ELECTROCONSULT

WORLDWIDE CONSULTANTS FOR OVER 50 YEARS

GEOTHERMAL POWER PLANTS

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background

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An outstanding experience has been acquired by ELC during the past 35 years in the sector of geothermal power exploitation, stretching from resource exploration and assessment to field development and power plant design and implementation, up to the economical evaluation (Due Diligence) of geothermal projects at different stage of implementation.

ELC has participated in about 40 geothermal projects in multiple geological and logistic environments ranging from the volcanic belt of South-East Asia to the African Rift and the Central-Southern America range of Quaternary volcanoes.

The exploitation of endogenous fluids may constitute a significant alternative for power generation in numerous countries in the world having favourable geological conditions. The strategic advantage of this use rests on the replacement of imported fuel, with an increase of the security of energy supply and a saving of foreign currency, as well as on the social benefits due to the utilisation of local manpower.

These advantages are enhanced by the contribution of geothermal exploitation to the reduction of the global pollution of the earth, which is the object of the Kyoto protocol.

The accurate evaluation of the potential and characteristics of the resources, their rational exploitation and the innovative design must maximise the efficiency of generation and reduce the costs, in order to be competitive with large conventional plants, in particular the combined cycle ones.

geothermal power plants

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To reach competitiveness it may be necessary to consider the benefits (externalities) associated with the reduction of the environmental impact.

An outstanding experience has been acquired by ELC in the design and construction of power plants exploiting geothermal resources. Cycle optimisation and steam pressure level selection are performed with the aid of computer programs developed in-house, particularly for low enthalpy fluids which are typical of water dominated geothermal fields.

Thanks to its multidisciplinary staff, integrated when necessary by highly qualified and experienced permanent consultants, ELC is in the position to provide engineering services during all phases of geothermal development, from initial exploration up to commercial operation.

These services can be summarized as follows:

- Exploration Planning
- Geological, Geochemical and Geophysical Studies
- Drilling Programming and Supervision
- Wells Measurements and Tests
- Resources Evaluation

services provided by ELC

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- Optimisation Studies of Field Development Strategy
- Engineering Feasibility Study
- Economic and Financial Analyses
- Final Design and Bid Documents Preparation
- Assistance to Bidding and Bid Evaluation
- Equipment Control and Erection Supervision
- Environmental Studies
- Assistance to Field Management
- Due Diligence of Projects at any stage of development

- Kamojang (Indonesia) 50 MW Geothermal Power Plant: preparation of final design and Bidding Documents, for PERTAMINA;

- Sarulla (Indonesia) Geothermal Project with 300 MW of proven resources: Due Diligence to assess the commercial value of the Project, for PLN;

- Karaha Bodas (Indonesia) Geothermal Project: Due Diligence with resource assessment and development planning to assess the commercial value of the Project, for PERTAMINA;

- Technical Advice to PLN (Indonesia) for the renegotiation of Geothermal Energy Sales Contracts with Independent Power Producers, for PLN;

significant geothermal projects carried out by ELC

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- Darajat (Indonesia) 55 MW Geothermal Power Plant: detailed design and construction supervision, for PLN;

- Gunung Salak (Indonesia) 3 x 55 MW Geothermal Power Plant: resource feasibility and engineering feasibility studies, final design and preparation of Bidding Documents, for PLN;

- Inventory of Geothermal Prospects in the whole territory of the Philippines, for the Ministry of Energy;

- Miravalles (Costa Rica) 2 x 55 MW + 2 x 25 MW Geothermal Power Plant: feasibility study and assistance during construction, for ICE;

- Momotombo (Nicaragua) 2 x 35 MW Geothermal Power Plant: feasibility study for the enhancement of the present steam production, reservoir modelling, simulation and assessment, co-ordination of geoscientific activities, for ENEL;

significant geothermal projects carried out by ELC

- Ahuachapan (El Salvador) Geothermal Power Plant 2 x 30 MW + 1 x 35 MW steam units: diagnostics of the field and plant, reservoir simulation and production recovery assessment, feasibility study, contract documents and bid evaluation for field-power rehabilitation works, for CEL;

- Southern Afar (Ethiopia) region: assessment of the geothermal resources, for Ministry of Mines and Energy.