RETEGEOTERMICA

MISSION TO KENYA ON GEOTHERMAL SECTOR

Italy-Kenya Business & Investment Forum on Geothermal

Matteo Quaia
Manager of Rete Geotermica
Kenya, 27th - 30th March, 2023

SPECIAL THANKS

Special thanks to MASE for funding this mission to Kenya on geothermal sector and to all the entities which cooperated in making it possible.

Italian-Kenyan cooperation in this sector is already ongoing but can definitely be improved.

FUNDED BY MINISTERO DELL'AMBIENTE E DELLA SICUREZZA ENERGETICA

IN COLLABORATION WITH REPUBLIC OF KENYA, STATE DEPARTMENT FOR ENERGY, GAK Geothermal Association of Kenya, UNIONE GEOTERMICA ITALIANA, GDC Geothermal Development Company, KenGen Energy for the nation.

WHO WE ARE

RETEGEOTERMICA

- **6 developers**
- **4 engineering and services provider**
- **2 turbine manufacturers**

MISSION

Create an Italian supply chain for the sustainable development of geothermal resources

- Carrying out environmentally compatible geothermal project
- Using innovative «zero emission» technologies
- Maximizing the local socio-economic repercussions

COMPETENCES

- Identification and characterization of geothermal resources
- Design and construction of wells and plants
- Development and management of geothermal projects

ROLE AND DUTIES

- Representing the members in institutional offices (e.g., establishing MOUs)
- Promote the enhancement of geothermal resources with information and awareness campaigns
- Collaborate with other associations (e.g., UGI) to enhance the role of geothermal energy in the national energy framework

The members of RETE GEOTERMICA are committed to developing and applying innovative technologies to create «closed cycle» plants with total reinjection of geothermal fluids.

OUR PLANS OF INVESTMENTS

RETEGEOTERMICA

≈ 2 BILLION €



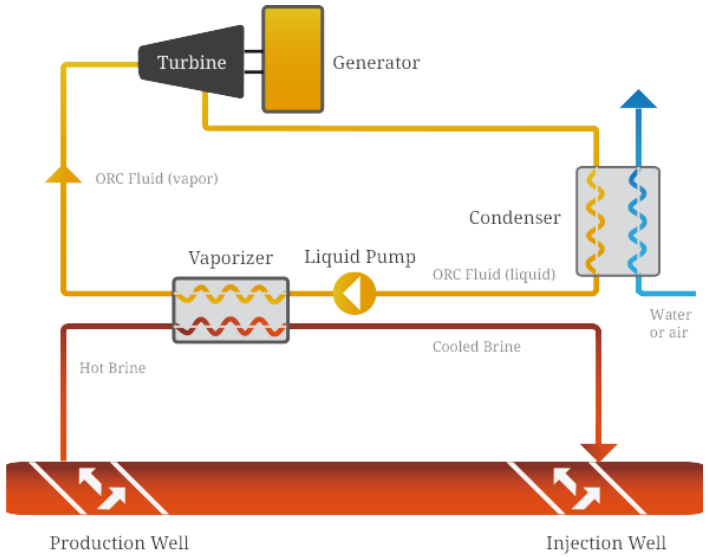
60% UP STREAM
40% DOWN STREAM



≈ 200 MW new net capacity
≈ 15-20 new projects

OUR TECHNOLOGY: "CLOSED CYCLE" GEOTHERMAL PLANTS

Binary ORC technology



Rendering of some of the plants in the authorization phase

OUR EU FUNDED R&D PROJECTS

RETEGEOTERMICA

GECO GEOTHERMAL EMISSION CONTROL

www.geco-h2020.eu

Innovative EU funded research project which aims to provide a clean, safe, and cost-efficient non-carbon and sulfur-emitting geothermal energy across Europe and the World.

GEOENVI

www.geoenvi.eu

Assess environmental concerns in terms of both impacts and risks, by first setting an adapted methodology for assessing environment impacts to the project developers, and by assessing the environmental impacts and risks of geothermal projects operational or in development in Europe.

GEOTHERM FORA

www.rhc-platform.org

Aims to support and strengthen forums on research and innovation on geothermal systems. This with particular reference to the Deep Geothermal Implementation Working Group (DG-IWG) and the Deep Geothermal Platform (ETIP-DG)

OUR MEMBERS
Developers

RETEGEOTERMICA

sorgenia
YOUR NEXT ENERGY

GRAZIELLA
green power

magma
ENERGY ITALIA

GEOTHERMICS ITALY

RENEWEM

SVOLTA
GEOTERMICA

OUR MEMBERS
Engineering and services

IdroGeo ENGINEERING&CONSULTING

RETEGEOTERMICA


GEOENGINEERING, GEOTECHNICS & ENVIRONMENTAL GEOLOGY


GEOCHEMISTRY & CO_2 RESEARCH


GEOTHERMICS, AIR CONDITIONING & RENEWABLE ENERGY


CITY PLANNING, HYDROLOGY AND & SEISMIC DANGER


HYDROGEOLOGY, SPA & DEEP WATER CIRCULATION


GEORESOURCES, NATURAL GAS & HYDROCARBONS

IdroGeo Engineering & Consulting was founded in February 2001 with the aim of providing customers with a series of complete services in the field of **environmental engineering, hydrogeology, hydrology and hydraulic engineering, geology, geotechnics, environmental geology and decontamination**.

The company is made up of 11 senior geologists specializing in the fields of geology applied to **engineering, geothermal and hydrogeology with a high level of know-how in the search for thermal and geothermal resources**.

Main activities in the last 12 Years

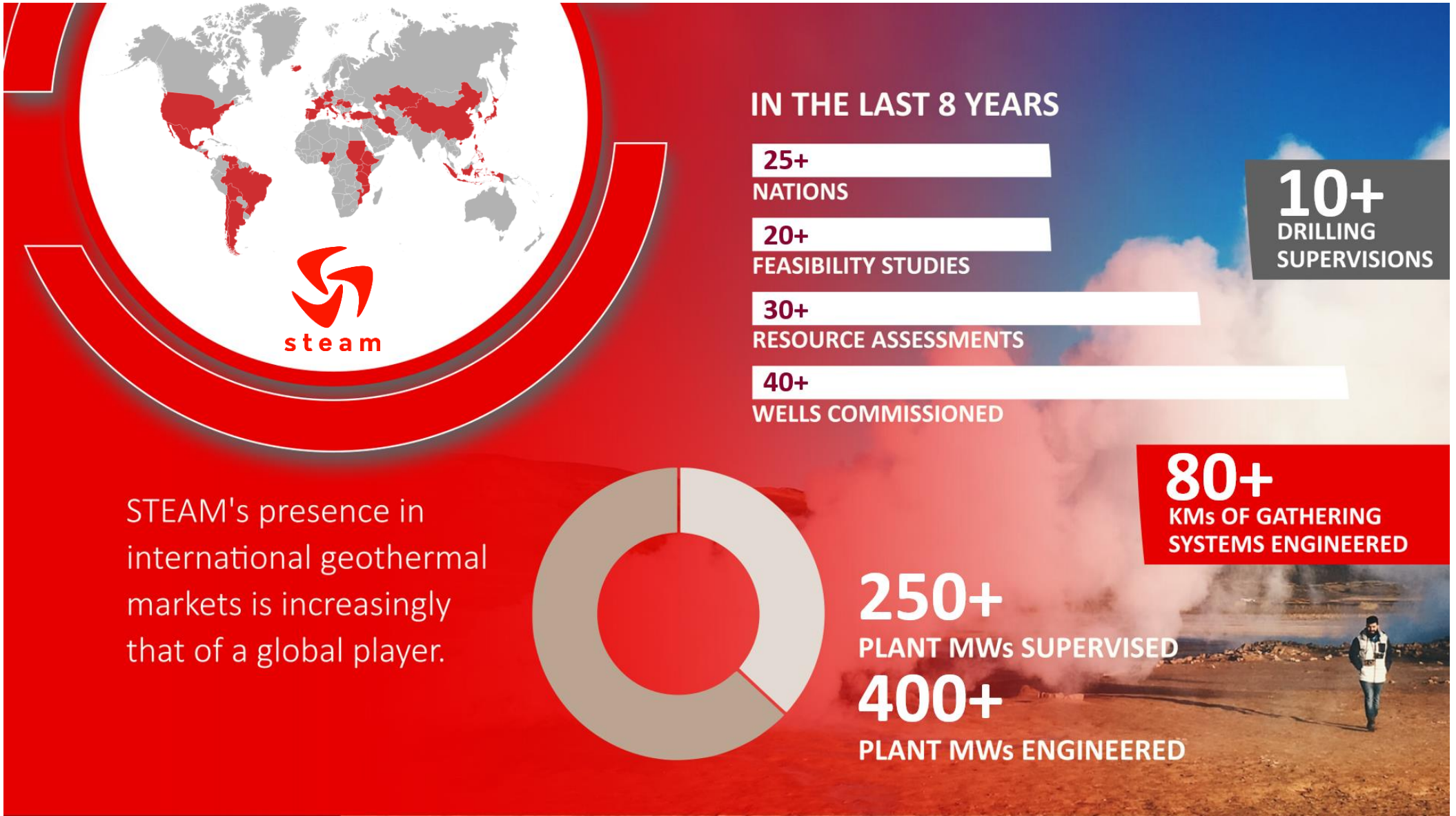
- ✓ **Exploration Geothermal Permit Licenses** for electricity production with zero emission power plants and district heating projects;
- ✓ **Environmental Impact Assessment studies** for drilling geothermal wells, solar, wind and geothermal power plants; electric lines;
- ✓ **Feasibility studies** for thermal water researches, recognition of the geothermal and thermal waters;
- ✓ **European projects**: GEOENVI; Fault Lab; Geo Energy projects
- ✓ **Low enthalpy geothermal projects** for building air conditioning

OUR MEMBERS

Engineering and services

SINTECNICA

RETEGEOTERMICA

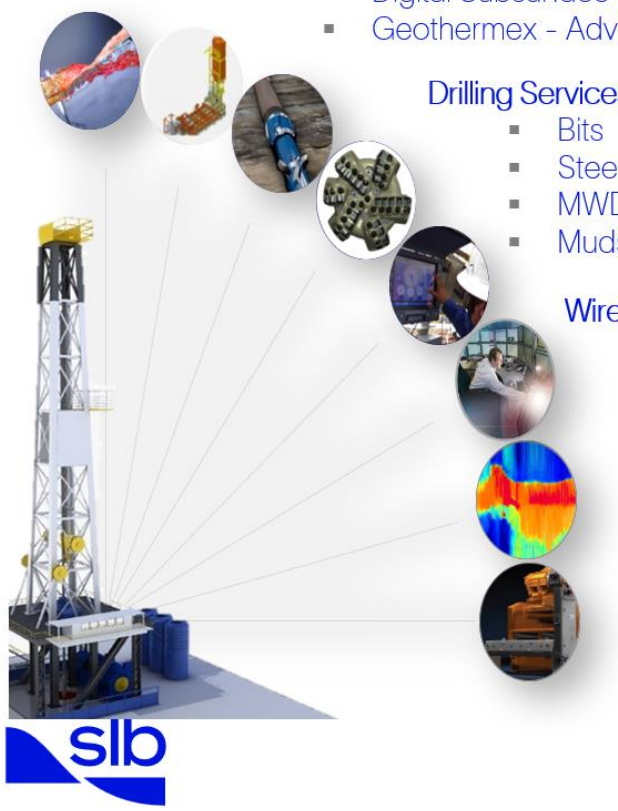


OUR MEMBERS

Engineering and services

Technology and service provider for subsurface evaluation, well construction and well centric hardware

Schlumberger Geothermal Services



Pre-drilling studies

- Digital Subsurface Solutions
- Geothermex - Advisory

Drilling Services

- Bits
- Steering Tools , Motors
- MWD/LWD
- Muds – Synergy with drilling tools

Wireline Services

- Reservoir Evaluation (Fractures, Rock properties, Cores)
- Cement and Casing Integrity

Well Services

- Cementing
- Coiled tubing
- Stimulation

Downhole Pumps

- ESP – Motor up to 1,500HP; Flow up to 600+ m3/hr
- Surface Equipment

Cameron Wellheads

- Dedicated Geothermal Wellheads
- Horizontal Tree

OUR MEMBERS
Turbine manufacturers

EXERGY

RETEGEOTERMICA

- **Expert global provider** of new generation high-efficiency **Organic Rankine Cycle (ORC) systems**
- Expert in the **Radial Outflow Turbine** technology application to ORC
- **Comprehensive In-house technical expertise** to develop and supply ORC solutions.
- The second ORC supplier in the world for geothermal application with approx. **500 MWe in portfolio**
- **Among the biggest ORC turbines** in operation in the market (20 MWe)
- **Proven technology** and **very high** plant **availability**
- In-house **after sales support** and **remote assistance** H24

OUR MEMBERS
Turbine manufacturers

COMPANY PROFILE
Turboden is an Italian firm and a group company Mitsubishi Heavy Industries, operating in the ORC market since 1980.

KEY FIGURES
- ✓ **Experience in over 50 countries***
- ✓ **With 430+ installations and 830+ MWe generated**
- ✓ **300+ employees**
- ✓ **3 different products (ORC, LHP and Gas Expander) with 8 different applications**

OUR MISSION
We provide reliable, advanced, environmentally-friendly solutions that maximize the value of renewable sources and energy efficiency.

TURBODEN'S CAPABILITY
- ✓ **Experience in delivering EPC / full turn-key solutions.**
- ✓ **Possibility to provide BOT / BOOT schemes together with partners.**
- ✓ **Support in procuring financing.**

TURBODEN'S EXPERIENCE
- ✓ **Global leader in ORC power plants.**
- ✓ **Thermodynamic process and control philosophy designed by Turboden.**
- ✓ **Multi-stage axial turbine, Turboden proprietary design.**
- ✓ **Up to 60 MW per single generator.**

*in red the countries in which Turboden has installations

THANKS FOR YOUR ATTENTION

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