



■ **JET Slim-Line**



## JET FANS type JET FANS

SIG Air Handling has the widest range of car park fans available in today's market: from the largest induction thrust fan; through to compact, lightweight Jet thrust fan models to meet any installed requirement. That means we can deliver all the air movement functions, capacity, performance and fire safety criteria that any car park requires – whatever its size and purpose.

Ventilation of covered car parks is usually recommended in order to limit concentration of carbon monoxide and to remove smoke and heat in the event of fire. Car park can be designed for one or more of 3 purposes:

- To assist fire-fighters to clear smoke from a car park during and after a fire.
- To provide clear smoke-free access for fire-fighters to a point close to the set of the fire.
- To protect means of escape from car park.

Although the Air Trade Centre Thrust Fan System works on surprisingly simple principles, highly trained engineers, backed up with the latest high quality Computational Fluid Dynamic (CFD) software, gain high system performance through skilled design.

The typical system includes the jet fans and main exhaust air fans, eventually supply air fans, should the openings in the building (entrance, ramps etc.) not be sufficiently sized. In addition, a control system with carbon monoxide detectors and/or heat/smoke detectors is required to operate the system effectively. On detecting a fire emergency signal, the Thrust Fan System is automatically switched from day-to-day mode/vent into fire mode. Jet Thrust Fan units and main extract fans are run to full design speed - reaching full speed and maximum thrust in just a matter of seconds.

### Brand

- Fläkt Woods

### Application

The design of car park ventilation systems with Jet fans offers the following benefits:

- Elimination of expensive, bulky and complex duct systems within the car park
- When used in conjunction with CO sensors further energy savings can be obtained by selectively operating fans in polluted areas
- Improved air quality can be achieved by more effectively mixing the air
- Greater flexibility in installation and operation avoids the problem of stagnant areas.
- Effective smoke control by limiting the spread of smoke and directing the smoke flow.
- Less ductwork means a safer, lighter environment with better security due to increased visibility.

- Reduction of installation and overall construction build costs over traditional ducted systems.

### Design stages:

- Define clearly the parking area, dimensions and volume.
- Define the fresh air and exhaust air localization.
- Calculate the air volume to be removed in case of fire.
- Define the number of Jet fans in the parking.
- Define the number of CO sensors.
- Define the number of Warning Lights.
- Define the number of Acoustic Signal.

### CFD - Computational Fluid Dynamics

CFD software allows the creation of visualization planes, which intersect points of interest in the model, where contours and vectors of any stored variable, such as air speed, pressure, velocity etc, can be displayed.

### Process Stages:

- A computer model of the layout of the car park is created. 3-D plots are sent to the customer for approval.
- Once approved, the design layout of the car park and model geometry will be frozen, and detailed analysis undertaken.
- The model is initially run with only the main fans operating. This identifies the main bulk airflow paths from the supply to the extract points and any areas of re-circulation within the car park.
- Thrust Fans are added to the model and positioned to distribute the airflow to all of the areas of the car park, ensuring removal of any stagnant areas of air.
- A detailed report of the results is produced for each project with appropriate air speed plots, velocity profiles and particle animations.