

FUTURE SHOCK

Supers, mechanics none too pleased with mandated RFG

By J. BARRY MOTHES

Officially, the acronym RFG stands for reformulated gasoline. But some golf course mechanics and greens crews around the country might have their own spicy interpretation.

As part of the 1985 federal Clean Air Act, RFG became mandatory starting Jan. 1, 1995, in all or part of 18 states with the worst ozone and air pollution problems. RFG supposedly pollutes less because it has lower levels of volatile compounds like benzene and contains an oxygenate like ethanol.

But complaints and anecdotal evidence against the new, technically "cleaner" gas have been piling up.

Some golf course mechanics are finding RFG yields lower mileage, less engine power and punch, more frequent tune-ups and nagging repairs on everything from greens and fairway mowers to weed-whackers. The gas is also less stable and many distributors recommend a storage life of no more than 30 days.

"The big surprise to me was mixed-gas items," said Eric Ingenbrandt, mechanic at the 18-hole Trenton (N.J.) Country Club (CC). "I have five Echo weed eaters (models SRM 2501, 2502) and on two of them had to do carburetor rebuilds because the diaphragms are wearing out. I've already cleaned carbon out of the mufflers once on all of them and changed spark plugs. I don't know how much can be attributed to this new gas ... but prior to this I'd only done one carburetor in five years, and that was four years ago."

RFG is being used statewide in Connecticut, Delaware, Massachusetts, New Jersey, Rhode Island and the



LOOK OUT BELOW!

The newly completed back nine at the Jim Fazio-designed Country Club of the Poconos (CCP) is so rugged, they've installed guard rails on cart paths at strategic locations — probably when the golfer encounters some of CCP's 100-foot vertical drops. "We're also going to install a cellular phone on the back nine for emergencies due to the remoteness," explained CCP General Manager Albert Bertha. The front nine at CCP has accommodated play for two years, but delays in securing state wetland permits postponed completion until this spring. The course held its grand opening — guard rails and all — over the Memorial Day Weekend.

District of Columbia. It is also required in metropolitan areas in parts of California, Illinois, Indiana, Kentucky, Maine, Maryland, New Hampshire, New York, Pennsylvania, Texas, Virginia and Wisconsin. The U.S. Environmental Protection Agency said some areas with less-serious ozone problems have elected to use it also. It was estimated 33 percent of all gasoline used in this country after Jan. 1, 1995 would be reformulated.

RFG — also known as methyl tertiary butyl ether (MTBE) — is considered "cleaner" gas. The content of toxic benzene has been reduced from about 15 percent to around 1 percent. But benzene contains lubricants that help engines run smoothly. Without these lubricants, engines run drier and hotter, which can lead to a variety of problems with carburetors, cylinders, spark plugs and head gaskets.

EPA estimates RFG produces 15 to

17 percent less pollution than conventional gasoline by reducing harmful vehicle emissions of smog-forming compounds and air toxins. It also estimates 1.3 million tons of ozone-forming emissions will be prevented in the first phase of the program from 1995 to 1999. EPA conceded in an early press release that RFG "may" reduce gas mileage on cars by 1 or 2 percent and, that "Certain oxygenates may not be compatible with small lawn and garden equipment engines, especially older ones."

"I'm all for pollution control, but I don't think anybody thought this out," said Harold George, head mechanic at 36-hole DuPont CC in Wilmington, Del. George oversees 300 pieces of maintenance equipment as well as 100 golf cars and 18 trucks. "It got forced on us, as usual. I don't think people realize how much small equipment can be

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Cost may exceed practicality with natural gas cars

By MATTHEW PHILLIPS

WASHINGTON TOWNSHIP, Mich. — First, they were electric-powered. Then came gasoline in 1971. And now, natural gas. Will the quest for a better-performing, more economical and environmentally friendly golf car ever end?

Recently, *Golf Course News* sampled the latest breakthrough in golfing transportation here at The Orchards, a year-old Robert Trent Jones Jr. designed course 30 miles north of Detroit. Built 3,500 feet above a Michigan Consolidated Natural Gas (MichCon) natural gas storage facility, The Orchards is a fitting venue for the world's first fleet of natural gas golf cars.

However, the sheer expense of exploiting this alternative fuel source — conversions run about \$1,500 per car, and fueling stations can be upwards of \$50,000 — may prohibit widespread use of natural-gas-powered golf cars.

The Orchards' unique fleet was the product of a three-way collaboration. E-Z-GO supplied cars to Modern Engineering, which converted the engines to burn natural gas. Once finished, MichCon stepped in to handle the fueling station and gas storage facilities.

The cars run on absorbed natural gas (ANG), a low-pressure gas fueling system. Environmentally, this system provides several benefits over its gasoline and electric siblings. Because of sealed fuel tanks and sealed refueling systems, there is no danger involved with accidental spillage, unlike gasoline-powered vehicles. In addition, non-methane hydrocarbons and carbon monoxide emissions are a fraction of those produced by gasoline cars. (Evaluating electric car emissions is difficult when you consider the electric plant's total emissions. They are believed to be higher than ANG-powered vehicles.)

The performance of the natural gas vehicle was simultaneously impressive and frustrating. Before the car goes anywhere, there is a three-to four-second delay while you wait for the engine to "spool up." This can be a source of ire for golfers eager to reach the resting place of their last duff. Once moving, though, the ANG vehicle performs on par with gasoline versions, providing good acceleration and impressive hill-climbing ability while surpassing terrain capabilities of electric cars.

In terms of economics, ANG-powered cars are significantly disadvantaged due to the newness of their technology. If the high cost of conversions and fueling stations can be overcome, ANG-powered cars possess a per-round cost advantage over their rivals. Whereas gasoline and electric cars cost roughly 25 cents per round to operate, early indications peg ANG cars at about 10 to 15 cents per round. Over the life of the car, which should be longer than gasoline or electric versions, the savings realized could be substantial.

As always with new technology, there are kinks to work out and eventual room for improvement and efficiencies. Absorbed natural gas-powered golf cars are no different. That having been said, early indications show ANG cars to be an environmentally sensitive, strong performing and a potentially economical golf transportation alternative — attractive qualities to golf course managers everywhere, even if they like to walk.

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