

By Phil Rawlings

If you have a question about geothermal installation, design or troubleshooting, send it to Phil Rawlings in care of *Geo Outlook*, Oklahoma State University, 499 Cordell South, Stillwater, OK 74078 or via e-mail to insight@igshpa.okstate.edu.



In foreign markets, is there one key point to be cautious about when sizing geothermal heat pumps?

Yes - equipment capacities. Here in the U.S. we are used to a number of different power supply voltages that are 60 cycle and either single or three phase. In many other countries, the power is 50 cycle. This significantly impacts equipment capacity. Review equipment capacity carefully at the operating temperature parameters, flow rates and electrical characteristics you will be using. The capacities that you are used to working with in the USA are greater than the same equipment, under the same conditions but on a 50 cycle power source. While it is recommended that you use manufacturer's data, as a reference, typical correction rules of thumb are 60 cycle data times 0.833 for CFM, 0.92 for capacity and 0.95 for watts.

This is my first international project. What do I need to prepare for?

Virtually everything, but be sure to:

- Verify travel and work documents and the time frames they allow are adequate if you encounter delays
- Verify that you can source "IT" at the project location or near by. If not, take what you need (plus spares) with you.
- Remember the time frames it may take for equipment and materials to clear customs
- Verify the power source at the exact site, not the general area
- Remember that your American electric tools will probably not work
- Remember metric versus inch/pound measurements
- Investigate local work cultures and be prepared to work with them

Any differences in loop design criteria?

None, other than the equipment capacity issues discussed in the first question. Also, be sure to verify that the equipment capacities used in your loop design programs include or can include 50 cycle power and international voltages.

What about travel documents and shipping paperwork?

- Investigate the country's entry and work paperwork requirements. In most cases you must write the country's Embassy for a work visa. Typical travel related documents are not usually acceptable as work documents.

- Be sure to keep original U.S. export documents at the project office. These are used to receive all equipment and material and will be used during demobilization as proof of what equipment was sent out of the U.S. and is now being returned.

Mr. Rawlings has over twenty-five years experience in the geothermal industry. He is a Certified Geoexchange Designer (CGD) and an IGSHPA Accredited Installer and Trainer.