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Education:

University of Arizona Tucson, AZ United States
Master's Degree 05/1988, Mechanical Engineering
Relevant Coursework, Licenses and Certifications:

United States Military Academy West Point, NY United States
Bachelor's Degree 06/1978
Major: Science

Course work at West Point and the University of Arizona was in fluids, heat transfer, thermodynamics, power systems, computer modeling, solar energy, calculus, differential equations and energy in general. I have many courses in energy conversion technologies including fossil fuel power plants, geothermal, solar, wind, and other less common power plants.

Work Experience:

Sustainable Engineering, Engineer/Owner, Jun 2007 to Present. Consulting extensively in the Geothermal Area. Most of my work has been developing projects from the initial start through the drilling, resource development and power plant procurement. I have extensive experience testing wells for flow and interference between wells. I was the main developer of the Paisley Geothermal Power plant a 3 MW Binary Power Plant. I have completed analysis of geothermal power plants for Grandview, ID, the Benton Piate Tribe, The Pueblo of Zia, and the town of Midwest, WY. I am currently working on geothermal projects in Northern California, Colorado, Oregon, and Idaho. I have evaluated small geothermal projects for the DOE Geothermal Technologies program for 3 years. My expertise is in understanding the physical challenges and being able to articulate both the possibilities and the challenges in energy and financial terms, especially the turbo machinery that makes up a power plant. I am also involved in leading edge research funded by ARPA-E regarding free piston engines. My education in fluids, heat transfer, thermodynamics, and power systems give me the understanding to recognize techniques and projects that have a high degree of being successful.

AltaRock Energy, Engineer, (09/2007 to 04/2009). I was one of the first new employees at AltaRock Energy. My responsibilities included mechanical engineering and developing new projects sites (securing owner support, land, water rights, etc). During my time at AltaRock I develop two potential projects that both received funding from Federal sources. Neither of these projects were eventually developed by AltaRock and I was so committed to the projects that I formed my own business to continue support of the projects. I also helped AltaRock secure Federal Funding for its project in Oregon. As a result of this experience I understand how engineered geothermal systems could work as well as how they relate to traditional geothermal systems.

Chevron, Engineer (07/2001 to 09/2007). This work experience improving energy efficiency at public institutions (towns, states, schools, colleges) and included a thorough analysis of energy consuming systems. It includes the building of a geothermal heat pump system using ground water and analysis of

several Gas and Steam Turbine Systems. Throughout this experience I became convinced that geothermal systems (although somewhat expensive at the time) would be the best long term solution to many of the low temperature requirements. This interest in tapping geothermal energy showed in all my jobs where heat pumps and geothermal energy were considered. During this time I performed engineering analysis, specifically energy on systems that include fluid flow, thermal energy transfer, combustion, lighting and controls systems. I understand how and why energy is used and delivered to a site.

Johnson Controls/NORESCO/Honeywell (6/1994 to 6/2001). Engineer for three different companies all in the energy efficiency and controls business. I learned how to model energy consumption, predict and compute savings. Probably more important than any technical analysis however was the management of the engineering departments in each organization and managing the relationship with clients. The ability to clearly and concisely articulate savings and keep good and open communications using a variety of presentation techniques was key to my success in the energy efficiency business. The communications I have found very useful in Geothermal. For example electric rate structures often determine which projects should be pursued

US Army Corps of Engineers, 06/1978 - 06/1994. Commission Army Officer, Basic pioneer engineering tasks, *for example construction of roads, airfields, power systems, and support infrastructure (including drilling for water)*. These are the same tasks that are required for geothermal drilling and power plant construction. While in the Army I went to Graduate School and taught thermodynamics, fluids, and mechanical engineering at West Point for 3 years. West Point is a very pragmatic engineering program focused on real problems. The Army experience gives me a very broad spectrum of engineering experience that includes explosives, engineer equipment, and energy analysis.

Professional Certifications

Professional Engineer with current licenses in NM, ID, OR, UT, WY, CO, MT, and WA.
Certified Energy Manager
LEED Accredited Professional