

May 20, 2020

Geothermal Development & Investment Inc.

GDI concluded a dealer agreement with TICA Thermal
and began supplying medium-and large-scale EXERGY binary generators

Geothermal Development & Investment Inc. (Head Office: Minato-ku, Tokyo, President: Tomofumi Ono, hereinafter referred to as 'GDI') has signed a distributor agreement with TICA Thermal of TICA Group, a major Chinese air-conditioning manufacturer, for medium and large ORC power system from EXERGY International Srl (hereinafter referred to as 'EXERGY') who was acquired by TICA Thermal on Sep 25th, 2019 and is the world-leading producer of binary generators, and will begin offering binary generators*¹.



Binary generator of EXERGY

※ 1: Binary power generation is a system in which heat is exchanged to a medium with a boiling point lower than that of water (CFC substitute, silicon oil, etc.), and the turbine, etc. is rotated by a vaporized medium to generate electric power. It is said to be binary power generation because it generates power using two thermal cycles, a heat source system and a medium system, and this cycle is called ORC (Organic Rankine Cycle).

■ Background to the conclusion of the distributorship agreement

GDI involves investment in geothermal power generation projects, the composition and operation of geothermal power generation projects in collaboration with local communities, and the design and operation of geothermal power plants. We also import and sell overseas generators and various equipment.

Recently, the acquisition of EXERGY by TICA Thermal has resulted in the expansion of its product scope, enabling TICA Thermal to offer medium and large ORC power system from 1MW to 28MW per unit to markets.

This conclusion of a dealer contract with TICA Thermal means that GDI will be an authorized distributor in Japan for binary generators developed and manufactured by EXERGY.

■ What is expected by the execution of the Distribution Agreement

The binary generators handled so far by GDI were U.S. Electrathern (75kW, 120kW) and Chinese TICA (280kW). However, with the addition of EXERGY (1MW-28MW), GDI will be the only Japanese company that can handle all the binary power generation: small, medium, and large. GDI will take advantage of this strength to promote the further dissemination of geothermal and unused industrial waste heat power generation and contribute to the realization of a sustainable society.

■ About EXERGY

With its technological capabilities and responsiveness, EXERGY ranks third in the world-class in binary generators, with a total installed capacity of more than 470MW.

EXERGY's core strength comes from its unique, multistage, highly efficient Radial Outflow Technology (ROT), which can achieve efficiencies of up to 30%, the world's highest level for binary generators. With its unique ROT technology, EXERGY has developed 2 pressure level vapor application with single turbine disk, offering up to 20% more power than other technology. Besides, a distinctive and patented design of built-in mechanical group that is intended to maintain longer life of bearing can significantly reduce downtime of system, offering higher availability year-round.

Although a few types of refrigerants are normally used, EXERGY have used 11 different types of refrigerants in its projects, while keeping testing new fluids for future utilization. This has enabled us to accommodate temperatures ranging from 90°C to 350°C, from a variety of applications, including geothermal power generation, factory waste heat power generation, biomass power generation, and solar thermal power generation.

■ Stakeholder Overview

(1) EXERGY

Company Name : EXERGY International Srl

Representative : Jiang Li

Established In : 2011

Capital : 5,010,000.00 Euro

Head Office : Via Santa Rita, 21057, Olgiate Olona (VA), Italy

Businesses : EXERGY was founded by Claudio Spadacini and in 2011 became a subsidiary of the Italian Maccaferri Industrial Group that backed its growth year on year allowing EXERGY to achieve an ORC fleet of 400 MWe worldwide in less than a decade. In 2019 EXERGY started a new course being acquired by China's Nanjing TICA Thermal Technology Co. Ltd. With this new strategic alliance EXERGY is today able to offer the global market a vast and competitive range of clean-technologies and green power generation solutions.

Website : <http://exergy-orc.com/>

(2) Geothermal Development & Investment Inc.



Geothermal Development & Investment Inc.

Company Name : Geothermal Development & Investment Inc.

Representative : Tomofumi Ono

Established In : March, 2015

Capital : 47 million yen

Head Office : 105-0014

Shibakoen ND Building 6F, 2-5-10 Shiba, Minato-ku, Tokyo

Businesses : investment in geothermal power generation projects, etc.

Website : <https://www.chinetsu.com/en/company.html>

(3) TICA

Company Name : Nanjing TICA Thermal Technology Co., Ltd.

Representative : Jiang Li

Established In : 2016

Capital : 100 million USD

Head Office : No. 6, Hengye Road, Economic and Technological Development Zone,
Nanjing, China.

Businesses : TICA Thermal, established in 2016 as a member of TICA Group, is dedicated to thermal energy utilization using Organic Rankine Cycle (ORC) technology. It focuses on ORC research & development, manufacturing, after sales service, investment, and energy management services etc.

Website : <http://global.ticachina.com/en/>

■ Inquiries regarding this release

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[GPSS Group]

Based on the corporate philosophy of 'Realizing a Sustainable Society by Utilizing Sustainable Energy,' GPSS Group, develops, arranges, and invests in power generation projects using sustainable energy.