



**Geothermal Development Associates**



**Eburru Wellhead Geothermal Power Plant**

**Eburru, Kenya**



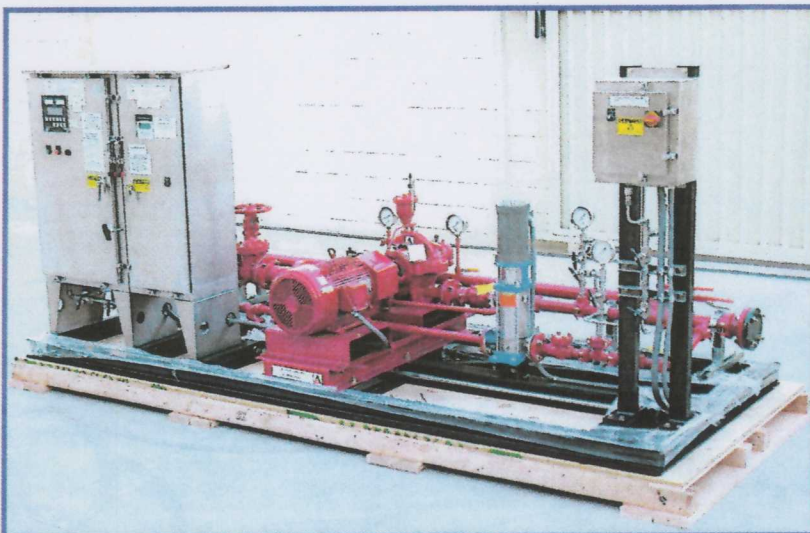
**Kenya Electricity Generating Company Limited (KenGen)** is the leading power generation company in Kenya, producing approximately 80% of electricity consumed in the country. They utilize varied types of resources to produce electricity, including hydro, geothermal, thermal and wind. KenGen currently has 195 MW of geothermal power online.

### **Wellhead Geothermal Power Plant at Eburru, Kenya**

- Under a contract with KenGen, Geothermal Development Associates (GDA) agreed to design, manufacture, test, and ship a geothermal steam turbine generator and related power plant auxiliary components from Reno, Nevada, USA to Eburru, Kenya. GDA provided supervision and technical support during installation and commissioning of the plant.

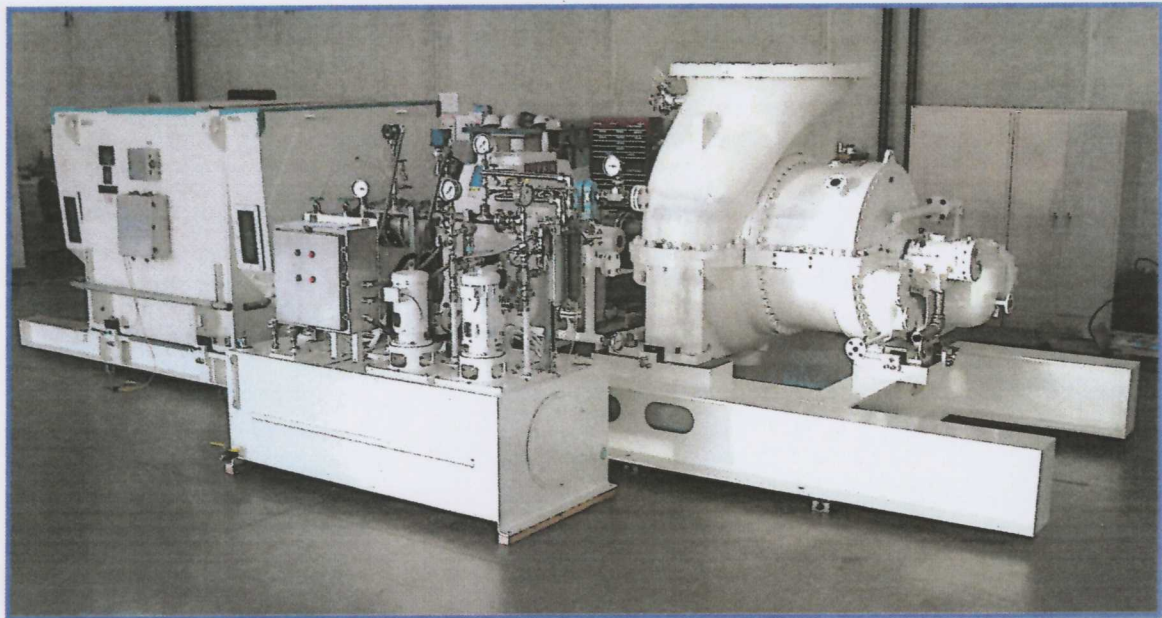


At the heart of the plant is an Elliott 8-stage GYR turbine. This turbine is built to withstand extreme operating conditions, making it ideally suited for use with geothermal resources. GDA packaged this turbine with high quality components including a generator from Kato Engineering, a gearbox from Lufkin Industries, a condenser from Graham Corporation, cooling water pumps from Gould Pump Company and a cooling tower from Cooling Tower Depot. All of the major component vendors have been with GDA for multiple projects and are intimately familiar with our needs.



In addition to providing equipment for the project, GDA's scope included engineering design of the facility. GDA's mechanical and electrical engineers have teamed with key civil and structural consultants to prepare a package of drawings and specifications to be included in KenGen's tender for construction of the plant.

The plant was commissioned in January 2012.

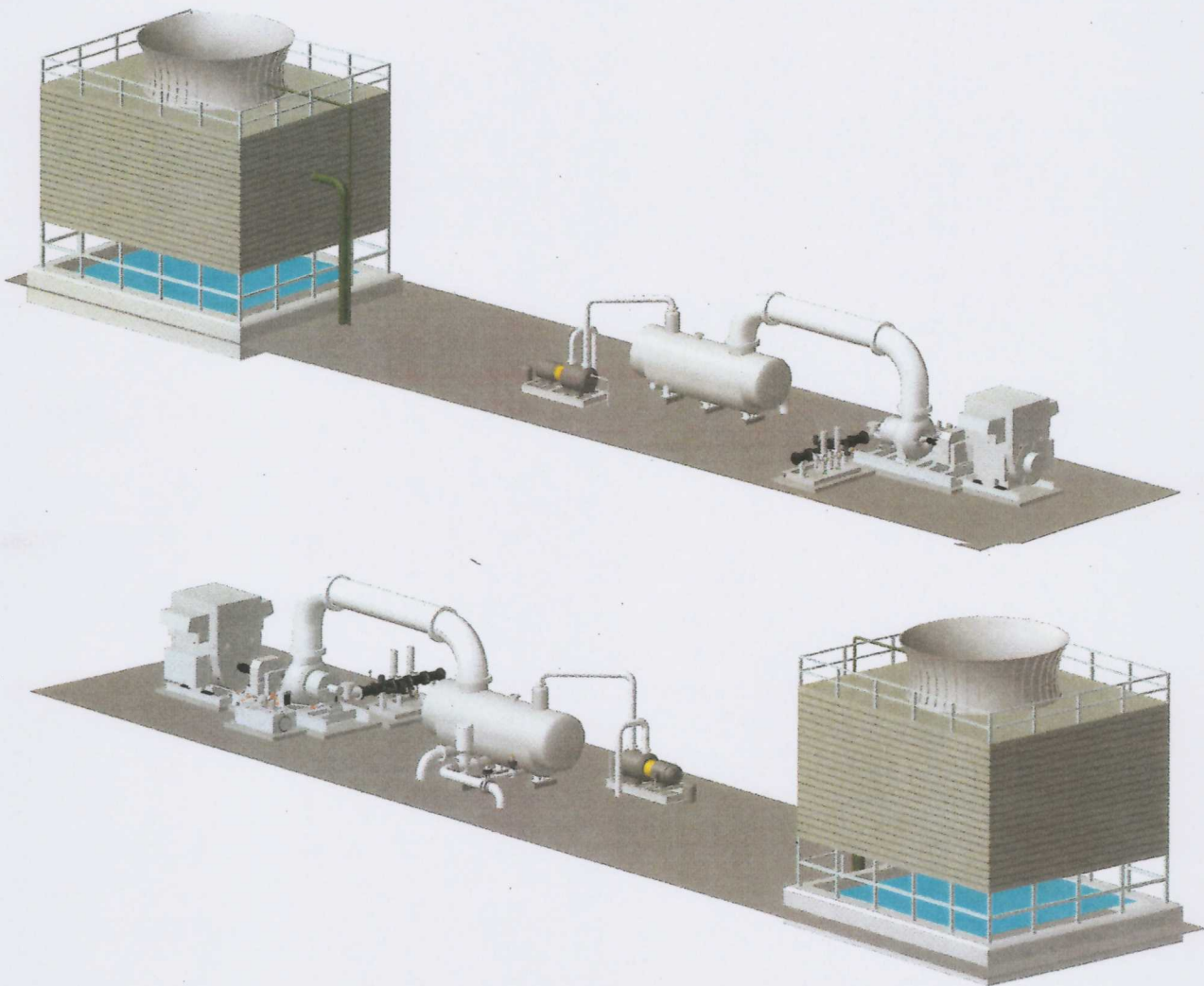


System Specifications	
Mass Flow	21,100 kg/hr
NCG	316 kg/hr
Turbine Inlet Pressure	580 kPa (abs)
Condenser Pressure	10 kPa (abs)
Turbine Inlet Temperature	157.6°C
Gross Generator Output	2,400 kW
Component descriptions are as follows:	
Steam Turbine	8-stage GYR, single axial flow Elliott Company, Jeanette, PA, USA
Generator	2400 kW, 0.8 pf, 11kV, 1500 rpm, WPII Kato Engineering, Mankato, MN, USA
Gearbox	N1600C, double helical, AGMA SF=2.0 Lufkin Industries, Lufkin, Texas, USA
Condenser	Direct contact, with integral gas cooler, 316L Graham Corporation, Batavia, NY, USA
Gas Extraction System	Liquid ring vacuum pump, 316L Graham Corporation, Batavia, NY, USA
Cooling Tower	Induced draft, counter flow, FRP, single cell, field erected Cooling Tower Depot, Golden, CO, USA

**Geothermal Development Associates (GDA)** is a privately held U.S. corporation with over 30 years of experience in geothermal power and direct use applications. Our core group of engineers, geologists, geoscientists and support staff has the capability to oversee projects during every stage, from resource exploration and well-testing to the commissioning of a new power plant.

Since the company's incorporation in 1978, GDA has been involved in numerous geothermal projects around the world, including some in their home state of Nevada. For several years, GDA served as a lead consultant on many geothermal projects, providing assistance with tasks such as permitting, land acquisitions, well-testing, and power plant engineering and supervision.

Beginning in 2002, GDA has taken on the role of designing and packaging turbine generator sets. GDA also designs and fabricates associated equipment such as lube oil consoles, hydraulic power units, complete electrical control systems, and other components using state of the art technology.



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