

## Model: P220D5

Powered by PERKINS



### Generator Specification

| Service                        | PRP <sup>(1)</sup> | ESP <sup>(2)</sup> |
|--------------------------------|--------------------|--------------------|
| Power (kVA)                    | 200                | 220                |
| Power (kW)                     | 160                | 176                |
| Rated speed (r.p.m)            | 1500               |                    |
| Standard voltage (V)           | 400/230V           |                    |
| Rated at power factor(cos phi) | 0.8                |                    |



AGG Power gensets are compliant with ISO 9001 and CE standard, which include the following directives:

- 2006/42/EC Machinery safety.
- 2006/95/EC Low voltage
- EN 60204-1: 2006+A1: 2009, EN ISO 12100: 2010, EN ISO 13849-1: 2008, EN 12601 : 2010

#### (1) PRP (Prime Power):

According to ISO8528-1, prime power is the maximum power available during a variable power sequence, which may be run for an unlimited number of hours per year, between stated maintenance intervals. The permissible average power output during at 24 hours period shall not exceed 80% of the prime power. 10% overload available for governing purposes only.

#### (2) ESP (Standby Power):

According to ISO 8528-1, It is defined as the maximum power available, under the agreed operating conditions, for which the generating set is capable of delivering for up to 500 hours of operation per year (of which no more than 300 hours for continuative use) with the maintenance intervals and procedures being carried out as prescribed by the manufacturers. No overload capability is available.

| Powers Voltage (V) | ESP KVA | ESP KW | PRP KVA | PRP KW | Standby Amps |
|--------------------|---------|--------|---------|--------|--------------|
| 415/240            | 220     | 176    | 200     | 160    | 306.1        |
| 400/230            | 220     | 176    | 200     | 160    | 317.6        |
| 380/220            | 220     | 176    | 200     | 160    | 334.3        |

### Performance Data

|                        |                    |      |
|------------------------|--------------------|------|
| Model                  | P220D5             |      |
| Engine brand           | Perkins            |      |
| Engine model           | 1106A-70TAG4       |      |
| Speed control type     | Electronic         |      |
| Phase                  | 3                  |      |
| Control system         | Digital            |      |
| Starter motor voltage  | 12V                |      |
| Frequency              | 50HZ               |      |
| Engine speed (RPM)     | 1500               |      |
| Fuel Consumption (L/H) | 100% standby power | 49.4 |
|                        | 100% prime power   | 45.8 |
|                        | 75% prime power    | 34.7 |
|                        | 50% prime power    | 23.1 |

#### Standard reference Conditions

Note: Standard reference condition 25°C (77°F) air inlet temp, 100m(328ft) A.S.L 30% relative humidity. Fuel consumption dat with diesel fuel with specific gravity of 0.85 and conforming to BS 2869: 1998 , Class A2



### Dimension and Weight

| Dimension     | Open   | Silent |
|---------------|--------|--------|
| Length (L)    | 2763mm | 3600mm |
| Width (W)     | 890mm  | 1100mm |
| Height (H)    | 1375mm | 2170mm |
| Net Weight    | 1560KG | 2399KG |
| Fuel Tank (L) | -      | 220L   |

Note: This parameters allows for some acceptable deviations.

## ■ Engine Specification: 1106A-70TAG4

| Basic technical data            |                                       |
|---------------------------------|---------------------------------------|
| No. of cylinders                | 6                                     |
| Cylinder arrangement            | In-line                               |
| Cycle                           | 4 stroke                              |
| Induction system                | Turbocharged<br>and air charge cooled |
| Compression ratio               | 16:1                                  |
| Bore                            | 105mm                                 |
| Stroke                          | 135mm                                 |
| Displacement                    | 7.01L                                 |
| All ratings certified to within | ± 3%                                  |
| Estimated total weight          | 788kg                                 |

| Cooling system             |                      |
|----------------------------|----------------------|
| Total coolant capacity     |                      |
| -with radiator             | 21L                  |
| -without radiator          | TBD                  |
| Maximum top tank temp      | 110°C                |
| Thermostat operation range | 85-95°C              |
| Radiator face area         | 0.351 m <sup>2</sup> |
| Rows and material          | 4 rows, aluminium    |
| Pressure cap setting       | 100 kPa              |
| Fan diameter               | 610 mm               |
| Drive ratio                | 1.2 : 1              |
| Number of blades           | 7                    |

| Fuel system           |            |
|-----------------------|------------|
| Injection system      | Mechanical |
| Fuel injection pump   | DP210G     |
| Priming pump type     | Manual     |
| Maximum priming time  | 90 seconds |
| Fuel lift pump type   | Electronic |
| - flow/hour           | TBD        |
| - pressure            | TBD        |
| Maximum suction head: |            |
| -1500 rev/min         | 10 kPa     |

| Induction system |               |
|------------------|---------------|
| Clean filter     | 2kpa          |
| Dirty filter     | 3kpa          |
| Air filter type  | paper element |

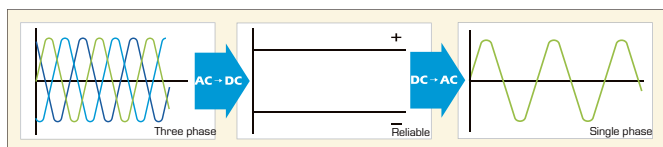
| Lubrication system                |        |
|-----------------------------------|--------|
| Total lub capacity                | 16.5L  |
| Sump minimum                      | 12.4L  |
| Sump maximum                      | 14.9L  |
| Maximum engine operating angles   |        |
| -front up, front down, right side |        |
| or left side                      | 25°    |
| Lubricating oil pressure          |        |
| -Relief valve opens               | 430kPa |
| - at maximum no-load speed        | 340kPa |
| Oil consumption at full load      |        |
| as a % of fuel consumption        | <0.1   |

| Electrical system     |          |
|-----------------------|----------|
| Type                  | A115i    |
| Alternator voltage    | 12 volts |
| Alternator output     | 85 amps  |
| Starter motor voltage | 12 volts |
| Starter motor power   | 4.0 kw   |

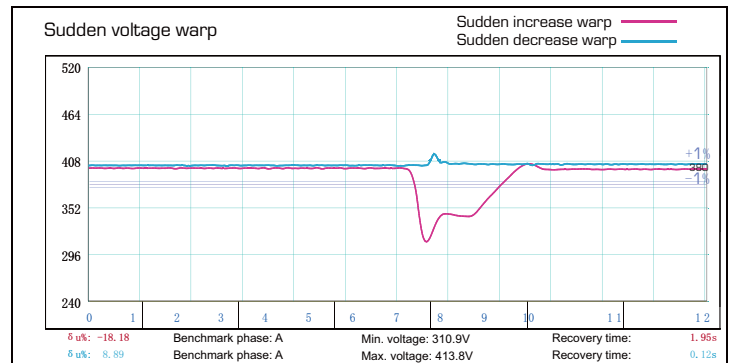
| General installation           | Prime power             |
|--------------------------------|-------------------------|
| Gross engine power             | 178.9kW                 |
| Brake mean effective pressure  | 2041.8kPa               |
| Combustion air flow            | 12.6m <sup>3</sup> /min |
| Exhaust gas temperature outlet | 580°C                   |
| Energy to charge coolers       | 32.8kW                  |
| Power to exhaust               | 148.1kW                 |

## ■ Alternator Specification

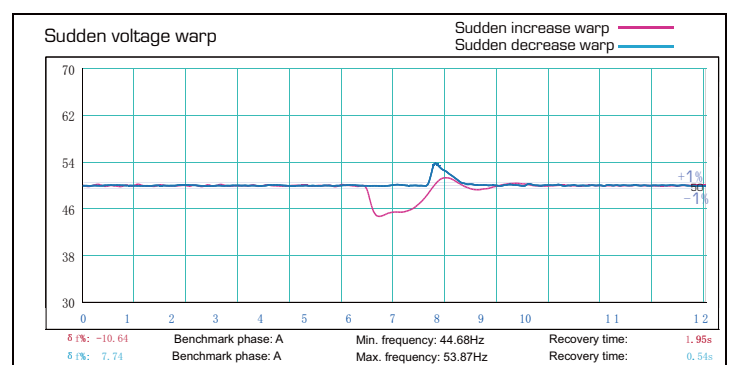
| Alternator                     |                     |
|--------------------------------|---------------------|
| Number of phase                | 3                   |
| Power factor (Cos Phi)         | 0.8                 |
| Poles                          | 4                   |
| Winding Connections (standard) | Star-serie          |
| Terminals                      | 12                  |
| Insulation type                | H class             |
| Winding Pitch                  | 2/3                 |
| IP rating                      | IP23                |
| Excitation system              | Self-excited        |
| Bearing                        | Single bearing      |
| Coating                        | Vacuum impregnation |
| Voltage regulator              | A.V.R               |
| Couping                        | Flexible disc       |



Emergency voltage curve



Emergency frequency curve



## ■ Options

| Engine                                                                                         | Alternator                                                                                                                                                                                                                                         | Generator Sets                                                                                                                       | Fuel System                                                                                                                                                   |
|------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>Water Jacket Pre-heater</li> <li>Fuel heater</li> </ul> | <ul style="list-style-type: none"> <li>Winding Temp measuring Instrument</li> <li>Alternator Pre-heater</li> <li>PMG</li> <li>Anti-damp and anti-corrosion treatment</li> <li>Anti-condensation heater</li> <li>Winding and bearing RTD</li> </ul> | <ul style="list-style-type: none"> <li>Tools with the machine</li> <li>Extended range fuel tank</li> <li>Bunded fuel tank</li> </ul> | <ul style="list-style-type: none"> <li>Low fuel level alarm</li> <li>Automatic fuel feeding system</li> <li>Fuel T-valves</li> </ul>                          |
| Canopy                                                                                         | Lub oil system                                                                                                                                                                                                                                     | Cooling System                                                                                                                       | Control Panel                                                                                                                                                 |
| <ul style="list-style-type: none"> <li>Rental type Canopy</li> <li>Trailer</li> </ul>          | <ul style="list-style-type: none"> <li>Oil Pre-heater</li> <li>Oil temp sensor</li> </ul>                                                                                                                                                          | <ul style="list-style-type: none"> <li>Front heat protection</li> </ul>                                                              | <ul style="list-style-type: none"> <li>Remote control panel</li> <li>ATS</li> <li>Synchronizing controller</li> <li>Adjustable earth leakage relay</li> </ul> |

## ■ Control Panel

### Configuration

- Emergency stop button
- Protection MCB
- Battery charger
- Integrated aviation plug
- ATS connection
- Digital control module

### Features

- 3 phase generator set monitoring
- Support of engines equipped with electronic control unit
- Comprehensive diagnostic message
- Automatic or manual start/stop of the gensets
- Push buttons for simple control, lamp test
- Graphic back-lit LCD display
- Parameters adjustable via keyboard or PC
- Mains measurements ( 50HZ/60HZ)
- Generator measurements ( 50HZ/60HZ)
- Comprehensive shutdown or warning on fault condition
- 3 phase Generator protections
  - Over-/under voltage
  - Over-/under frequency
  - Current/voltage asymmetry
  - Over current/overload
- 3 phase AMF function
  - Over-/under frequency
  - Over-/under voltage
  - Voltage asymmetry
- Configurable analog inputs
- Battery voltage, engine speed (pick-up) measurement
- Configurable programmable binary inputs and outputs
- Warm-up and cooling functions
- Generator C.B. and Mains C.B. control with feedback and return timer
- RS232 interface
- Modem communication support
- Hours counter
- Sealed to Ip65
- Event log

### Benefits

- Less wiring and components
- Integrated solution
- Less engineering and programming
- User friendly set-up and button layout
- Module can be configured to suit individual applications
- PC software for simplified configuration
- Wide range of communication capabilities

### Operation conditions

- Operation temp: -20 °C to + 70 °C
- Storage temp: -30 °C to + 80 °C
- Operating humidity: 95% w/o condensation
- Vibration : 5-25Hz,  $\pm 1.6$  mm  
5-100Hz,  $a=4g$
- Shocks:  $a= 500m/s^2$

### Options

- Ethernet interface (Remote monitoring and control)
- GSM modem/wireless internet (Remote monitoring and control)
- RS232-RS485 Dual port interface
- Synchronizing control panel
- Distribution board with sockets kit and power busbar
- Battery trickle charge ammeter
- Earth leakage protection
- Earth fault protection
- Low fuel level alarm
- Low fuel level shutdown
- High fuel level alarm
- Fuel transfer system control
- Low coolant level shutdown
- High lube oil temp shutdown
- Overload via alarm switch on breaker
- Engine coolant heater controls
- Control panel heater
- Speed adjust switch
- Oil temp displayed on LCD screen
- Additional 8 inputs and outputs