

## ***Stories of Resilience: flexibility and resistance, A fundamental attribute to be successful in South Africa project execution***

### **From bid to contract**

The two Open Cycle Gas Turbine Plant of Dedisa (with two Ansaldo AE94.2 GT's) and Avon (with four Ansaldo AE94.2 GT's) in South Africa, respectively in Commercial Operation since September 2015 and July 2016, have been realized after that the SA Department of Energy (DoE) issued a Request for Proposal in 2005 for constructing and operating two peaking power generation facilities, needed to support the South African transmission network during peak load times. The Contract was awarded to Avon & Dedisa Peaking Power IPP Consortium (ADPP), led by GdF (now Engie) and in partnership with Mitsui and South African partners. The electricity produced is sold to Eskom (SA National Utility) through a PPA Contract.

Successively, on April 2011 and after a tender process, ADPP awarded, to the Consortium Ansaldo Energia S.p.A. and FATA S.p.A., the contracts for the Engineering, Procurement, Construction and Commissioning of the two plants.

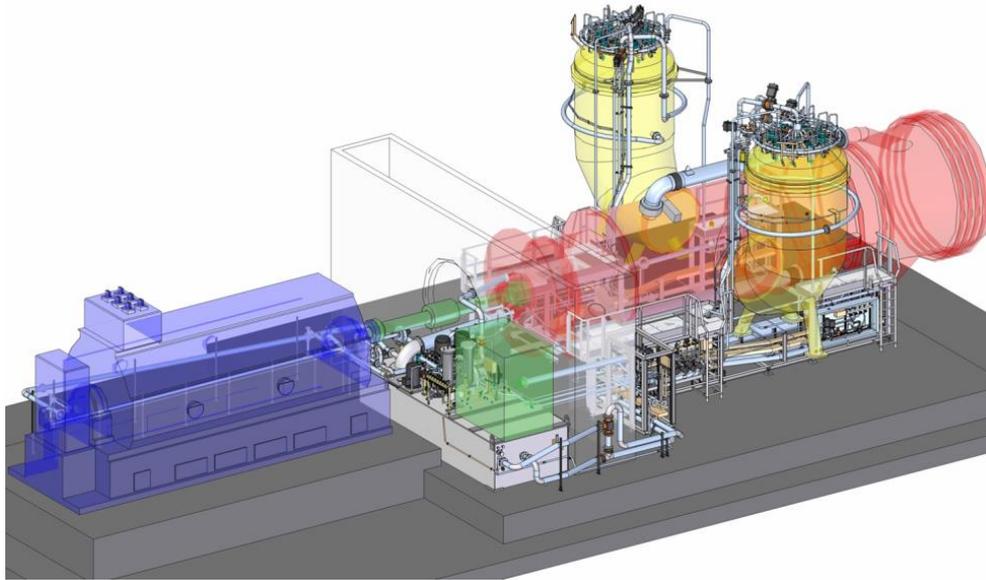
Notice to proceed for Avon Peaking PP was issued in August 2013. In December 2013 work commenced and on the 20th July 2016 the 685 MW Plant was officially handed over to the IPP Client as a Commercially Operating Plant.



### **Plant features**

The Avon Open Cycle Gas Turbine Facility is based on four Ansaldo AE94.2 gas turbines with related air cooled electrical generators and auxiliaries; the total capacity of the facility is around **685 MW**. The Facility is located adjacent to the existing Eskom Avon High Voltage Sub-station, to which the generators are connected to feed the electricity into the transmission grid at **275 kV**.

The Gas Turbines are fueled, as peaking plant, with diesel oil and are provided with a water injection system for reduction of NOx emissions within the prescribed limits.



The Facility is designed for peaking power operation and it is directly controlled by the National Transmission Control (NTC).

The Facility has a self-start capability, which allows to energize part of the Eskom grid also in case of black-out of the transmission grid.

The design of the facility takes into consideration, for the future the possibility to convert the plant to combined cycle and to natural gas as part of the government's planned introduction of natural gas to South Africa.

## Resilient management



Avon initiative faced various **challenges** including the prolonged **difficulties in obtaining the building permit** to start the civil works, **unexpected adverse environmental condition** of the site, one month national strike in the steel production sector during the construction period and various protests of local workforce.

**The most severe** was a subcontractor workers protest become a **riot**, occurred in July 2015, leading to the **torching of one unit** electrical building nearly ready for commissioning and the **lock-out of the Facility** for security reasons for

about three months. **The risk of cancellation of project** has been managed and solved in collaboration with local authorities and Contractors and by the implementation of a successful acceleration plan.

**Recovery and acceleration plans** have been implemented along the Project resourcing the phases and changing the sequences. **Managing by priority with a flexible approach** and optimizing the focusses in **coordination with the Owner** and the Independent Engineer, the final acceptance test phase resulted in a **Project completion ahead of the recovery schedule**.

## Primary Objectives

In addition to the quality and technology of the products supplied, key factors in the successful construction of the plant were the Consortium's ability to manage the South African construction companies involved, and its special focus on local communities and environmental impact, both very important issues in South Africa.

Over the duration of the Project around 3000 local black employees were employed (Avon is located in Kwa Zulu Natal region and the majority of workers on site were from Zulu Community) on site and we are proud to record that almost 75% of skilled labour and 99,7% of unskilled labour were sourced locally, fulfilling and exceeding the Black Economic Empowerment (BEE) law requirements. Whilst many of the local community members had no previous experience in working on a construction site, they were recruited, trained and developed to perform critical functions and duties on site. These members of the local community have gained skills and experience which will stand them in good stead and assist them in securing future employment.

One of the primary objectives of the Project has been the upliftment of the local community and therefore a focus of the Consortium has been towards the youth and education.

Over the course of the Project, local educational facilities have benefitted from the Consortium together with the major sub-contractor, Group Five. Upgrades and donations have been made to local establishments such as KDM, Summerhill House, Etefe and Osizweni Primary Schools, and Umfolozi College.



## Conclusions

Avon Power Plant realization is an EPC Contractor successful performance based on Consortium technical capability but, still more than that, on a **true resilient management** in the critical and particular local situations in which the Project found itself. The right **combination of project team flexibility and resistance** has finally achieved the project success. The Community Social Initiatives witness the concrete support to the local development and value added to people.