

Department
of Energy

Information



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VEGETABLE PLANT TURNS GEOTHERMAL FAILURE TO SUCCESS

The geothermal resource that provides the process hot water for the Geothermal Food Processors, Inc., plant at Brady Hot Springs, Nev., is an example of turning an initial failure into a success.

During the late 'fifties and early sixties' Magma Energy Company of Los Angeles, Calif., along with its subsidiaries, and Union Oil Company of California, drilled several exploratory wells at the Brady Hot Springs site in an attempt to locate high temperature steam for an electric power plant. They found hot water but not of sufficient temperature to provide steam and the economics were such that the hot water could not compete with other cheaper fuel sources.

Even before this abortive attempt to use the geothermal resource, the history of the area indicates a likelihood that early Indians used Brady Hot Springs and the springs were certainly used in the nineteenth century as an important water resource by early pioneers. The Springs were the only source of water on the Truckee branch of the Emigrant Trail that crossed the Forty Mile Desert.

In more recent times Brady Hot Springs was a commercial health resort. At its peak the spa located at the site included a swimming pool, bathhouse, and other resort buildings. But in the late fifties the springs ran dry, the resort was abandoned and later decimated by vandals. Only the foundation of the bathhouse and remnants of the swimming pool remain.

Not far away is a 40 by 600-foot building that houses Geothermal Food Processors, Inc., a plant whose founder believes represents the wave of the future in vegetable processing.

Vegetable dehydration is a process which at present uses huge quantities of natural gas. According to GFP president Ray Nash geothermal energy is a natural for replacing this dwindling resource.

"I've wanted to put this idea to work for a long time," says Nash. "The Department of Energy's Geothermal Loan Guranty program made it possible."

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Actually the technology associated with the plant is conventional and common to the food processing industry except for the heat exchanger which transfers geothermal fluid to dryer heat.

Nash, a native of Texas, who grew up in California, has been associated with the food processing industry since 1941 when he started as a general laborer with Basic Vegetable Products of Vacaville, Calif. By the time he left Basic in 1954 he had worked his way up through Preparation Leaderman, Preparation Foreman, Dehydration Foreman, and Assistant Mill Superintendent in charge of milling, packaging and shipping, to Assistant Plant Superintendent. He also got involved in sales, working with potential customers in development of new products.

He left Basic to become Plant Superintendent at Vacu Dry Company at Sebastopol, Calif., where he helped design and install the first continuous apple dryer in the industry. Promoted to Plants Manager he lead the development of prune flakes, apple flakes, perforated apple pie slices and also helped develop dehydrated soup mixes.

In 1963 Nash moved on to General Manager of California Operations for Rogers Bros. Company at Turlock, Calif. Continuing his interest in innovation he developed a raw procurement department to contract and harvest onions and garlic. These vegetables had previously been purchased on the open market.

In 1967 Nash became Vice President for Manufacturing and Raw Procurement for Gilroy Foods, a division of McCormick Schilling, at Gilroy, Calif., and where he was responsible for starting a Fresh Market Company for onions and garlic.

On 1970 he became a consultant, working with Hunt-Wesson Foods, Proctor and Swartz (dryer manufacturers), Philadelphia, Pennsylvania, Roger Denlon Company, Oxnard, Calif., and to the Mexican government for a garlic dehydration plant.

With the approval of the Geothermal Loan Guaranty by the Department of Energy in October 1977 Ray Nash began to see a longtime dream come true--a geothermal vegetable processing plant. Nevada National Bank in Reno provided the loan which amounted to \$2.8 million of the almost \$4 million cost of the project.

Already in existence on the 160 acre site where the 10 wells drilled by Magma Energy Company mentioned earlier. The site is on private land leased from Mrs. Lucy Brady for whose family the Hot Springs were named.

The geothermal expert on the project is B. C. McCabe, Jr., Vice President of GFP and longtime associate in Magma Energy. It was McCabe who introduced Nash to the possibilities of geothermal. Together they worked out the plan to match up geothermal energy with food processing.

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The first project milestone involved a detailed reservoir testing program to verify that pumping one of the existing wells would provide the required fluid flow (approximately 700 gallons per minute) at the proper temperature (270 degrees F) for plant operation. Additional testing checked long-term performance.

Although the plant is capable of processing 30 million pounds of raw onions per year the initial production will be about half that. The first run of onions started in mid-October and will run out about November 10. In a normal year onion processing will start about May 15 and continue to November 1. After a short conversion period the plant will process celery from November 15 to January 15. Then there will be a run of carrots from March 1 to April 15. It is possible that some time in the future the plant will process potatoes. Onions come from California with Gilroy Foods contracting farmers and handling the end product. GFP will do the contracting for celery and carrots.

Although most of the plant is taken up with one long piece of machinery -- the dryer -- 22 people per shift are required to handle just one operation -- the coring line which will run two shifts a day, seven days a week. The plant will operate around the clock and employ a total of 75 persons.

So if you see a lot of people with tears in their eyes, the plant is a success. They're processing onions.

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