

Ben Russell was an of Wood as an

Ben Russell explains
how his gasifier
works.

By Sam Duvall

TO PROVE THAT WOOD could be used as an alternative fuel in more ways than one, Ben Russell, chairman and CEO of Russell Lands, built a gasifier at his company shop near Alexander City and drove a car fueled only by wood from coast to coast.

"We put the back tires into the Atlantic Ocean at Jacksonville, Fla., and went to the West Coast on less than a cord of wood and put the front tires into the Pacific Ocean in California. We drove 2,700 miles without a single drop of gasoline and had the damndest time you ever saw," he said.

You might ask yourself why Russell, who runs a company that owns thousands of acres of land, including 250 miles of shoreline on Lake Martin, four full-service marinas, two lake-side restaurants, a bunch of residential developments, nine Do-it Best centers and a lot of other stuff, would spend his time tinkering with something that looks like an espresso machine on steroids?

The answer is that Russell loves working on such things. He was only partially joking when he noted that he and the men working with him on the project were threatened with divorce because their work was getting dangerously close to fouling up Christmas when "ECAR-1" set out for Florida on December 2, 1979, and then drove from there to California.

While the first to admit that the practical use for a gasifier is limited, Russell believes it could prove useful on farm equipment, or to run pumps or some types of forestry machines as a relatively simple system that could save money on fuel costs.

Russell's coast-to-coast trip was followed by trips to New York City for an appearance on "Good Morning America" and to Miami, Florida, this time in a truck that carried all its fuel in the bed (Due to time constraints, a separate truck had to travel with the car to haul the fuel out West). Russell used these trips to generate publicity for his real interest, which is supplying wood as fuel for industry.

Russell's fascination with wood as an alternative fuel started in the 1970s when the Organization of Petroleum

Early Promoter Alternative Fuel

This is the wood-burning boiler Ben Russell convinced the Alexander City company to buy and that is still in operation today.

This is the type of wood waste Ben Russell burns in his gasifier. Just about any wood will do as long as it's dry.

Russell's work has resulted in the use of over 5 million tons of waste wood, which he says has replaced some 250 million gallons of fuel oil.

Exporting Countries (OPEC) started manipulating the oil supply in a way that endangered the economic stability of developed countries.

After seeing how much wood came off of a couple of residential lots being cleared for development, a light went on in Russell's mind.

How Much Wood is Out There?

"We were building a little subdivision and we had to clean up the lots. We decided to just cut the brush and smaller trees, pick up all dead or fallen wood, and throw them on a pile and burn them. Well heck, I went out there every day for several days and they were continually

throwing wood on that big pile. This was during the Arab oil embargo and I began to wonder how much wood is out there (for fuel)," Russell said.

"I sought out some people that made boiler plants. They were the crudest form of forest products boilers, small ones... that would burn unprepared sawmill residue," he said. "I began to get some prices and then started doing a fuel survey. That was the main thing. Nobody would believe there was enough surplus wood to do anything with. They'd just about laugh you out of the office when you proposed it."

Russell first approached Russell Corp., then a public company founded by his



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grandfather in 1902. "I made them a proposition in 1973. I had accumulated all of the engineering work and a feasibility study on the availability of wood. I told them I would give them a contract to guarantee a four-year supply of wood at the equivalent of 17 cents per gallon of oil, if they would build the boiler," Ben said.

"That was three or four dollars a ton. They decided to do it and spent a million and a half dollars building the boiler plant, and oil suddenly went to 70 cents per gallon," he recalled.

"This was the first non-forestry wood burning power system in the country in modern times," Russell said, noting that the forest products industry pioneered the use of wood for fuel at their industry plants.

Beware Broken Wrenches, Pipes, Rebar and Old Saw Blades

Russell admitted that conversion to a wood-fired boiler system was not without problems.

"Our fuel came from sawmills. The sawdust and bark conveyer at sawmills is also the trash conveyer. Sawmill workers would throw broken wrenches, old pieces of pipe, the rebar they'd been tripping over, and old saw blades in there and you would never see it again" until it started showing up when the wood residues were being prepared for the boiler, he noted.

"We worked with the sawmillers and got them to be more aware of what they put in there. Although it took some time to get people to think about the overall picture, once they did it worked really, really well," he said.

So well in fact, with the Russell Corp. plant humming along, Ben got a call from a manufacturer inquiring about the possibility of selling a similar system to Jack Daniels Distillery in Tennessee.

"They [Jack Daniels] were progressive and said, 'yeah, it sounds great to us.' We gave them a contract and ran that system for 20-some-odd years. Both the mill (Russell Corp.) and Jack Daniels are still burning wood. We cranked up the mill system in, I think it was 1975," he noted.

In addition to Russell Corp. and Jack Daniels, Russell sold a similar boiler

The good thing about trucks powered by the gasifier is that they could carry their own fuel in the back.



Ben Russell surrounded by the loves of his life, wife Luanne (right) and daughter Adelia "Dedie" Russell Hendrix.

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system to Burlington Industries in Georgia. Although that plant has recently closed and the boiler is now idle, Russell is seeking an agreement to allow the boiler to be run as a co-generation facility to produce electricity.

Russell's work has resulted in more than 5 million tons of waste wood being burned, which he says displaced some 250 million gallons of fuel oil.

First Mills, Then Cars and Trucks

It was after establishing and selling systems to generate electricity and steam for industry that Russell stretched the idea of wood for fuel to include the ubiquitous symbol of American individuality, the automobile. He formed a company called ECON to do research and development on the gasifier.

The idea for the gasifier came from Russell's recollection of the Germans and some people in Asia and other parts of the world using gasification to run buses, farm equipment and other types of vehicles to take a load off of fossil fuels needed to fuel the war effort. He also heard of someone closer to home developing a new wood fuel system.

"I heard that somebody in South Alabama had developed something that could make a car run. I went down to see it and it was sort of a few stovepipes hooked together. They could crank the car up after a few hours work and maybe go around the parking lot before it would gum up and quit," he recalled.

"That floored me," he continued. "So I began to look for other information. Sweden accumulated all the knowledge they had developed in World War II and published it. I contacted their Agricultural

Department under which Forestry was housed, went to Sweden, and got to see some things they had been running on wood gas. But it was very old information, a hodgepodge of that which would work and that which would not work."

"The problems in the past were centered on the area of filtering out the carbon, the soot. It was almost impossible for them to handle that because if you cool the gas off enough that cloth [filters] can stand it, water starts to form and you cannot get wet material through a filter," Russell said.

"But with the advent of fiberglass filter cloth, we were totally relieved of that problem because we could run the gas at 300, maybe 400 degrees and filter dry but very hot gas and take the soot out of it without the water forming," he explained.

Once Russell and his crew whipped the inherent tar or creosote problem, which is the real challenge, they bought a 1978 Chevrolet Malibu Station Wagon and fitted the gasifier to the back on a little trailer. To show that wood was the only fuel source, the gas tank and other fuel-related components were removed, along with the "unleaded gasoline only" sign on the dash; the sign was changed to read, "untreated wood fuel only."

A more recent version of the gasifier, with some refinements, has been mounted on a used Chevrolet pickup. The truck runs about as smooth as a gasoline-fueled vehicle, although wood gas only produces about 60 percent of the power of gasoline. A control valve on the dash allows the driver to open an air inlet to adjust the fuel/air ratio.

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Workers have had the truck up to about 70 mph. It does not accelerate as well as a gasoline-fueled vehicle and does not have the hill climbing power of gasoline because of the diminished power of wood gas. But in all other respects it worked fine as Russell and an employee gave the writer a ride around Russell Lands property.



"Mr. Ben" circa 1940.

It All Began With Mr. Ben

Ben Russell and the Russell family have been prominent land and business owners in the Alexander City area since before the Civil War. In 1902, his grandfather, Benjamin "Mr. Ben" Russell, a lawyer, banker, landowner farmer — and just about everything else you can think of — started Russell Manufacturing Company in a 50 by 100-foot wooden building with six knitting machines and 10 sewing machines.

The company, which became Russell Corp., now has an internationally recognized logo. The textile company was sold to Berkshire Hathaway several years ago. "They're leaving the Russell name; it will remain Russell Corp., and that's very pleasing to me," Russell said.

In 1963, when it was decided to take the company "public" and trade it on the New York Stock Exchange, the law firm working on the project, Bradley, Arrant, Rose and White, separated Russell Lands from Russell Corp.

This was fortuitous for Ben Russell. First, he became president of Russell Lands in 1970 and is now president and CEO of the company and majority stock-owner. But separation also allowed the smaller company to flourish.

"I was technically oriented. I thought everything came from wrenches and such. I grew up in the mill. But I decided to leave that and come with this company. And this was just a little bitty company. But my heavens, what if they hadn't separated the companies? It would have been a tragedy for this lake [Lake Martin]. Can you imagine a corporation being able to sell off these and the other assets on bad years to make the books look a little better? Oh, man," he said.

The success of Russell Lands has allowed Ben Russell to fund projects like Children's Harbor on 50 acres of donated land along a mile of beautiful shoreline. This is Russell Land's principal charity and is affiliated with Children's Hospital.

Much of the land owned by Russell Lands was originally acquired by Mr. Ben, who seemed to realize that recreation would one day become an industry in and of itself. In addition to buying land all around Lake Martin, which at the time was thought foolish because it was feared that malaria would be a problem (or that the lake would fill up with silt within 50 years), Mr. Ben also planted millions of pine trees on his land to help



Benjamin Francis Commander (B.F.C.) Russell, Mr. Ben's father, as he appeared in the Confederate uniform he wore while fighting under Gen. James Longstreet in the Army of Northern Virginia.

stabilize the soil and keep the lake water clean by filtering it through pine straw.

"A lot of people thought he was crazy, buying land when land had little value, and then planting pine trees all over the place. But he was actually way ahead of his time," Ben Russell said.

Indeed, considering his early interest in alternative fuels, the same thing could be said about Mr. Ben's grandson ■



An aerial shot of the light house at Children's Harbor, a special place set up for the Russell Lands charity to help children.