

Case study

Open Cycle Electricity Generation Plants
Dedisa and Avon, South Africa

Project Summary

Project: IPP Peaking Power Generation
OEM Customer: Ansaldo Energia SPA
EPC: Fata EPC (IT) SPA
End-user: Dedisa & Avon Peaking Power Ltd.
Application: Two Open Cycle Electricity Generation Plants
Turbine size: 1650 kW

Nidec's Role

As a long-time motor and drive supplier to Ansaldo Energia SPA (IT), Nidec Industrial Solutions furnished fuel injection pump motors, LCI systems and Excitation systems for two new peak power generation plants in the South African cities of Dedisa and Avon.



Scope of Supply:

- n° 12 Induction motors	CA 355 L2
- n° 6 Static Freq. Conv. Systems	LCI 1900 kW
- n° 6 Excitation Systems	ES22F1650-A500-s type

System test at Nidec Industrial Solutions factory

The Challenge:

To deliver a complete electrical supply for two grassroots peak power plants

To improve the reliability of the power grid in South Africa, open cycle gas turbine peak units were to be constructed in Dedisa and Avon that could be ramped up quickly to serve as backup to the existing power supply during times of peak demand and in emergency situations. Electricity generated at the two plants would be fed into the transmission system through the two high voltage substations located adjacent to the facilities.

The 670 MW Avon Facility and the 335 MW Dedisa Facility would be designed to run for short durations totaling approximately 20 hours per week, with provisions for continuous operation for up to 45 hours.

The Solution:

Turnkey power plants with a Nidec Industrial Solutions electrical supply

The two Greenfield facilities were to be built using a Build-Own-Operate approach. The owners -- Avon Peaking Power (PTY) Ltd. and Dedisa Peaking Power (Pty) Ltd. -- awarded a turnkey contract for their engineering, procurement and construction (EPC) to Ansaldo Energia Spa and Fata Spa.

MOTOR TECHNICAL DATA	
Model	CA 355 L2
Type	Induction
Power (kW)	350
Speed (RPM)	2966
Voltage (Vac)	6300
Gas Safety Exec.	Ex nA IIB T3
Poles	2
Cooling type	Air-Cooled

Static Frequency Conversion Systems	
Type	LCI/Current Source
Electrical Power	2900 kW
Cooling System	Forced Air

Excitation Systems	
Type	ES22F1650-A500-s Type
Current (Acc)	1650
Cooling System	Forced Air

Because the plants would be started and stopped frequently, equipment reliability was critical.

As Ansaldo Energia's motor and drive vendor for more than 25 years, Nidec Industrial Solutions was selected to provide the complete supply for both power stations, including fuel injection pump motors, LCI systems and excitation systems for gas turbine. The solutions included both standard and customer equipment for the plants, both of which were designed with self-start capabilities.

