Peter and the Powerhouse

Like his forefathers from colonial times, Peter Burno believes in power derived from steam and the Law of Gravity.

There are three things that set Peter Burno apart from all the power engineers you're going to meet in your lifetime.

One is that Peter Burno is the sole stockholder in the Wisconsin Edison Corporation, which sells electricity to the City of Stoughton Electric Utility. That means he owns the riverside generating plant—lock, stock, and turbines—"the whole dam thing," you might say.

Another is that Peter Burno is president of the Wisconsin State Association of Power Engineers, president of the National Association of Power Engineers, and president of the National Institute of Power Engineers.

These presidencies are great honors bestowed upon him by his peers, honors made all the more impressive by the fact that many of his peers have graduated from some of the most prestigious engineering colleges in America. Peter never graduated from a prestigious college. As a matter of fact, Peter never got to college at all.

He operated a machine shop in DeForest for 25 years, always designing power plants on the side. Today he owns his own, at Stoughton, and at Dunkirk and Stebbinsville on the Yahara River—with two more under construction: Fulton on the Yahara and Indianford on the Rock River.

In the humming, uncluttered Stoughton powerhouse, Peter Burno is at one and the same time the shy, smiling young boy with his beloved toys—the refurbished, resurrected "working antiques"—and the ageless owl, an Old Professional born to this ancient work in the Chicago of a vanished world.

In some respects, Peter seems just like ordinary people. He and his wife, Lela, have four children, eleven grandchildren, and three great-grandchildren. They live in Stebbinsville—"in the best house by a dam site."

But, in another respect, there is a quality about Peter Burno that is very extraordinary, indeed. He, like his machinery, survives from another era, another age. One of his machinists comes to him, and they confer about a part, a forged casting designed by Peter from scratch *because no one makes those* parts anymore, which will go into a working turbine. Peter says the new part will last a hundred years easily. He leans on the green housing of the generator, which is already older than any living American, and he begins to talk about hydro and steam and all the other good stuff in life.

by George Vukelich / photos by Brent Nicastro

"From the age of two, I knew what I was going to do. I was going to be an engineer, specializing in *power*. It must be in my genes.

"Our family was involved as a colonial partner in Principia Furnace, the first ironworks in the American colonies. Our neighbor, and a partner in the firm, was George Washington's father. There were twelve partners in all—five colonial and seven British.

"I started out as a design engineer in the Harrison Shop in Belleville, Illinois, a shop that began in 1848 manufacturing heavy steam machinery. I designed Corliss steam engines. George Corliss invented that particular type of engine, but his patent expired in 1869, and because of the success of his machine, many companies began to build 'Corliss engines.' I'm probably the last living designer of Corliss steam engines. There's a very limited market for them.

"The design philosophy of that era was: *Why did you use a 12-inch shaft when a 24-inch shaft would have fit?* Just 180 degrees from today's philosophy. The engineering in those days was dictated to by a sales department that was concerned with *longevity*—that's the direct opposite of 'planned obsolescence.' I follow that same design philosophy today.

"During World War II, I went into the army at Lee Hall, Virginia, and designed steam locomotives for the Military Railway Service. The MRS was responsible for all military railroad activities in the U.S. and such railroad activities in the war zones as the army was charged with—mostly in the ETO, the European Theater of Operations.

"There's no way I could have learned in a hundred years in civilian life what I learned in the army.

"Tinkering on the American locomotives was an education. I had drawings. I had operating histories. And I could always go to Pennsylvania, to the Baldwin Locomotive Works, and take advantage of their 100-years of know-how.

"My real challenge came when foreign locomotives, made in Europe, were shipped here for repair. There were no drawings, no information. The army just said to us: 'This is what's missing. Make it work, get it together, and get it back to Europe as soon as possible.' Sometimes they didn't know what was missing, and you had to figure that out, and after you figured that out, you had to make the missing part from scratch.

"It's very much like working on this power plant (in Stoughton)—all massive castings and forgings—and you wind up making your own because you can't get them anywhere. If you make them right, they last a long time. I would project the life of this gear we made right here in Stoughton at 500 to 600 years.

"Steam has always been my first love. It still is today, but I could see the handwriting on the wall. I always felt a side use of atomic piles should be to produce steam, which would produce electricity. Our government dictated that atomic piles would not be used that way, a decision with which I still disagree.

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"After World War II, I began talking about hydroelectric power when everybody else was trying to get rid of it. The political climate was such that a private individual couldn't do much about hydro in the 1950's and early 60's.

"Then in the late 60's, the City of Stoughton wished to divest itself of three hydroelectric plants. Instead of the City (of Stoughton) having to repair and maintain the dam, I assumed that burden and the city is the recipient of my electricity, which is, incidentally, *the cheapest electricity sold in* the state. Presently, it costs 2.3-cents a kilowatt—an average family of four persons uses about 6,000 kilowatts of electricity a year—and our little company produces about 2.4-million kilowatts a year.

"We produce this electricity at a time when the load on the system is at the max, so in addition to furnishing energy, we furnish *peak power*, which is the most expensive energy any utility had to deal with—*and we do this free*.

"What I'm doing here is creating something from nature. One of the laws that our legislators can't fiddle with is the law of gravity, and that's the one I'm dealing with. What I have here is something that transcends time and politics.

"The world will always need energy, and as the population increases, the energy requirements will increase almost logarithmically. In other words, doubling the population will cause need for more than double the energy requirements.

"Personally, I've solved my energy problems, but looking at the people who have not solved theirs, I feel the only long term alternative is to develop *nuclear* power.

"Nuclear power produces *heat*, which could be used to make *steam*, which then turns turbines to generate *electricity*. On a smaller scale, this same nuclear power can and will eventually be used by industry for the production of heat.

"Finally, the small amount of heat remaining in the nuclear residue—which we mistakenly refer to as 'waste'—can provide heat for private residences, thus making the 'waste' the most valuable part of the nuclear power cycle.

"As I see it, we have two courses before us. One, we can continue to increase our populations and then our energy development can only be nuclear. Two, we can retreat from our energy development, provided we also retreat from our population escalation.

"The sobering fact is that we have the technology now to provide enough energy to populate the world until, as a race, we fall heir to the fate of the trilobites.

"Well, the Wisconsin Edison Corporation, for one, has solved its population problem. I'm *the sole stockholder*. You know, by Wisconsin law, we must have an annual stockholders' meeting. And so, once every year, I sit down with myself, and we have one."