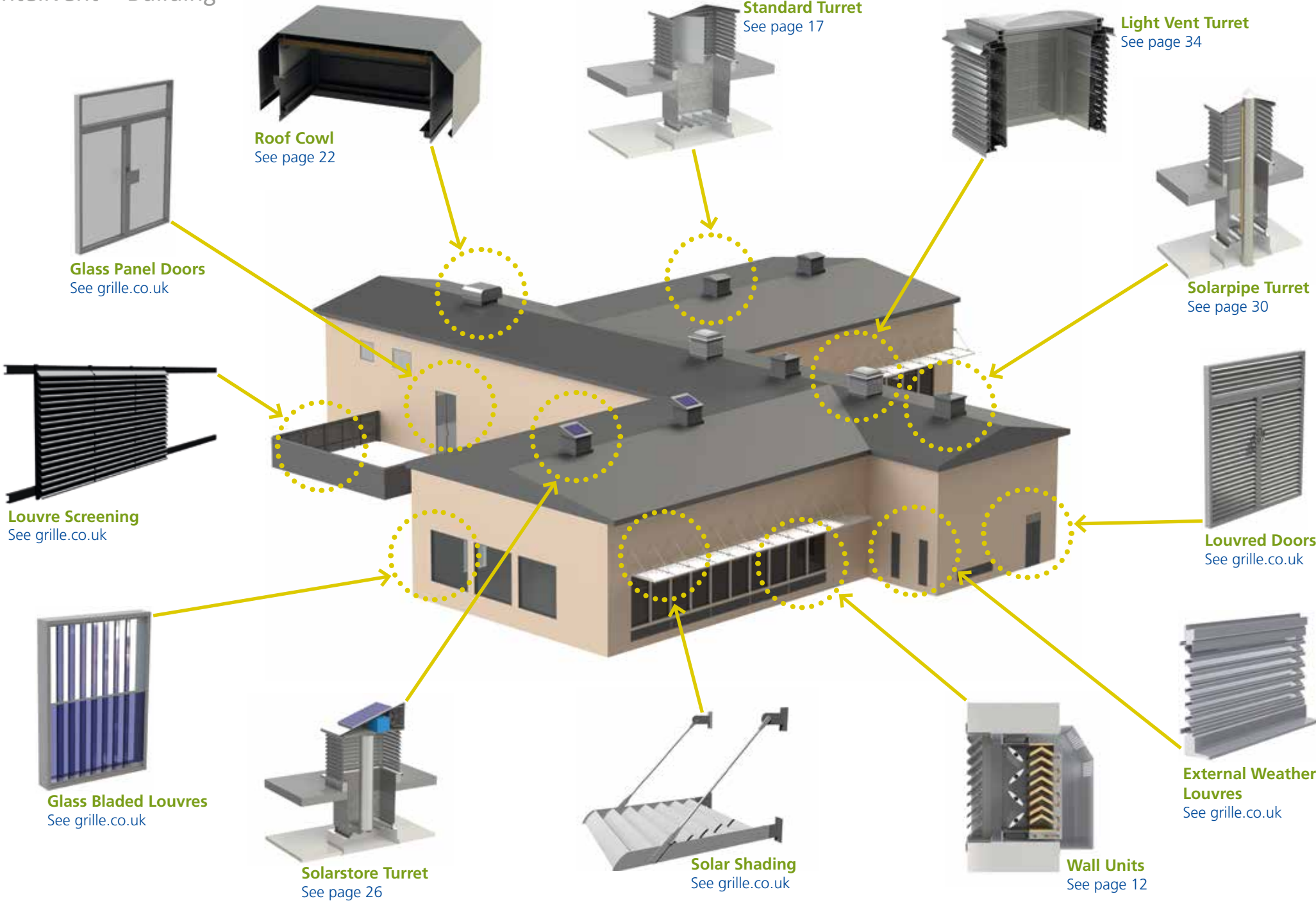
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## for air that flows naturally

natural | sustainable | efficient | healthy | eco friendly



# Intelivent™ Building





## Introduction to our Sustainable Intelivent<sup>TM</sup> Product Range

It is fundamental that all buildings, new or refurbished, comply with the relevant building standards. Building Regulations Part F (Means of Ventilation) and Part L (Conservation of Fuel and Power) ensure the adequate provision of ventilation in buildings, good air quality and the avoidance of overheating. The Building Research Establishment's BREEM scheme is an environmental assessment that ensures the optimum environmental performance of buildings, and produces an overall rating according to the efficiency and effectiveness of all aspects of a building's design, including its services.

Our Intelivent range of products has been designed to provide a sustainable and cost effective method of providing energy efficient ventilation and lighting throughout all building types. Harnessing natural wind, solar power and temperature buoyancy to ventilate buildings significantly reduces energy consumption that would have been used to operate a more traditional mechanical arrangement.

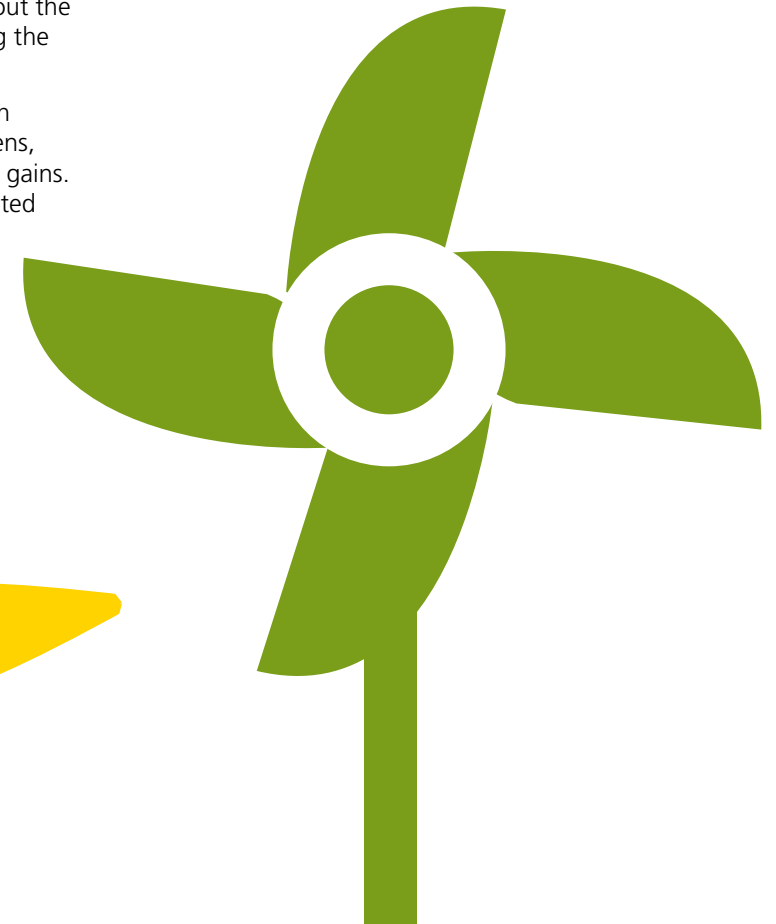
Incorporating CO<sup>2</sup> and temperature sensors within a natural ventilation system will prevent wastage of energy in buildings where occupancy varies throughout the day, such as a school classroom. The ventilation rate can be designed in each area to be dependent on the occupancy within the room, significantly contributing to energy conservation.

In summer, ventilation rates will be controlled by temperature sensors, but lower winter ventilation rates will be controlled by CO<sup>2</sup> sensors. This limits the fresh air entering the building in order to maintain the internal temperature. There are numerous options to allow for the most effective airflow throughout the building.

### Considerations When Specifying Natural Ventilation systems

When designing a suitable natural ventilation system, it is crucial to understand both wind and buoyancy. Warm air is less dense than cold air, when the two meet the dense cold air will fall, displacing warmer air upwards. As warmer air rises and cold air falls within a room, this promotes a flow of air to produce the required ventilation rate. The height and layout of a building will also affect its ventilation requirements. There are numerous options to allow for the most effective airflow throughout the building. Our in-house design team can assist in making the correct system choices.

Natural ventilation systems are not suitable in areas with a high level of pollutants, fumes and odours – eg kitchens, laboratories, toilets and areas with high functional heat gains. Operating theatres also need to be mechanically ventilated so that outside air cannot bring in potential pollutants. Mixed mode systems can be used to minimise the cost of a mechanical arrangement by using natural ventilation where possible. Solar powered systems can reduce energy demand where power-assisted fans are required.







## Introduction to Natural Ventilation

Harnessing natural wind power and temperature buoyancy to ventilate buildings significantly reduces energy consumption and provides a sustainable and energy efficient alternative to traditional mechanical ventilation methods.

Our range encompasses several products types that can work as stand alone products or in harmony with each other depending on the height and layout of the building. They include the Wall Unit, Penthouse Turret, Solarstore, Solarpipe, Roof Cowl and our Light Vent. How to specify the products and an explanation of where each product is applicable, can be found on the individual product pages throughout the catalogue.

The concept of the Intelivent system is to create a stack effect through the space controlling the incoming air temperature and CO<sup>2</sup> levels. This allows us to maintain a comfortable environment, with the correct air temperature and velocity with a controlled seasonal ventilation rate. Our systems are ideally controlled by CO<sup>2</sup> and temperature sensors, however we can connect our products to any existing or proposed BMS Installation.



## The Intelivent<sup>TM</sup> Range



The Intelivent<sup>TM</sup> Range includes:



Penthouse Turret



Light Vent



Roof Cowl



Wall Unit



Solarstore



Solarpipe

Ventilation demand changes depending on the season and occupancy levels. In a school, for example, occupancy in each room varies throughout the day, so a controlled ventilation rate using our 'Intelivent Natural Ventilation Range' would be both cost effective and energy efficient. Natural ventilation is a popular method of ventilating offices, restaurants and educational facilities, and is particularly effective in open spaces that have a high occupancy, such as warehouses, distribution centres, gymnasiums, sports halls, assembly areas and supermarkets.

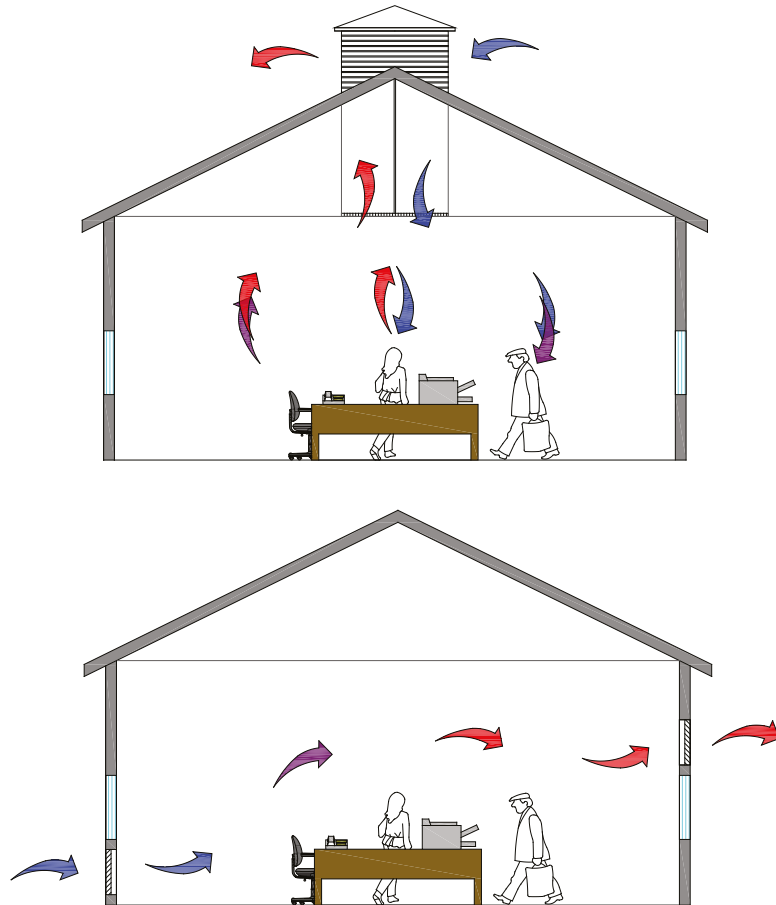
GDL design, manufacture and install our Intelivent range of natural ventilation systems with the option of temperature and CO<sup>2</sup> sensor controls allowing a controlled winter and summer ventilation rate whilst maintaining the security of the buildings.

### Intelivent Advantages

- Two section heater battery to give greater control and energy saving. (This applies to the Wall Unit range).
- Heater battery sited at low level to eliminate cold drop (cold air at low level). (This applies to the Wall Unit range).
- Fully modulating damper gives greater control to prevent 'over ventilation' and reduces energy consumption.
- The units can be controlled by CO<sup>2</sup> emissions, temperature sensors or manual override.
- Wireless control systems are optional and give significant cost savings over hard wiring.
- Optional noise attenuation can further reduce noise entering or leaving the space.
- Control systems can be sited remotely, e.g. in the roof space to eliminate misuse.
- Tamper proof fixings and user friendly design to help prevent willful damage.
- All our range can be made to suit any required size.



Effects of Ventilation and its Application



The Natural Ventilation System  
 Effects of Ventilation and its Application

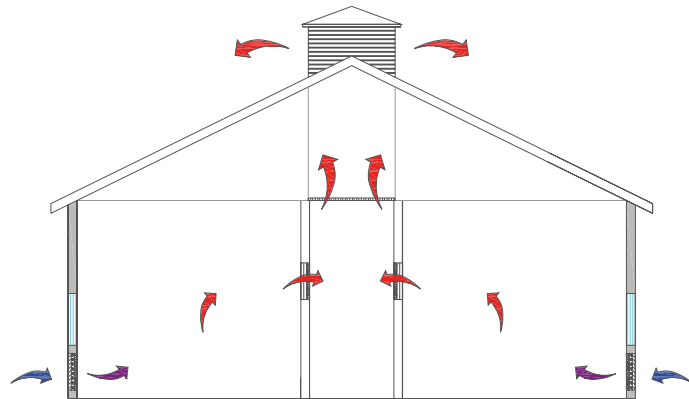
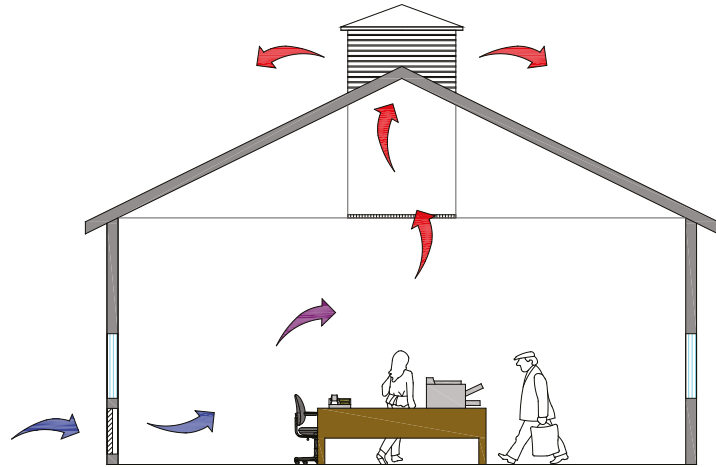
**Down Flow Ventilation**

Cool fresh air enters the space by driving wind on the windward side of the unit. At the same time warmer 'used' air leaves on the leeward side of the unit. This method is particularly effective in large, open spaces with high ceilings, such as warehouses, distribution centres, gymnasiums, sports halls, assembly areas and supermarkets.

**Cross Flow Ventilation**

Air enters at low level and leaves through the opposite wall at a high level, usually driven by wind driven forces. This can be as simple as opening two windows on opposite sides of the room or by installing two wall mounted units to allow controlled cross flow ventilation.

## Effects of Ventilation and its Application



## The Natural Ventilation System

Effects of Ventilation and its Application

### Stack Effect

Stale air is then exhausted via roof-mounted penthouse turret at high level. The system uses the buoyancy effect, where warmer, lighter air is displaced upwards when it meets cold, dense air. The system design will depend on the buildings layout.

### Atrium Scenario

Air enters at low level in each room. Using the stack effect, the air is drawn across the room and transferred via the grilles into the corridor or atrium. The air is then displaced upwards and out of the roof turret.



## The Intelivent<sup>TM</sup> Range

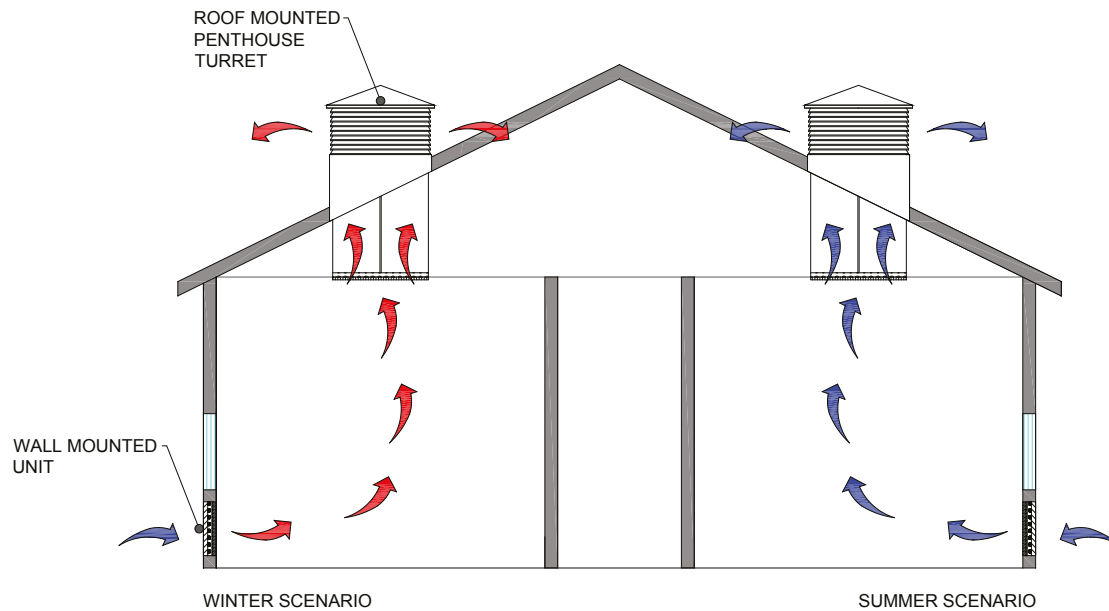
### Set the Scenario

#### Summer Scenario

The summer ventilation rate is controlled by a temperature sensor. Once the room temperature peaks, the dampers will open to allow fresh air to enter. The ventilation rate in summer will more than double that in winter. Our solarstore option allows increased ventilation with an assisted solar powered fan. The reversible fan is driven by a solar powered battery that allows 24-hour supply or extract ventilation to increase the ventilation rate during the summer in hot weather or when the occupancy in the room is at high level. This also provides a night purge, providing a naturally cool environment for the occupants the following morning. See pages 27 and 28 for more details for the 'Solarstore'.

#### Winter Scenario

The winter ventilation rate requirement is much lower than summer. This is controlled by a CO<sup>2</sup> sensor. Monitoring CO<sup>2</sup> emissions limits the amount of fresh air entering the building via the wall mounted unit in order to retain the internal air temperature. The heating coil can be used as a front line heating source during winter for re circulated air. See page 45 for more information on our sensor controls.





## Intelivent™ Wall Unit



### Typical Construction

- A.** External weather louvre. From extruded aluminium sections grade 6062-T6, blades and frame 2.0mm thick. Frame are of fully welded construction.
- B.** Internal fabricated 16swg galvanised mild steel sleeve to carry internal components.
- C.** Tight shut off insulated damper. Manufactured from 1.2mm galvanised mild steel. Stainless steel casing is optional in grades 304,316 or 430. The blades are extruded aluminium airfoil section and insulated with polystyrene.
- D.** Acoustic baffle.
- E.** Low pressure hot water heating coil.
- F.** Perforated zintec internal fascia grille. Constructed from 16swg zintec sheet with 16swg zintec stiffeners. Fully welded construction with location lugs and concealed fixing screws.



## Intelivent™ Wall Unit Options

### Description

GDL Intelivent wall mounted units allow natural fresh air to enter buildings through external weather louvres. The air passes through a series of grilles and dampers allowing for a controlled environment purely using fresh air, eliminating the need for costly mechanical arrangements.

The wall mounted units can be manufactured to fit any bespoke size and can work in harmony with all other products within the Intelivent range.



**WLU270** Louvre, damper and egg crate grille.

**WLU350** Louvre, damper, LPHW flat coil and egg crate grille.

**WLU450** Louvre, damper, acoustic baffle and egg crate grille.

**WLU470** Louvre, damper, acoustic baffle, LPHW flat coil and egg crate grille.

**WLU500** Louvre, damper, acoustic baffle and fascia grille.

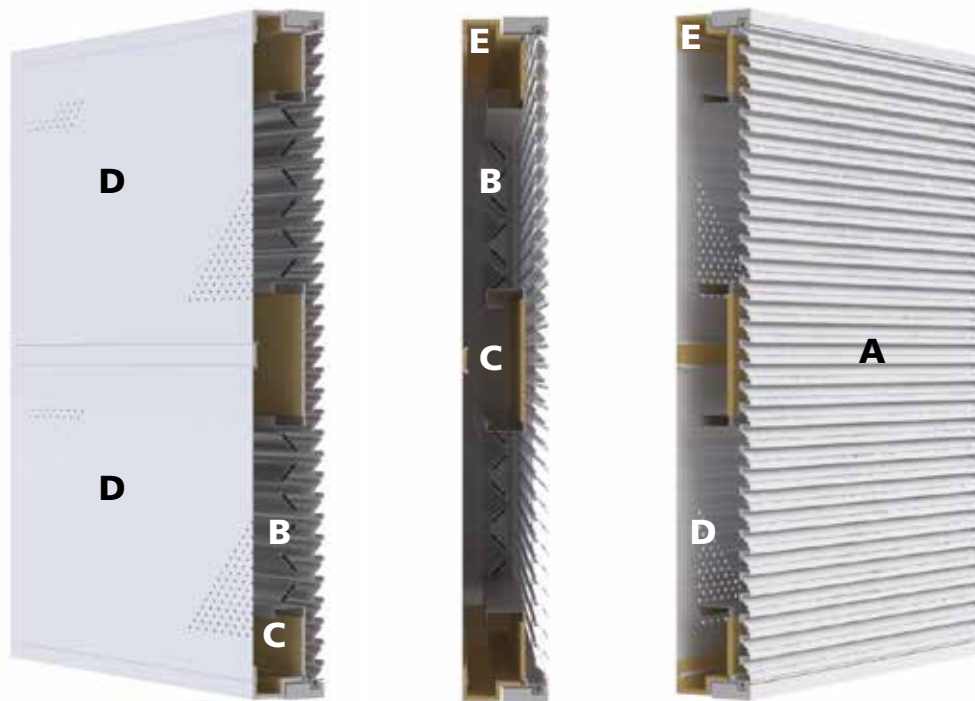
**WLU550** Louvre, damper, acoustic baffle, LPHW L shape coil and egg crate grille.



Available options. Please specify at the time of placing order.



## Intelivent™ Wall Unit Large Cabinet Style Unit Louvre, Damper, Acoustic Insulation & Fascia Grille



### Description

GDL Intelivent wall mounted cabinet units allow natural fresh air to be transferred from rooms to corridors or from space to space. The air passes through a series of grilles and dampers allowing for a controlled environment for transferring fresh air, eliminating the need for costly mechanical arrangements.

The wall mounted cabinets can be manufactured to fit any bespoke size and interface into partition walls and glazing systems.

### Typical Construction

- A.** Louvre blades. Various profiles available for performance and aesthetics.
- B.** Ultra low leakage insulated dampers.
- C.** Rockwool insulation for acoustic noise reduction.
- D.** Perforated fascia comes with removable panels. Free area options available.
- E.** Curtain wall interface. Various interface options available for application.



Available options. Please specify at the time of placing order.

## HML School, (Holte, Mayfield & Lozells) Birmingham BSF

Education, Birmingham



### Project details

HML School in the Lozells area of Birmingham is the amalgamation of three schools on to one site developed under the 'Building Schools for the Future' government initiative. The shared site consists of Holte Secondary School, Mayfield Special Needs School and Lozells Primary School. Holte & Lozells School were formerly based on this regenerated site.

The previous buildings were demolished and in their place a state of the art, sustainable and eco-friendly learning environment has been created. The buildings were constructed to deliver a low carbon solution of 27kg/m<sup>2</sup>, lowering energy consumption, operating and maintenance costs and at the same time provide an environment for the building occupiers that is both light and airy conducive to the improved learning platform.

### Project overview

GDL Air Systems supplied a natural ventilation solution to ventilate the majority of the classrooms and common areas by fresh air and heating from a biomass sustainable energy source. Our natural ventilation systems meet the government requirements for a 'breathable building' environment. The GDL Intelivent Wall Units were used throughout the buildings as an alternative to more commonly used mechanical ventilation. The wall units were a particularly suitable method of ventilation for this type of building.

The design team at GDL worked closely with the main contractor and the local Education Partnership to design the units to tailor the specification to provide the ideal solution for each classroom. The final solution exceeded the Education Building Bulletin requirements.

### Benefits of using GDL products to the project

- GDL worked closely with the main contractor and the local council to develop a sustainable and energy efficient natural ventilation solution.
- One of the problematic areas was the depth of our wall mounted units, our design team remodelled the units resulting in a slim-line design that complied to the necessary requirements.
- Other bespoke requirements included the reinforcement of the unit covers to prevent wilful damage, including tamper proof fixings, a unique feature that is particularly useful in a learning environment.

### GDL products used on this project

Intelivent Wall Units  
Exterior Louvres  
Supply and Extract







## Intelivent™ Penthouse Turret Product Details

### Description

GDL Intelivent roof turrets are designed to offer a balanced supply of fresh air whilst also having the ability to remove warm stale air. The effective supply of fresh air is due to the internal split design within the turret unit and duct extension sleeve; the supply and extract air are kept separate avoiding cross contamination. The air is balanced through our motorised volume control damper.



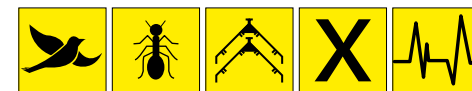
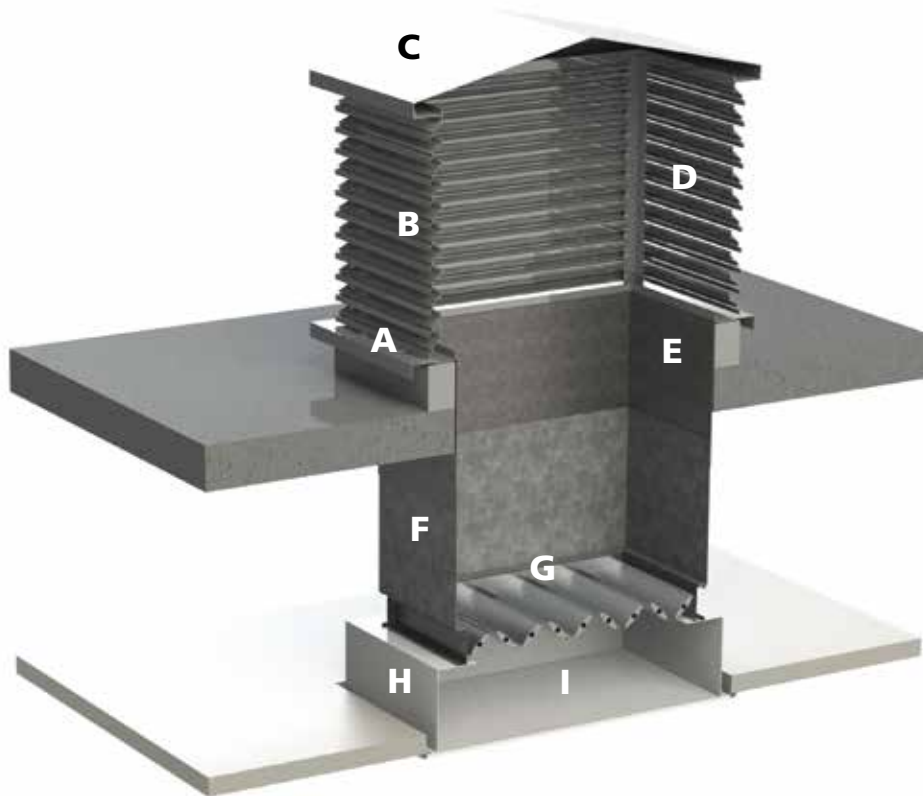


## Intelivent™ Penthouse Turret

### Product Details

#### Standard Turret

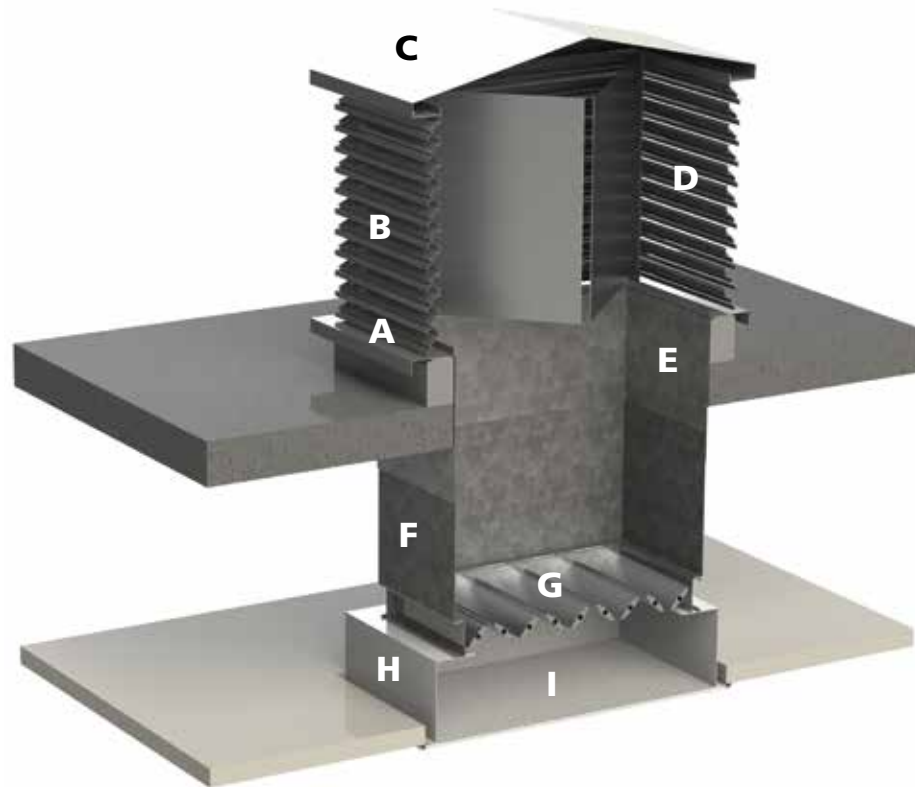
- A.** Turret skirt with 50mm turned down base from extruded aluminium section.
- B.** High performance weather louvre.
- C.** Turret roof fabricated from 2.0mm aluminium. Supplied in sections where over sized.
- D.** Bird mesh fitted to rear of blades as standard. Optional extras available.
- E.** Galvanised drop duct from turret up stand.
- F.** Telescopic damper connection sleeve constructed from 16swg galvanised steel.
- G.** Ultra low leakage insulated damper supplied with actuator (DL533+3M).
- H.** Grille connection sleeve, fabricated from aluminium.
- I.** Internal ceiling egg crate grille (S5000+1C).



Available options. Please specify at the time of placing order.

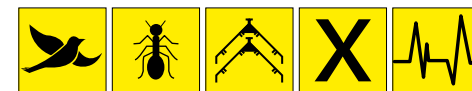


## Intelivent™ Penthouse Turret Product Details



### Standard Turret with Internal Splitters

- A.** Turret skirt with 50mm turned down base from extruded aluminium section.
- B.** High performance weather louvre.
- C.** Turret roof fabricated from 2.0mm aluminium supplied in sections where over sized.
- D.** Bird mesh fitted to rear of blades as standard. Optional extras available.
- E.** Galvanised drop duct from turret up stand.
- F.** Telescopic damper connection sleeve constructed from 16swg galvanised steel.
- G.** Ultra low leakage insulated damper supplied with actuator (DL533+3M).
- H.** Grille connection sleeve, fabricated from aluminium.
- I.** Internal ceiling egg crate grille (S5000+1C).



Available options. Please specify at the time of placing order.

## Sheffield University Education, Sheffield



### Project details

Sheffield University has undergone a series of refurbishments including a £5 million renovation project to transform the universities Student Union. The union employs over 900 people and offers a vast scope of facilities and activities, this re-development will refresh the building and help retain its reputation as being one of the best in the country.

GDL designed and supplied an energy efficient natural ventilation solution for the Student Union area that harnesses wind power to naturally cool the building.

### Project overview

GDL Air Systems supplied a natural ventilation solution for the renewed student union assembly area. Various roof mounted penthouse louvres located within a walk-way area were used to ventilate the space as opposed to a mechanical arrangement. We also supplied various ceiling diffusers and egg crate grilles within the union.

Harnessing natural wind power and temperature buoyancy to ventilate buildings significantly reduces energy consumption that would have been used to operate a more traditional mechanical arrangement.

During the day in the summer months in particular there is a build up of solar gain and human heat gain within all building types, natural ventilation penthouse turrets allow a fresh supply of air throughout the night to lower the internal temperature of the building structure for the next morning providing a fresh feel for occupants with 100% security as there are no open windows.

### Benefits of using GDL products to the project

- Natural cooling eliminates the need for mechanical air conditioning, which incurs virtually no energy costs.
- We incorporated a removable access panel at roof level enabling the engineers' quick entry to the internal mechanical equipment and controls.
- The penthouse louvres were also designed to fit perfectly with the roof walk-way environment for the students.

### GDL products used on this project:

Penthouse Louvre  
Ventilation Grilles  
Ceiling Diffusers  
Egg Crate Grilles





## Intelivent™ Roof Cowls

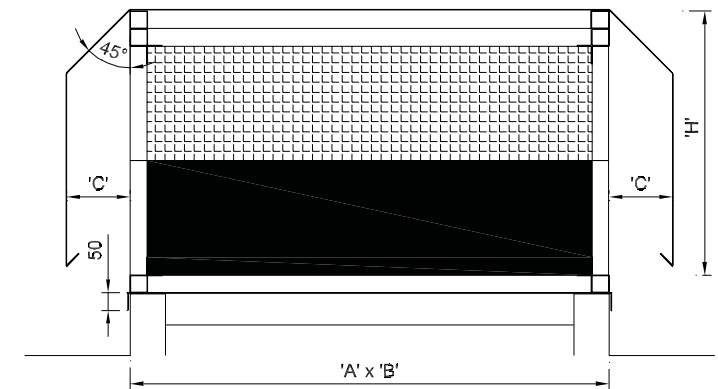
### Product Details

#### Roof Cowl

Roof cowls provide either low or high level ventilation in buildings and roof spaces preventing and eliminating the build up of condensation and stale air. Roof cowls can be manufactured to maximise aesthetic features of roofs by mounting low profile and discreet units hidden from view.

#### The Advantages

- Provides excellent weather protection ensuring low pressure drops.
- Works in harmony with ducted systems.
- Simple and effective design.
- Controlled airflow via volume control dampers connected to the cowl.





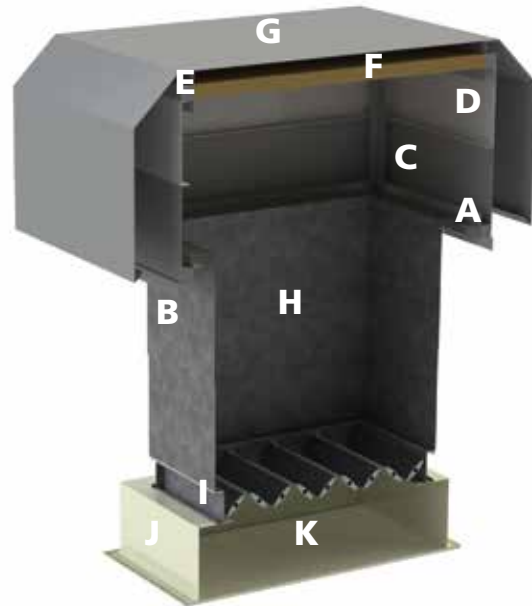
## Intelivent™ Roof Cowls

### Product Details

#### Description

For natural supply and extract of air, the roof terminals are also designed to offer a balance supply of fresh air whilst also having the ability to remove warm, stale air.

These units are ideally suited for sports halls, gymnasiums and assembly areas.

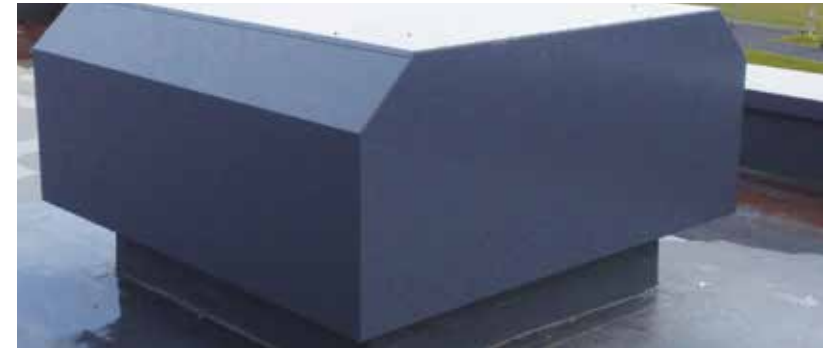


- A.** Frame – Extruded aluminium 40x40mm pentapost section.
- B.** Base – Extruded aluminium 50x50x4mm angle.
- C.** Blanked panel – Fabricated 2mm aluminium blanking panels.
- D.** Open area panel – Galvanised bird mesh/aluminium perforated panels/woven or welded mesh. Material type and construction dependant on free area requirements.
- E.** Roof channel – 50x50mm extruded aluminium channel.
- F.** Insulation – 50mm Kingspan insulation board.
- G.** Terminal roof – 2mm thick fabricated aluminium roof.
- H.** Galvanised drop duct.
- I.** Low leakage insulated damper.
- J.** Damper and grille housing sleeve.
- K.** Internal ceiling mounted grille.



**Available options. Please specify at the time of placing order.**

## Shirebrook Academy Education, Mansfield



### Project details

The academy had been designed and built to aesthetically blend with the surrounding environment being both respectful and considerate to the local community.

The design encompasses many environmentally friendly and sustainable methods of reducing the carbon footprint of the school including its own wind turbine. The turbine generates enough electricity to power the school and is suitably located in a windy area. Other sustainable products specified include our Intelivent wind driven natural ventilation products throughout the academy.

### Project overview

GDL worked alongside the selected M&E Company to design, supply and install a natural ventilation solution throughout the building to provide the necessary seasonal ventilation requirements whilst maintaining low energy consumption and operational costs. In this instance wireless CO<sup>2</sup> and temperature sensors were specified to control the products to maintain the correct summer and winter ventilation rates.

We supplied and installed our roof cowl turrets at the academy offering combined ventilation and increased weather protection. The roof cowls provide either low or high level ventilation in buildings and roof spaces preventing and eliminating the build up of condensation and stale air. Roof cowls can be manufactured to maximise aesthetic features of roofs by mounting low profile and discreet units hidden from view.

### Benefits of using GDL products to the project

- Penthouse turrets and roof cowls utilise wind power to generate costs savings.
- Our roof cowls provide excellent weather protection ensuring low pressure drops.
- Simple and effective roof cowl design.

### GDL products used on this project:

Intelivent Roof Cowls  
Penthouse Turrets  
Ventilation Grilles  
Full Controls Package  
Low Leakage Motorized Volume Control Dampers







## Intelivent™ Solarstore Product Details



### Key Features

- Photovoltaic solar cell.
- Power management module.
- DC carbon fibre battery.
- Dual DC reversible fans.

### Solarstore Turret

Harvested solar energy is used to assist the effective operation of a natural ventilation system, particularly during the summer when an increase in the ventilation rate is required. In this instance the photovoltaic cells are used to power the fan within the penthouse turrets themselves in order to increase the ventilation rate when required. The fan is able to run without 'mains' power for up to 12 hours without a charge.

### Solarstore Solution

Our solarstore solution allows increased ventilation in summer and at times of high occupancy, and also improves the effectiveness of night-time cooling or night-purge.

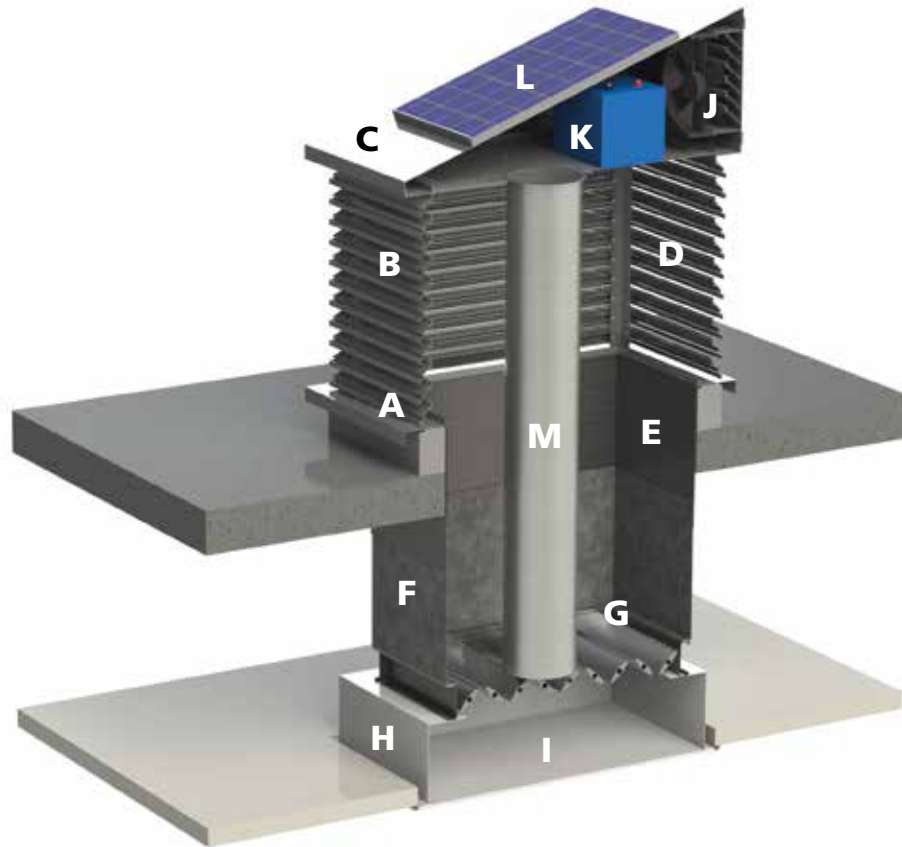
A solar photovoltaic cell is located on the roof of the penthouse turret itself, the power generated from the cell allows 24-hour supply or extract ventilation. This can work in harmony with our wall units or as a stand alone product using the down flow effect, whereby fresh air circulates and stale air is extracted via the penthouse turret.

### The Advantages

- The solarstore can increase the ventilation rate by over 75%.
- The innovative design permits the DC battery to run the fan system allowing 24-hour supply and extract ventilation.
- The unit is controlled by CO<sup>2</sup> and temperature sensors or manual override.
- To introduce 1m<sup>3</sup>/s during winter, the air temperature needs to be raised from 0°C to 20°C. This takes over 20kW, with the Solarstore this requirement is reduced to 7kW.
- The DC battery enables night purge allowing 24-hour ventilation.
- Energy free fans.

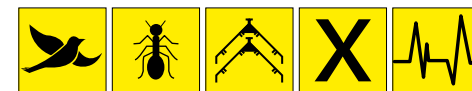


## Intelivent™ Solarstore Product Details



### Solarstore Turret

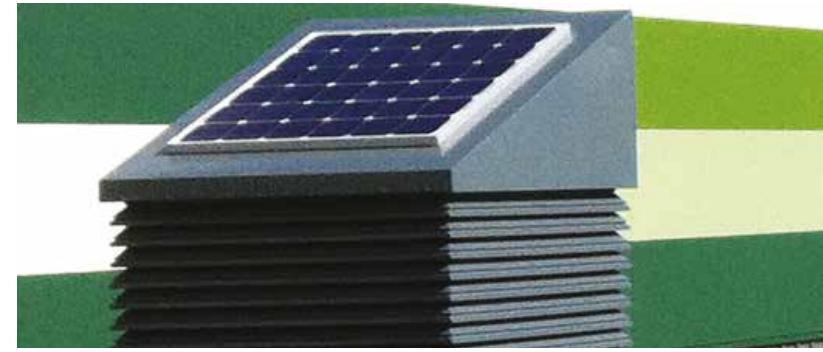
- A.** Turret skirt with 50mm turned down from extruded aluminium section.
- B.** High performance weather louvre.
- C.** Turret roof fabricated from 2.0mm aluminium roof. Supplied in sections where over sized.
- D.** Bird mesh fitted to rear of blades as standard. Optional extras available.
- E.** Galvanised drop duct from turret up stand.
- F.** Telescopic damper connection sleeve constructed from 16swg galvanised steel.
- G.** Ultra low leakage insulated damper supplied with actuator (DL533+3M).
- H.** Grille connection sleeve, fabricated from aluminium.
- I.** Internal ceiling egg crate grille (S5000+1C).
- J.** Supply/extract boost fan.
- K.** Re-chargeable battery.
- L.** Solar PV panel.
- M.** Boost duct.



Available options. Please specify at the time of placing order.

## Morrisons Bridgwater RDC

Retail, Somerset



### Project details

GDL were specified by the mechanical and electrical contractors to provide an energy efficient natural ventilation system suitable for the 767,500sqft distribution centre based in Somerset. Our Intelivent Solarstore Turrets and Wall Units were designed and installed at the site working in harmony together creating a stack effect.

The site will be used for food preparation, packing and storage serving Morrisons stores throughout the South West and South Wales. This prominent building featuring a cladding panelled façade encompasses various sustainable and energy efficient solutions to improve the performance of the building. These include the use of ammonia for refrigeration and the elimination of unnecessary heat losses and artificial lighting.

### Project overview

Solar power is commonly used to assist in the effective operation of a natural ventilation system, particularly during the summer at times of high occupancy when an increased ventilation rate is required. A solar photovoltaic cell is installed on the penthouse turret itself, powering the fans situated within the turret allowing 24-hour supply or extract ventilation. Night-time purge can be further enhanced via the battery assisted fans within the solar-powered penthouse turret.

In order to maintain a comfortable environment with the correct air temperature and velocity, temperature and CO<sup>2</sup> sensors maintain a controlled ventilation rate again significantly contributing to energy conservation.

A unique benefit of this particular system is the addition of ammonia sensors that have been built into the controls system. This is a requirement specific to this project; ammonia is used within the refrigeration system as part of the sustainable design. If there is a leakage the sensors detect this and the dampers operate accordingly.

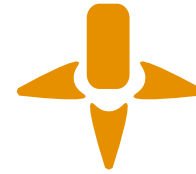
### Benefits of using GDL products to the project

- The solarstore turret allows increased ventilation in summer and at times of high occupancy, and also improves the effectiveness of night-time cooling.
- The addition of ammonia sensors was specific to this project at the client's request.

### GDL products used on this project:

Wall Units  
Full Controls Package  
Solarstore Penthouse Turrets





## Intelivent™ Solarpipe Product Details



### Natural Ventilation and Lighting Combined

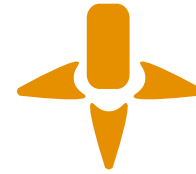
Our solarpipe turret is designed to deliver natural daylight throughout buildings in areas such as corridors, stairwells, offices and classrooms. The system is often specified within educational, healthcare and commercial buildings.

The purpose of this system is to diffuse natural light into the building eliminating the need for artificial lighting providing a sustainable and energy efficient alternative. Natural light enters the turret at roof level and is dispersed into the required areas.

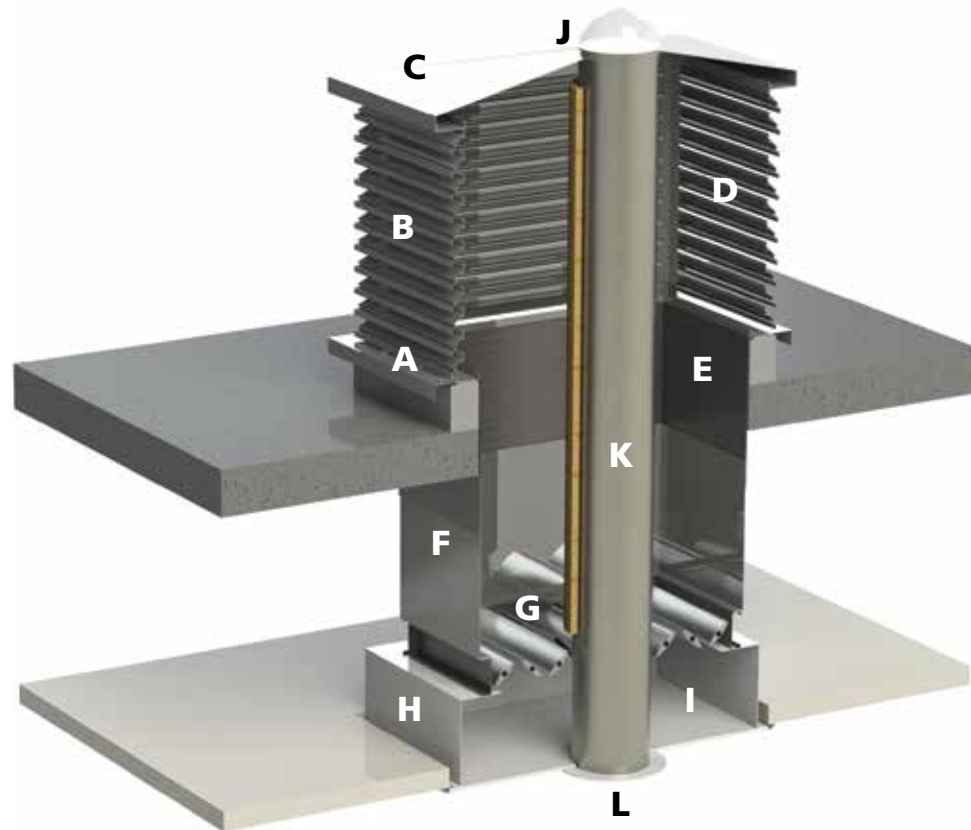
The solarpipe can be used in conjunction with the penthouse turret to provide both lighting and ventilation within the building. Our design team can size the turrets accordingly to meet the required light and ventilation needs for each specific space.

The natural day lighting performance is always related to the external sky conditions and light levels, the brighter it is outside, more light is received inside. The purpose of the system is to collect daylight at roof level and directed down through the building via reflective tubing where the light is diffused into the required areas.

The tube material is 99.7% reflective allowing maximum light transfer into the building. The solar tube is available in 250mm diameter to light up to 13sqm, 350mm diameter (22sqm) and 530mm (33sqm) diameter. Transition boxes are available to convert between sizes for drywalls and suspended ceilings.

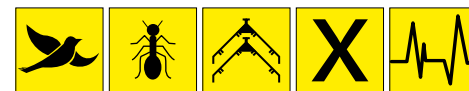


## Intelivent™ Solarpipe Product Details



### Solarpipe Turret

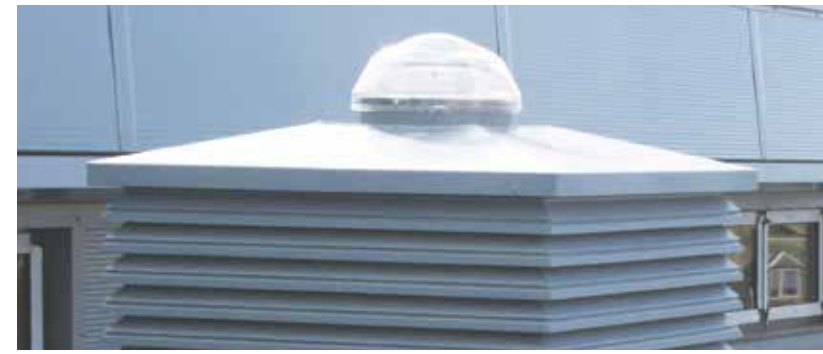
- A.** Turret skirt with 50mm turned down from extruded aluminium section.
- B.** High performance weather louvre.
- C.** Roof fabricated from 2.0mm aluminium. Supplied in sections where over sized.
- D.** Bird mesh fitted to rear of blades as standard. Optional extras available.
- E.** Telescopic damper connection sleeve constructed from 16swg galvanised steel.
- F.** Galvanised drop duct from Turret up stand.
- G.** Ultra low leakage insulated damper supplied with actuator (DL533+3M).
- H.** Grille connection sleeve, fabricated from aluminium.
- I.** Internal ceiling egg crate grille (S5000+1C).
- J.** Solar dome.
- K.** Solar pipe, comes lagged with insulation.
- L.** Light diffuser fitted to grille.



Available options. Please specify at the time of placing order.

## Auchinleck New Community and Day Care Centre

Education, Scotland



### Project details

The recently completed Auchinleck New Community and Day Care Centre is a £4.9 million new build community centre in Auchinleck, East Ayrshire, Scotland. The new centre has replaced the former much loved but fatigued building.

This new state of the art facility completed in May this year includes a learning centre, library, day care centre, general training, interview and community rooms as well as dining and kitchen facilities for the local community.

The new centre is one of a number of projects that have taken place in the local area to provide the very best facilities for all age groups to enjoy.

### Project overview

GDL supplied and installed the most suitable product types within our 'Intelivent Natural Ventilation Range' that utilise both wind and solar power and also allow natural day-lighting throughout the building. This is a sustainable and cost effective method of providing energy efficient ventilation and lighting throughout the building.

The solarpipe is used in conjunction with the penthouse turrets to provide both lighting and controlled ventilation within the community centre. Our design team can size the turrets accordingly to meet the required light and ventilation needs for each specific space.

The purpose of this system is to diffuse natural light into the building eliminating the need for artificial lighting providing a sustainable alternative to a wired costly lighting arrangement.

### Benefits of using GDL products to the project

- Bespoke ventilation system created by our in-house design team.
- Wind and solar power utilised to generate cost savings providing low energy consumption, low operating and maintenance costs.
- Natural daylight solution installed to provide a sustainable and energy efficient alternative to artificial wired lighting.

### GDL products used on this project:

Solarstore  
Solarpipe  
Standard Penthouse Turrets







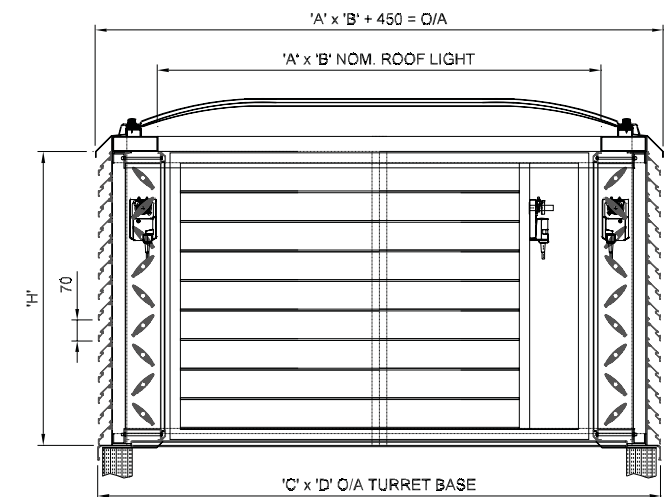
## Intelivent™ Light Vent

### Product Details

#### Natural Ventilation and Lighting Combined

Our light vent also offers combined natural ventilation and lighting and is an alternative option to our solarpipe.

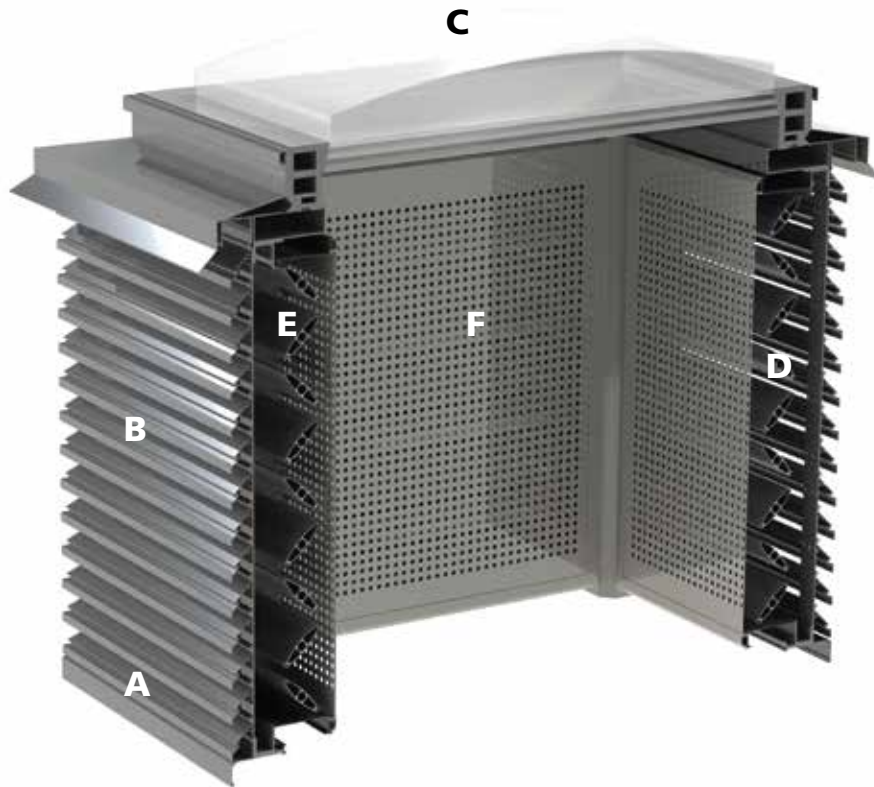
The light vent allows natural daylight to enter the building from roof level via a polycarbonate cover that is similar in appearance to a sky light and is suitable in almost any application. This product type again eliminates the need for costly artificial lighting throughout buildings, corridors and stairwells.





## Intelivent™ Light Vent

### Product Details



#### Light Vent Turret

- A.** Turret skirt with 50mm turned down flange from extruded aluminium section.
- B.** High performance weather louvre.
- C.** Double/single glazed roof light complete with polycarbonate weather dome.
- D.** Bird mesh fitted to rear of blades as standard. Optional extras available.
- E.** Ultra low leakage insulated damper mounted directly behind louvres supplied with actuator (DL533+3M).
- F.** Internal perforated grille mounted behind dampers (S6000+1C). Various perforations and patterns available for aesthetic requirements.



Available options. Please specify at the time of placing order.

## John Leggott College Education, Scunthorpe



### Project details

John Leggott College in Scunthorpe has recently undergone a £5 million refurbishment ready for completion for the new school term. The money, funded by a dedicated building grant from the Department for Education, has been spent on refurbishment over a three-year period at the Scunthorpe college. The grant that funded these improvements is shared across 96 colleges nationwide. The college now benefits from an improved library and canteen as well as enhanced sporting facilities.

GDL worked alongside our clients to design and supply a natural ventilation solution throughout the building that includes our Intelivent Light Vent Turret and Wall Units throughout.

### Project overview

GDL supplied and installed a natural ventilation and daylight solution throughout the college buildings offering an energy efficient and sustainable alternative to a wired mechanical arrangement.

Our light vent was specified as the most suitable product type offering combined natural ventilation and lighting. Our solarpipe solution within the Intelivent range is another option available if combined lighting and ventilation is required.

The light vent allows natural daylight to enter the building from roof level via a polycarbonate cover that is similar in appearance to a sky light and is suitable in almost any application. This product type again eliminates the need for costly artificial lighting throughout buildings, corridors and stairwells.

### Benefits of using GDL products to the project

- Bespoke ventilation system created by our in house design team.
- Natural daylight solution installed to provide a sustainable and energy efficient alternative to artificial wired lighting.
- Simple and effective light vent design.

### GDL products used on this project:

Intelivent Light Vents  
Penthouse Turrets and Wall Units  
High Performance Weather Louvres  
Ventilation Grilles  
Glazed Louvres  
Low Leakage Motorised VCD's





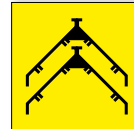
## Optional Extras



A. **Bird Mesh** – Fitted to units as standard.



B. **Insect Mesh** – Optional. Reduces free area by 15%.



C. **Double Bank** – Optional.

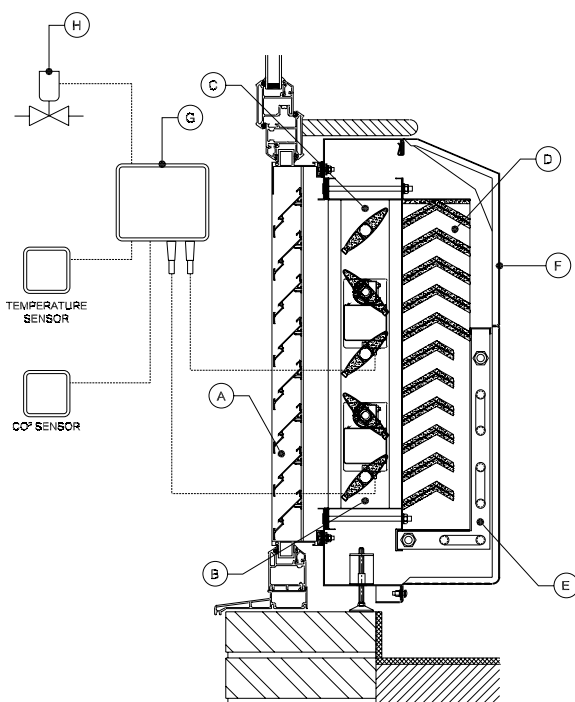


D. **Internal Splitter** – Optional. For supply and extract. Roof turrets only.



E. **Acoustic Insulation** – Optional. Reduce noise & vibration levels.

For NBS Downloads please see our website for further details



- A. Weather louvre.
- B. Tight shut off insulated damper.
- C. Tight shut off insulated damper.
- D. Acoustic baffle.
- E. Low pressure hot water heating coil.
- F. Fascia grille.
- G. Control panel.
- H. LPHW control valve.

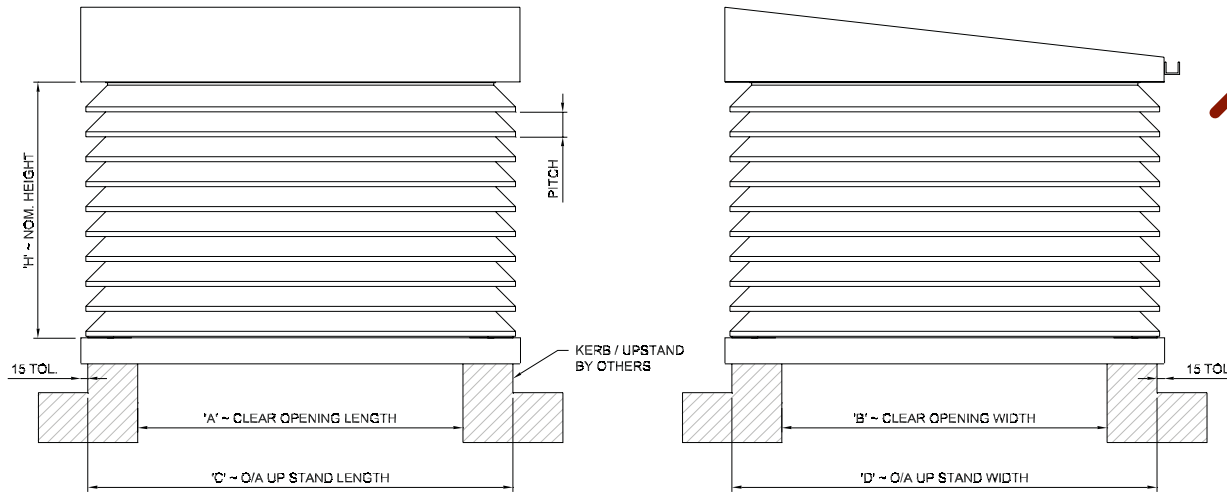


## Wall Unit

Large 1m <sup>2</sup> and above	Entry velocity of 0.45m/sec
Air flow ventilation rate	0.15m <sup>3</sup> /s 2.2Pa
Air flow cooling rate	0.15m <sup>3</sup> /s 4.2Pa
LPHW heating coil	4.5kW
82°C - 72°C Water flow	0.11 l/sec 10.3kPa
Medium 0.9m <sup>2</sup>	
Air flow ventilation rate	0.1m <sup>3</sup> /s 2.2Pa
Air flow cooling rate	0.19m <sup>3</sup> /s 4.2Pa
LPHW heating coil	3.0kW
82°C - 72°C Water flow	0.07 l/sec 6.5kPa
Small 0.6m <sup>2</sup>	
Air flow ventilation rate	0.07m <sup>3</sup> /s 2.2Pa
Air flow cooling rate	0.132m <sup>3</sup> /s 4.2Pa
LPHW heating coil	2.5kW
82°C - 72°C Water flow	0.06 l/sec 4.1kPa

Acoustic tests have been carried out on a 1650 x 600 unit by the AIRO Labs in Hertfordshire.

The full copy of this independent report can be provided upon request. The addition of an acoustic baffle shown on this page will reduce noise levels by 8db when the unit is fully open and 18db when fully closed.



**Roof Turret**

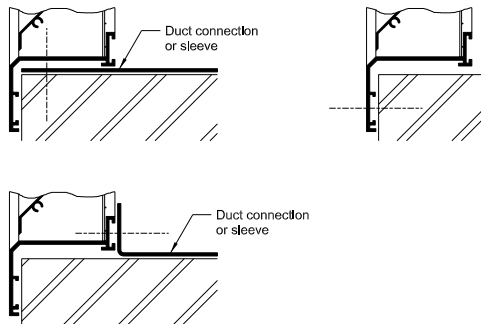
<b>Air flow performance</b>	The air flow volume is dependant on the external wind speed.
<b>External wind speed m/s</b> 2.0 4.0	Max air volume m <sup>3</sup> /sec/m <sup>2</sup> of louvre: 0.2 0.6
<b>Determination of air volume</b>	This is determined by both the internal air temperature and CO <sup>2</sup> levels. The intelligent controls and sensing devices determine the modulation and control of dampers.
<b>Options</b>	Thermally lined internal splitter plates. Guards (insect screen) removable. Controls package. User interfaces.





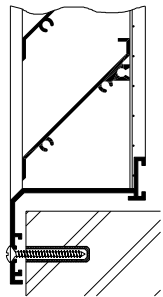
## Weather Louvre Frame Fixing Options

0 None



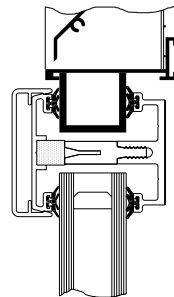
Fixings by installers via positions indicated in situ. From the face of the louvre it is possible to fix between the louvre blades via the side frames.

1 Flange Holes



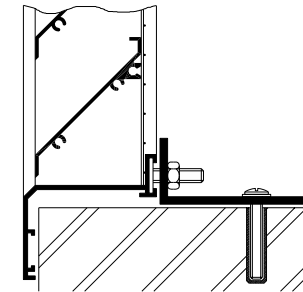
Pre-punched or drilled flange holes to take No.8 self tapping screws.

G Glazing Bar



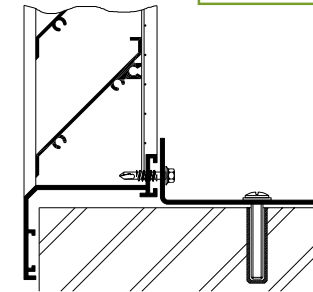
25mm or 28mm glazing bar welded around the perimeter of louvre frame. Suitable for double glazing frame applications.

2 Rear Fixing Lugs  
C/W Tee Bolts



Fixing style 2 is intended for the larger sized louvre panels. Specially formed tee bolts traverse within the track at the rear of the frame.

4 Rear Fixing Lugs



Fixing style 4 is ideal for small to medium sized louvre panels. Brackets are of 1.6mm galvanised steel folded but undrilled.



## Low Leakage Insulated Damper

For the modulating control of our intelivent wall mounted and ceiling mounted units, this damper gives a low air leakage rate of below  $5\text{m}^3/\text{hr}/\text{m}^2$  @50PA and an insulated value of  $1.6\text{ watts}/\text{m}^2$ . The linkage is enclosed and positioned outside the air stream.

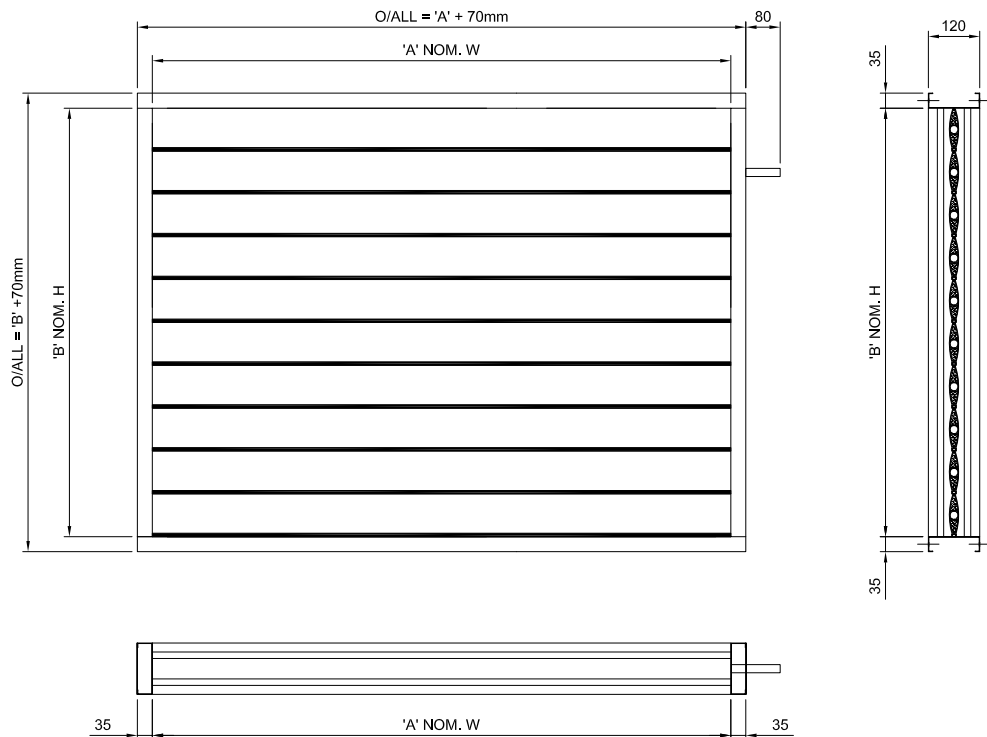
### Construction

The casing is available fully flanged and is manufactured from 1.2mm galvanised mild steel. Stainless steel casing is optional in grades 304, 316 or 430. The blades are extruded aluminium airfoil section and insulated with polystyrene sections. This model is complete with blade and side seal gasket.

Note – uPVC plastic damper with a U Value of 1 is available, ask our technical department for more details.

### Size and Weight

From 100 x 100 to 1450 x 1450 in one module. Multiple assemblies can be supplied.



### Eggcrate Core Grilles

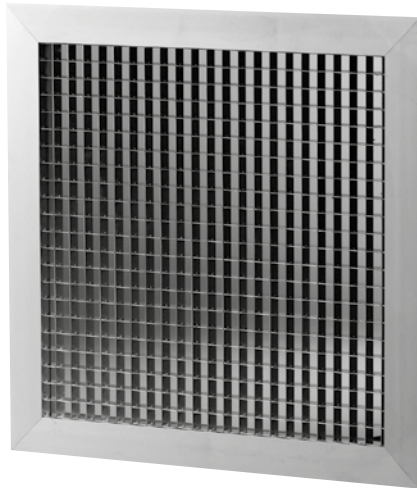
For extract or air transfer applications, eggcrate core grilles have the highest possible free area of approximately 85%, thus keeping the grille sizes to a minimum. When viewed from any off centre position this grille has a no see through appearance.

### Construction

The frame is manufactured from 1.6mm thick extruded aluminium alloy section and the aluminium core cell size is 12.5mmx12.5mmx12.5mm.

### Size and Weight

From 100x100 to 1200x1200 in 25mm increments.  
Grille only 7.8kg/m<sup>2</sup> Free area approximately 85%.



## Grille Options

### Perforated Grilles

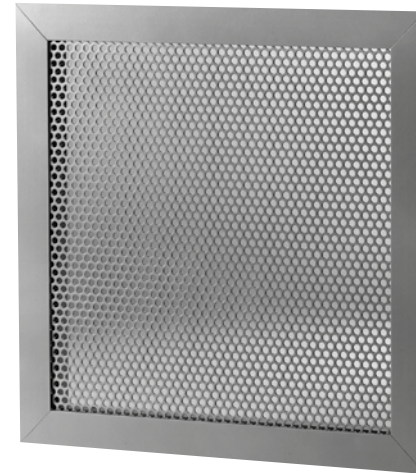
For return air, having a perforated panel core which provides an attractive yet practical finish. Suitable for wall, duct and ceiling mounting.

### Construction

The frame is manufactured from 1.6mm thick extruded aluminium section with a perforated sheet core. Hairline mitres mechanically held. Optional OBD is of extruded aluminium.

### Size and Weight

From 100x100 to 1200x1200 in 25mm increments.  
Face mullions are incorporated when width exceeds 1050mm.  
Grille only 8.5kg/m<sup>2</sup>, Grille + OBD 16.5kg/m<sup>2</sup>.  
Free area approximately 48%.



### Multi-Cone Ceiling Diffusers

For supply or extract air, multi-cone design with quick release core and 2 position setting for heating and cooling. Available in a range of different core styles and sizes giving total flexibility for installation in modern ceiling tile applications. Flanged for surface mounting or lay-in ceiling grid.

### Construction

From extruded aluminium sections, outer frame and inner cores 1.6mm thick. Hairline mitres mechanically held. Optional OBD is of extruded aluminium.

### Size and Weight

From 150x150 neck size to 1500x1500 overall in 25mm increments.  
Diffuser only 9.0kg/m<sup>2</sup>. Diffuser and OBD 14.0kg/m<sup>2</sup>.  
Free area 46%.



## Grille Options

### Linear Grilles

For supply or extract air, having a single set of fixed blades, available with various blade styles and blade pitches. Quick release core provides easy access to rear and concealed fixing facility. Suitable for wall, cill or ceiling mounting.

### Construction

From extruded aluminium sections, frame 1.6mm thick, blades 3.3mm tapering to minimum 1.3mm thick. Blade centres set at 12.5mm as standard. 6mm, 10mm, 15mm and 20mm centres also available. Hairline mitres mechanically held. Optional OBD is of extruded aluminium.

### Size and Weight

Height from 75mm to 600mm in 25mm increments.  
Widths or lengths from 100mm to 3000mm in a single unit.  
Longer lengths can be supplied as multiple units.  
Grille only 10.5kg/m<sup>2</sup>, Grille on OBD 18.5kg/m<sup>2</sup>.  
Free area approximately 77% (12.5mm blade pitch).





### Smart Controls (All optional)

The controls options available for the Intelivent application covers all aspects of intelligence, from standalone simple indication and override to fully integrated open protocol advanced control platforms.

The system can be supplied with any of the global standard open protocol connectivity for integration into your desired enterprise or BMS systems.

### Cloud Based Control

A unique offering in the natural ventilation market is the ability to link your system directly to the cloud, this provides connectivity, control & management from any smart device from anywhere in the world. You can tap into your system by using your smart phone tablet or even your PC and manage the local conditions via a simple dashboard application that is running on the cloud or even hosted within your own service.

### Integration Solutions

The system will be ready to integrate on arrival and when you request your interface choice the platform will provide

a simple plug and play solution for communicating over the desired protocol, this allows the connectivity into any lair of the enterprise. Supported protocols are in line with the global standards that all today's major BMS and controls manufacturers support.

- Echelon.
- BACnet.
- Modbus.
- IP.
- XML.
- KNX.
- RS232.
- RS485.

Along with several other protocol options.

### Stand Alone Solutions

The system offers various stand-alone applications from simple on off switching through to traffic light displays with set point adjustments and override facilities. Each service can be offered as a bespoke engineered solution for your requirement or an off the shelf application.

### No Wires No Batteries

The system has wireless technology embedded and this can support a wide range of wireless solutions and peripheral devices. The EnOcean self-powered wireless technology offers the ability to control the natural ventilation from self-powered sensing and switching devices – whilst the Zigbee powered wireless technology delivers Mesh wireless networking covering the leading wireless standards on the market place today.

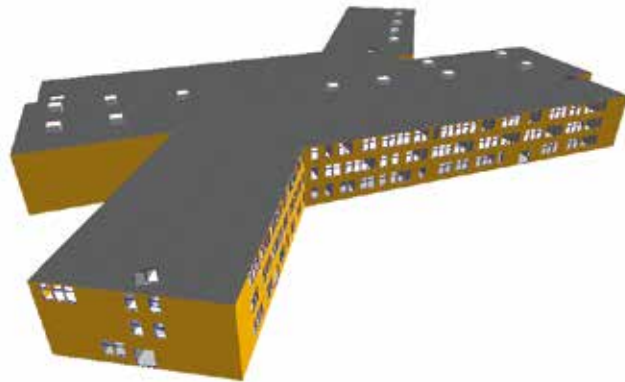
### Window Ventilation

We can also provide automated window control with the smart actuators and these can be managed by any of the platforms described above or driven directly from the wireless battery less switches – The window control can be integrated into the natural ventilation strategy and also monitored via the solar powered window contacts.

*NB. Smart buildings are our preferred controls supplier/partner. Although other options can be used at the clients request.*



## Thermal and CFD Modelling



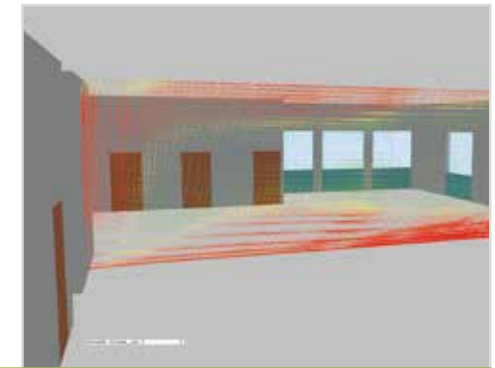
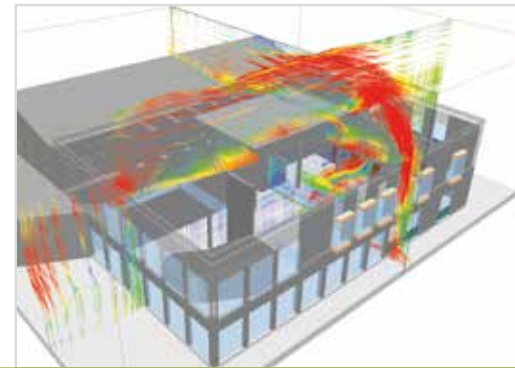
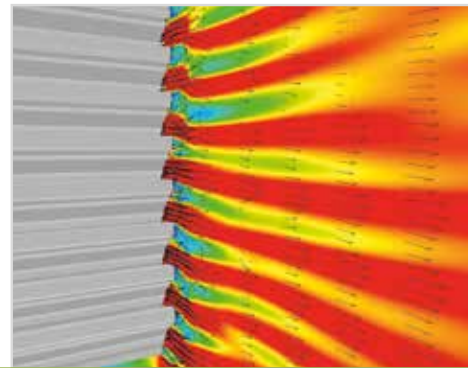
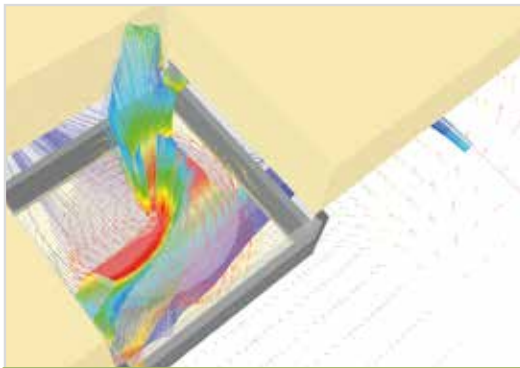
**A FLAIR for Simulation.**

### Thermal Modelling

GDL have acquired in-house thermal and air flow modelling software to simulate overheating and ventilation for the construction industry. Our designers and engineers can use 3D modelling techniques to model buildings for simulating solar heat gains using EDSL TAS. Thermal modelling has become an integral part of designing systems to ensure overheating and over cooling of buildings for the future is kept to a minimum.

### CHAM - Concentration Heat and Momentum Limited

CHAM provides HVAC designers with software (FLAIR) and consultancy services to simulate air flows together with fire & smoke spread in the built environment. FLAIR enables users to visualise, evaluate and refine air-flow patterns on a micro - or macro scale within a room, throughout a building, around a building complex, within tunnels or in any other structure of this nature. FLAIR enables users to check on environmental, or ventilation flows before embarking on costly construction.





## Installations and Maintenance



GDL Air Systems Ltd offer a full professional on-site installation service for all of our product range.

Full turnkey packages can be offered, from manufacture, deliver and install to annual or six monthly maintenance contracts. Our experienced and highly trained site installation team are trained and experienced in the installation of all of our product range.

**All site operatives are fully trained in the following:**

- Working at height.
- Manual handling.
- Use of harnesses.
- First aid.
- IPAF.
- PASMA.
- CSCS.
- Site supervisor SSSTS scheme.

All operations are carried out in accordance with approved site risk assessments and method statements.

**GDL Air Systems Ltd has the following accreditations**

- CHAS.
- Construction Line.
- ISO 9001 Quality Assurance ISO14001 Environmental Assurance.

GDL Air Systems Ltd is fully insured to carry out the installation of all its product range.

# for air that flows naturally

natural | sustainable | efficient | healthy | eco friendly



[grille.co.uk](http://grille.co.uk)

## HEAD OFFICE

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T. 01457 861 538 | F. 01457 866 010 | E. [sales@grille.co.uk](mailto:sales@grille.co.uk)

\*Part of a controlled natural ventilation unit. GDL is a manufacturer of air distribution systems. Intelivent and Intelishade only refers to the control packages available on our natural ventilation and solar shading systems within our renewable energy range. The systems can be purchased from us with or without the controls package.

