



## DAN HOYER, PE, PHD

TEAM LEADER / SENIOR GEOTHERMAL CONSULTANT

### TECHNICAL EXPERTISE

- / Strategic Planning
- / Merger/Acquisitions
- / Geothermal Exploration, Drilling and Testing, Development, Design, Construction, Startup, Operations, and Reserves

### EDUCATION

- / PhD in Civil Engineering, South Dakota School of Mines & Technology, Rapid City, SD (2003)
- / Executive MBA, Kellogg School of Management, Northwestern University, Evanston, IL (1998)
- / MS in Civil Engineering, South Dakota School of Mines & Technology, Rapid City, SD (1978)
- / BS in Civil Engineering, South Dakota School of Mines & Technology, Rapid City, SD (1978)

### REGISTRATIONS & LICENSES

- / Professional Civil Engineer, California

### PROFESSIONAL MEMBERSHIPS

- / Geothermal Rising
- / Society of Petroleum Engineers
- / American Society of Civil Engineers

### HONORS & AWARDS

- / Ben Holt Award, Geothermal Rising, 2010

### WORK HISTORY

- / DH Geothermal (2021–Present)
- / Veizades & Associates, Inc. (2014–2021)
- / Energy Source (2011–2014)
- / Mighty River Power (2007–2011)
- / RESPEC (2003–2007)
- / Unocal (1984–2001)

### OVERVIEW

Dr. Dan Hoyer is a senior geothermal executive with 44 years of experience in drilling and geothermal projects. He has experience exploring, designing, constructing, starting up, and operating production and injection wells, power generation and resource gathering systems, and direct-use projects. He has drilled exploration and development wells to depths over 3,000 meters into geothermal systems greater than 300° Celsius. His expertise includes in-depth knowledge of 12 resource areas in 4 countries with binary and flash-conversion systems connecting to the existing transmission infrastructure, zero carbon co-production, and stand-alone direct-use projects, such as greenhouses and milk drying facilities. He has led front-end engineering and design work to evaluate the feasibility of commercial projects, including geology, geothermal reserves, drilling programs, surface facilities, and infrastructure. Dan is familiar with the financial analysis requirements of international funding institutions and has worked closely with government agencies and public and private utilities in supporting energy and infrastructure planning. He also has co-developed procurement strategies for clients using market insights of drilling contractors and service providers.

Dan's accomplishments in geothermal exploration and drilling are extensive. He was the project manager to target, drill, and test six exploration wells that successfully discovered two geothermal resources. Dan led and participated as an "Owner's Engineer" in developing, designing, constructing, and starting up six power plants and resource production facilities. He managed a \$54-million drilling exploration project in Djibouti, Africa, with a team of five companies, including geologic prognosis, the overall drilling program, civil works, and testing of 3 to 5 kilometers (km) deep wells, resulting in a "bankable" feasibility report. He led major growth at Mighty River Power (MRP) as their general geothermal manager, leading a fourfold revenue increase from \$35 million to \$135 million after increasing capacity by 240 megawatts (MW), resulting in an operation of over 360 MW. As the general manager at Energy Source, Dan participated in negotiating \$500 million in long-term financial agreements with insurance and tax credit investors. As the asset manager for Unocal in the Philippines, Dan grew the company's asset value by leading a workforce of more than 180 people through improved operations at the plant. Dan has extensive experience working in environments where a high degree of coordination and efficiency is required. His experience brings unmatched advice for a project like Waterfront Toronto's.

### PROJECT EXPERIENCE

#### DH Geothermal, Rapid City, South Dakota

*President*

- / Participated in developing a strategic project plan, creating a high-performance team with a vision to build and operate three power generation resource production facilities producing more than 350 MW and drilling and testing more than 40 wells
- / Led the development and submittal of a sales tax exemption of more than \$16 million that was approved by the California Alternative Energy and Advanced Transportation Financing Authority
- / Led the development of a Process Flow Diagram and worked with a turbine vendor to optimize the turbine/generator and resource production facility
- / Participated in the development of a transmission generator interconnecting request, including system impact and facility studies, and interacted with the utility
- / Led the development of a capital and operations and maintenance (O&M) budget as inputs to the financial model supporting the Power Purchase Agreement pricing and sensitivity analyses



- / Led the hiring and management of an "Owner's Engineer" to perform a front-end engineering design study resulting in the technical information to support the Application for Certification for the California Energy Commission and the technical portions of an Engineer, Procure, Construct (EPC) Request for Proposal with budget and options for EPC oversight

#### **Veizades & Associates, Inc., San Francisco, California**

##### *Senior Consultant*

- / Delivered high-value results for worldwide clients in drilling, design, construction, operations, and retrofits
- / Managed a \$54-million drilling exploration project in Djibouti, Africa, with a team of five companies, including geologic prognosis, the overall drilling program, civil works, and well testing, resulting in a "bankable" feasibility report (wells were 3 to 5 km deep; seven different international finance institutions funded the project)
- / Led/participated in the geothermal design, construction, operations, and due diligence for developments in Turkey, Africa, Europe, the Caribbean, New Zealand, El Salvador, and the US (Salton Sea, Coso, North Brawley, Dixie Valley, and The Geysers)

#### **MRP (Now Mercury), New Zealand**

##### *General Manager Geothermal*

- / Oversaw operations of 120 MW and construction of 240 MW geothermal power plants; reported directly to Boards of three Mauri-owned trusts and the Mercury Board
- / Increased MRP's Geothermal Generation Portfolio from \$500 million to \$1.5 billion and 100 to 360 MW in 4 years
- / Provided technical and construction oversight for a \$1.5-billion investment (accomplishments included directing the bid process and negotiating lump sum EPC contracts for construction; overseeing a \$100-million high-risk drilling program and contract; developing operation's process and procedures, capital expense, and maintenance budgets (\$55 million); and hiring 80 professional and non-professional staff)
- / Earned O&M company bonus fees in 2 of 4 years for significantly exceeding net revenue budget without an environmental, health, and safety (EHS) reportable incident
- / Managed the MRP professional staff to develop the exploration and drilling plan, which proved the commercial viability of a new resource area with only three exploratory wells leading to the commercially successful 90 MW Ngatamariki geothermal power plant

#### **Unocal, California, Philippines**

##### *Asset Manager Mak Ban/Tiwi/Philippine Geothermal, Inc., Project Engineer Salton Sea*

- / Hired as a change agent to turn around troubled business units
- / Managed \$58 million in annual revenue and 180 employees
- / Participated as "Owners Engineer" for the design, construction, and startup of Salton Units 2 and 3
- / Set electric sales generation records for 2 of 7 years in Tiwi
- / Increased EHS rating from the bottom of Unocal fleet to the top 20 percent
- / Assessed staff skills and performance gaps, recruited candidates, and realigned the organization to improve performance
- / Built and managed successful relationships with the local village leaders, the national utility (NPC), the American Chamber of Commerce, and the U.S. Embassy, which helped achieve Unocal corporate goals

## **PUBLICATIONS & PRESENTATIONS**

**Hoyer, D. P., 2014.** *Improve Resource and Plant Operation Management with Key Performance Indicators.* Geothermal Resources Council Transactions, Vol. 38.

**Hoyer, D. P., McClintock S., Spinks, K. D. 2010.** *Mighty River Power's Geothermal Program.* 2010 Geothermal Congress, Bali, 25-30 April 2010.

**Hoyer, D. P., Spinks, K. D., Powell, T. 2008.** *Mighty River Power's Geothermal Development Program in the Taupo Volcanic Zone of New Zealand.* Geothermal Resources Council Transactions, Vol. 32.

**Hoyer, D. P., 1991.** *Salton Sea Unit 2, Innovations and Successes.* Geothermal Resources Council Transaction, Vol. 15.

**Hoyer, D. P., 1990.** *Silica Solids Use, Salton Sea KGRA.* Geothermal Resources Council Transactions, Vol. 14, Part II.

**Hoyer, D. P., 1984.** *Minerals Recovery: A New Generation in Geothermal Resource Development.* Society of Petroleum Engineers of AIME, Copyright 1984.