

Step 3 - Design Example

For the purpose of estimating costs, the steps below may be bypassed. Allow 5N of thrust per 100m² of car park floor area to approximate the number of fans required.

Fans should be placed in the laneways with the air blowing along them. This is to avoid obstructions such as parked cars and also ensure that the throw pattern of the selected fan is long enough to reach the next JetVent fan.

JetVent Design Parameters;

- Based on 5N per 100m² floor area, minimum total fan thrust = car park floor area x 5N/100m²
= 1920m² x 5N/100m²
= 96N
- Minimum thrust criteria can be achieved with 4 x JIU-CPCEC-SD fans on preset speed (operating thrust 28.4N), total fan thrust = 28.4N x 4 = 113.6N.
- Fans are spaced within the 30m spacing recommendation for thrust levels.
- Final fan to wall spacing under 40m maximum spacing guide lines for fan thrust. This is because the exhaust point is an area of low pressure, making it likely to enhance the fan throw distance.

ComLink Design Parameters

Aviator controls should be placed in the Mechanical Services Switchboard enclosure. The RS485 ComLink line must start at the controller and then daisy chain to all the JetVent Fans and Drives. The last connection must have an End-of-Line resistor. If the line is greater than 1,000m or includes more than 32 connected devices, then a communications repeater must be added to extend the line. A repeater can also be used where the ComLink line branches off, such as at the beginning of each level in a multi-story car park.

Fantech can provide support for electrical cabling mark-up designs, to help ensure the most efficient ComLink strategy is used.

Placement of CO sensors:

Because the guidelines for positioning CO sensors in AS1668.2:2012 is based on a ducted system, we propose that the following guidelines be used as a starting point for their placement in a jet fan system.

- No part of the enclosure shall be greater than 25 metres from a sampling point.
(A 50 metre diameter circle around a CO sensor can show coverage areas).
- Additional detectors shall be installed in areas where people may congregate within the car park and are not within separately ventilated areas.
- The most practical mounting position for a CO sensor within a car park is the support columns.
- CO sensors will be more effective if placed in areas where CO levels are likely to be higher. Eg. Placing a CO sensor in front of a fresh air intake is not likely to be effective.

If jet fans are placed in each laneway of a car park and the recommended preset speed jet fan spacings are followed, the above guidelines can be achieved by using one CO sensor per jet fan and providing additional CO sensors at congregation points. Therefore, for this car park we would suggest installing 5 (4 + 1) CO sensors for good coverage.

