

JAU /JCC/JVC Series Jet Fans - for car park ventilation

INTRODUCTION

Pacific HVAC Engineering is able to offer a complete solution in car park ventilation at a competitive price with in house developed EC jet impulse fans along with AC jet impulse fans.

Car Park Ventilation Principles

Jet fan systems are active systems offering a cost effective solution to ventilate and extract smoke and pollutants, for example Carbon Monoxide (CO), from car parks. This ductless ventilation system provides either normal ventilation or smoke extract in case of emergencies, or a combination of both.

An efficient system requires good planning, starting with the physical dimensions of the car park, considering the pattern of utilisation as well as peak loads. Ventilation rates are mostly based on an air exchange rate, or on a rate multiplied with the number of parking spaces.

A Jet Fan system offers the "ventilation on demand" principle for car parks, depending on measurements by CO sensors. Jet Fans can be individually controlled, or grouped together in fire zones. In fire mode, after a pre-set standstill escape period, the jet fans will run at full speed to quickly and effectively clear smoke.

Benefits

The space saving design, compared to a standard duct based ventilation systems, offers a variety of benefits:

- It is possible to ventilate or extract smoke in particular sections of the car park. CO (carbon monoxide) and smoke sensors ensure that only fans in polluted areas are activated and the fans are switched into smoke extract mode immediately if a fire starts.
- No expensive, bulky and complex duct systems, making it an ideal solution for renovations.
- Car park design is more attractive.
- Improved air quality in car parks compared to conventional ducted systems.
- Optimum safety is provided in case of a fire in the car park. Rapid smoke extraction, smoke cooling, limited smoke spread, i.e. better smoke control.
- Jet Fan systems for smoke extract prevent costly consequential damages in case of a fire: the ceilings are subjected to less heat, and smoke is quickly removed from the building.
- More flexible in re-positioning when the parking area is redesigned.
- Energy saving in exhaust air fans due to reduced system resistance (no duct systems).
- Reduced installation and running costs.

BCA And The Requirements of AS/NZS1668.2

The use of an appropriately designed Jet Fan system is deemed to meet the requirements of the Building Code of Australia (BCA) and comply with AS/NZS1668.2 provided there is evidence to support the efficacy of the installed system. Evidence of the system function and compliance is produced in the form of computer generated models (Computational Fluid Dynamics Analysis) simulating air flows within the structure.

JAU /JCC/JVC Series Jet Fans - for car park ventilation

INTRODUCTION

BCA And The Requirements of AS/NZS1668.2 (Continued)

In order to perform a CFD analysis, it is essential to have a 3-D model of the building site, giving all openings, slab height, surface of the ceiling (flat or with drop beams, dimensioning of the drop beams, etc.) and all other details required to carry out a simulation.

A CFD analysis is used to simulate the airflows, to ensure that the distribution of the air is sufficient to effectively ventilate the car park under normal conditions as well as in emergency situations. The analysis references all aspects of the design of the structure and the emissions concentrations calculated for the intended usage loads of the building. The CFD report illustrates the number and placement of Jet Fans taking into account the building design and structural obstacles.

Pacific HVAC Engineering is able to facilitate the preparation of CFD Reports on a project by project basis. Costing is quoted taking into account the scale as well as complexity of the project.

Control Systems

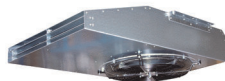
A control system is required, which is tailored to handle the requirements of the specific project for ventilating and smoke extraction. An effective control system saves energy by reducing the ventilation rate with the help of CO sensors, depending on the car park usage, increasing ventilation rate only in peak hours and operating the jet fans only selectively, according to demand. When used for smoke extract, the system has to work on a fire detection system (heat or smoke detection). In car parks with different levels, the system has to run the jet fans full speed on the fire level, and simultaneously switch off the fans in all other levels. The main exhaust air fans are switched to full speed. The control equipment regulates the main supply and/or exhaust fans together with the jet fans, both depending on the signals coming from the sensors.

Note: Pacific HVAC Engineering work with control experts to facilitate system designs specific to your project needs.



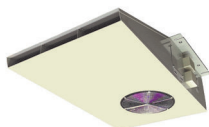
JAU - Series

Axial Impulse Fans.



JCC - Series

Low Profile Centrifugal Impulse Fans.



JVC25 EC Impulse Fans.

JAU Axial hi temp series jet fans

(Rating 300°C / 120 minutes)



Description

JAU Series Jet Fans are axial impeller types with smoke spill certification to AS/NZS4429:1999.

Range

Three impeller sizes : 315mm, 350mm, 400 mm.

Motors are 2/4 pole double polarity, tapped winding.

Speed control for two speed motors is via switching or VSD (high speed only). Single speed motors can be controlled with VSD's

Features

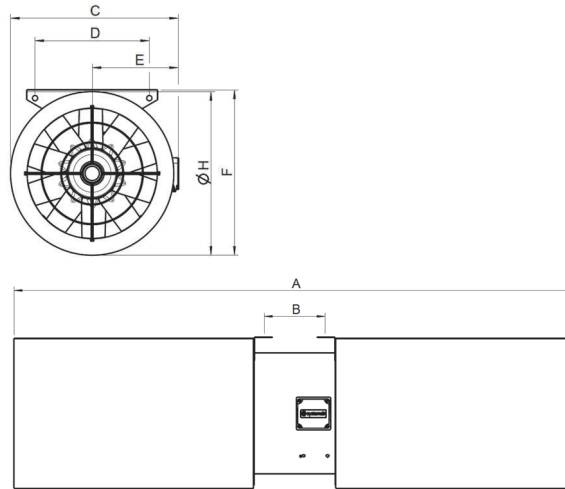
Ventilation and smoke extraction in case of fire F300 (300 °C/120 min.)

Symmetrical blades; 100% reversible with low sound level

IP55, insulation class H motors (smoke extract)

Casing manufactured from galvanized steel

Certified AS/NZS4429:1999.



Dimensions

| Size | HØ | A | B | C | D | E | F |
|------|-----|------|-----|-----|-----|-----|-----|
| 315 | 420 | 1535 | 211 | 433 | 265 | 223 | 425 |
| 355 | 460 | 1695 | 211 | 473 | 305 | 243 | 465 |
| 400 | 500 | 1875 | 211 | 516 | 350 | 266 | 505 |

Performance

| Fan Model | Thrust N | Amps | RPM | kW | kg | Temp |
|-----------|----------|----------|-----------|----------|----|----------|
| JAU31-H | 22/6 | 1.95/0.4 | 2880/1440 | 0.8/0.16 | 60 | 300°C/2h |
| JAU35-H | 37/9 | 3.6/0.8 | 2880/1440 | 1.5/0.2 | 66 | 300°C/2h |
| JAU40-H | 55/14 | 3.6/0.8 | 2880/1440 | 1.5/0.2 | 68 | 300°C/2h |

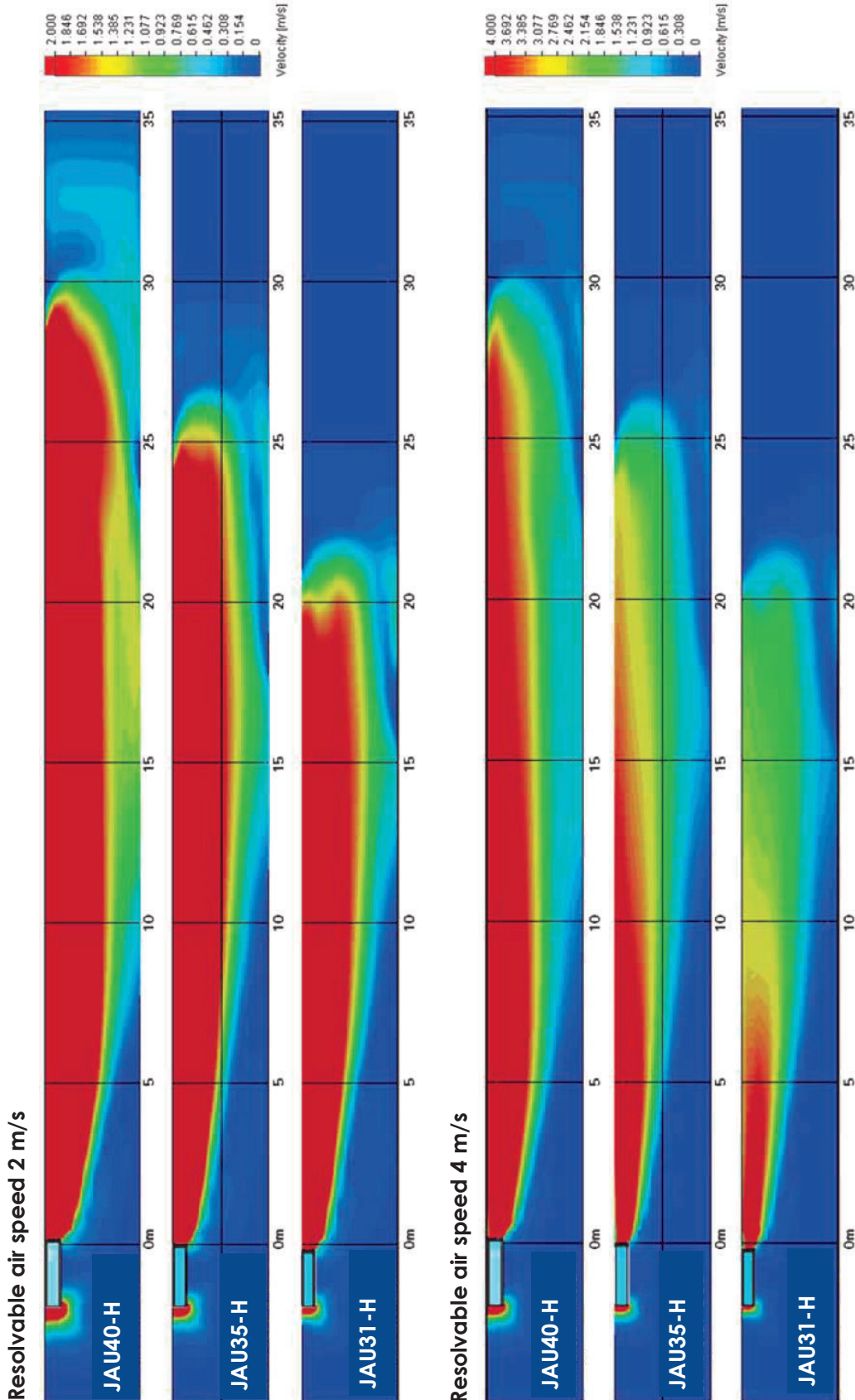
Sound

| Fan Model | dB(A) @ 3m | Sound Power Level dB | | | | | | | |
|-----------|------------|----------------------|-----|-----|-----|----|----|----|----|
| | | 63 | 125 | 250 | 500 | 1K | 2K | 4K | 8K |
| JAU31-H | 57 | 78 | 71 | 85 | 70 | 69 | 64 | 64 | 58 |
| JAU35-H | 58 | 76 | 79 | 86 | 72 | 68 | 66 | 65 | 61 |
| JAU40-H | 59 | 81 | 81 | 86 | 75 | 69 | 69 | 65 | 63 |

JAU Axial hi temp series jet fans
(Rating 300°C / 120 minutes)

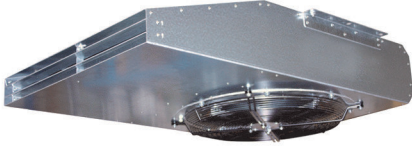


Discharge Patterns



JCC - Centrifugal Hi Temp Series jet fans

(Rating 300°C / 120 minutes)



Description

JCC Series Jet Fans are centrifugal impeller types with smoke spill certification to AS/NZS4429:1999. The JC models are particularly useful where head clearances are restricted.

Range

Two models - 52N and 85N capacities.

JCC25-H (52/14 Newton)

JCC31-H (85/22 Newton)

Features

Ventilation and smoke extraction in case of fire F300 (300 °C/120 min.)

IP55, insulation class H motors (smoke extract)

Certified AS/NZS4429:1999.

Motors are two speed 4/8 pole asynchronous three phase types.

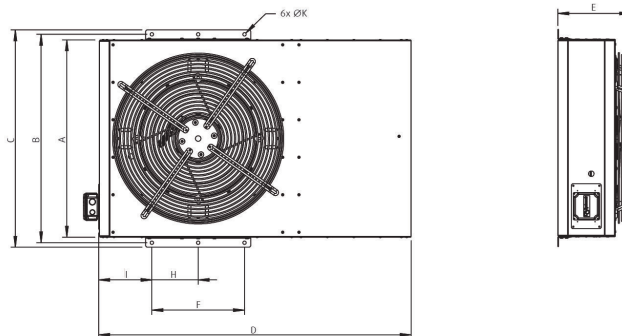
Voltage / Frequency; 4015V/50 Hz.

Smoke Spill Rating

Smoke exhaust operation 300°C/120' (F300) certified AS/NZS4429:1999.

Construction

Cases are formed from corrosion resistant galvanised sheet. Impellers are high efficiency backward curved types fabricated from galvanised steel sheet balanced according to ISO1940.



Dimensions

| Model | A | B | C | D | E | F | H | I | 6xØK |
|---------|------|------|------|------|-----|-----|-----|-----|------|
| JCC25-H | 790 | 834 | 870 | 1248 | 285 | 370 | 185 | 210 | 13.5 |
| JCC31-H | 1140 | 1184 | 1220 | 1900 | 340 | 420 | 210 | 430 | 13.5 |

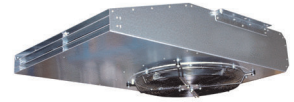
Performance

| Model | Thrust N | Amps | RPM | kW | kg | Temp |
|---------|----------|-----------|------------|------------|-----|----------|
| JCC25-H | 52 / 14 | 3.3/ 1.2 | 1430 / 715 | 1.3 / 0.22 | 78 | 300°C/2h |
| JCC31-H | 85 / 22 | 6.7 / 2.2 | 1425 / 715 | 3.7 / 0.7 | 164 | 300°C/2h |

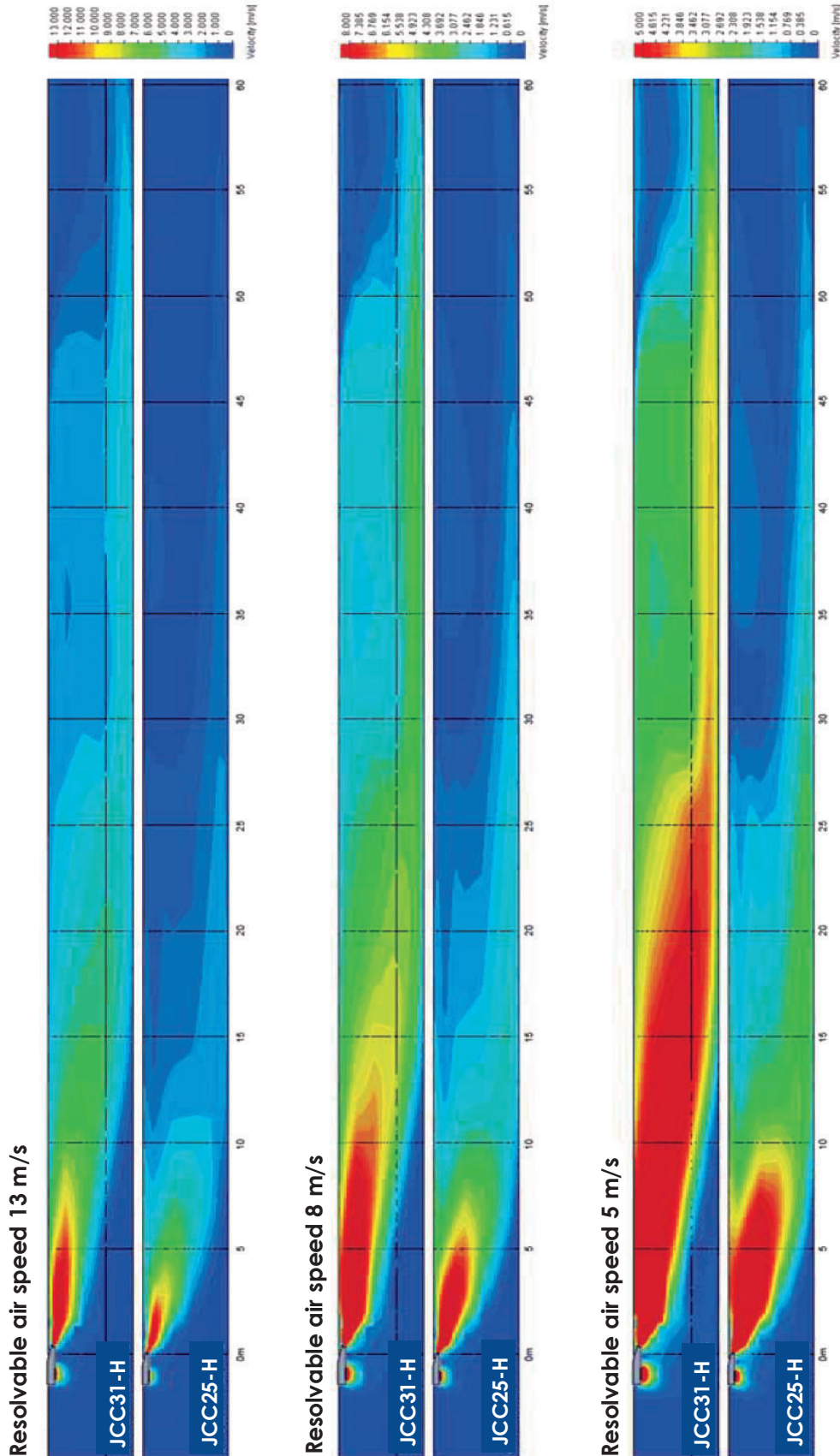
Sound

| Fan Model | dB(A) @ 3m | Sound Power Level dB | | | | | | | |
|-----------|------------|----------------------|-----|-----|-----|----|----|----|----|
| | | 63 | 125 | 250 | 500 | 1K | 2K | 4K | 8K |
| JCC25-H | 66 | 77 | 90 | 86 | 87 | 77 | 79 | 76 | 67 |
| JCC31-H | 67 | 82 | 92 | 84 | 84 | 83 | 82 | 73 | 62 |

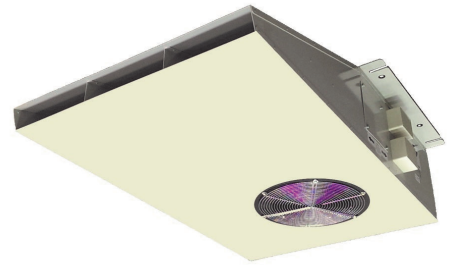
JCC- Centrifugal Hi Temp Series jet fans
(Rating 300°C / 120 minutes)



Discharge Patterns



JVC25 - EC jet centrif car park



SPECIFICATIONS

Description

The JVC25 is an advanced EC jet impulse fan based on the technically superior ebm-papst RadiCal backward curved centrifugal impeller. The centrifugal wheel design delivers exceptional air efficiency with unmatched quietness. The low profile design is particularly useful where head clearances are restricted.

The fans incorporate highly efficient permanent magnet EC motors with on board speed control and intelligent interface capability with BMS (management systems) or optional CO sensors.

Motors

Three phase permanent magnet, electronically commutated (EC) with long life ball type bearings

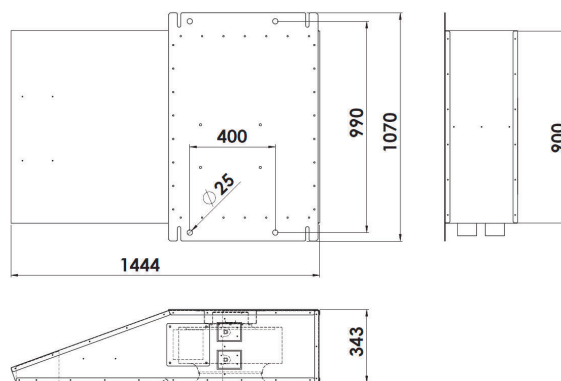
Construction

Cases are formed from corrosion resistant galvanised sheet with powder coat finish

Technical Features

- Input for sensor 0-10 V or 4-20 mA
- External 24 V input (programming)
- Integrated PID controller
- RS485 MODBUS RTU Compatible
- Soft start
- Control input 0-10 VDC / PWM
- Over-temperature protected electronics / motor

Dimensions



Performance

| Fan Model | Thrust N | Motor k/W | Amps | Air Speed m/s | Air Flow m ³ /h | RPM | kg |
|-----------|----------|-----------|------|---------------|----------------------------|------|----|
| JVC25 | 50 | 0.97 | 1.7 | 25 | 5,800 | 1550 | 85 |

Sound

| dB(A) @ 3m | Sound Power Level dB | | | | | | | |
|------------|----------------------|-----|-----|-----|----|----|----|----|
| | 63 | 125 | 250 | 500 | 1K | 2K | 4K | 8K |
| 52 | 72 | 75 | 73 | 70 | 66 | 66 | 60 | 55 |