

Director's Digest



Technical Director

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FAT FOR FUEL

IS THIS AN IDEA WHOSE TIME WILL COME?

In the January 28, 1983 issue of the National Provisioner, an article entitled, "Yellow Grease As Car Fuel? It Works!" described the success a machine shop owner in southwest suburban Chicago had in adapting a diesel engine in an AMC Gremlin to use yellow grease as fuel. The yellow grease, incidentally, was supplied by Kaluzny Bros., Joliet, IL.

At the recent Area V meeting, the car was demonstrated and, except for exhaust emissions reminiscent of frying hamburgers, the engine ran very well on yellow grease. Prior to that, there was considerable publicity generated when the car came second in the 1982 Nebraska Independence Day Alternate Fuels Classic, the only entry powered by animal fat.

Is this development anything more than an interesting curiosity? In terms of present oil consumption and price, it is difficult to envision the oil companies as outlets for animal fat, partly because of the competition with petroleum from an outside source and partly because there is not enough animal fat available to interest the oil companies in handling such material.

Annual U.S. production of fat and grease is about 6.6 billion pounds. Present daily U.S. consumption of petroleum is about 15 million barrels, or about 5 billion pounds. Thus, total U.S. production of fat and grease would constitute only about 1.3 days' supply of fuel. This would be difficult to integrate into normal supply channels.

Where, then, is the possible outlet for fat and grease as fuel? The answer is in the renderer's own diesel trucks or as boiler fuel, blended with fuel oil at some level. Questions which must be answered are:

1. What are the economics?
2. Would the free fatty acids in grease cause excessive wear in diesel engines?
3. Would grease cause tube-fouling in boilers?

The economics of using grease are directly influenced by the comparative energy value of grease and fuel oil. Yellow grease has an energy content of about 132,000 BTU per gallon compared to 140,000 BTU per gallon for No. 2 fuel oil and 146,000 BTU per gallon for No. 6 Fuel oil. Thus, yellow grease has about 95% of the energy value of No. 2 fuel oil and about 90% of the energy value of No. 6 fuel oil.

Current prices (Chicago area - February 11, 1983) at the plant are as follows:

No. 2 fuel oil - 97 cents/gallon
No. 6 fuel oil - 68 cents/gallon
Yellow grease - 12 cents/pound or, assuming 7.5 pounds per gallon, 90 cents per gallon equivalent.

It is obvious that yellow grease would not be competitive with No. 6 fuel oil, based on price per unit of energy. Compared with

the price of No. 2 fuel oil on a comparative energy basis, yellow grease and No. 2 fuel oil are close to break even. If yellow grease were taxed as motor fuel, this would not be true.

Thus, if inventories of yellow grease are burdensome, it might be feasible to blend a reasonable amount of yellow grease with diesel fuel oil for consumption within the industry. This assumes that the grease will be adequately filtered to remove particulate matter which would clog the fuel injectors, that free fatty acids would not harm the working parts of the

engine, that further refining and its added cost would be unnecessary, and that renderers would not pay tax on yellow grease used in their own trucks.

World petroleum prices as we know are subject to the whims of the exporting countries, tempered, to the credit of the American consumer, by demand factors. If long term trends appear to favor the use of animal fat as fuel and such use will produce concrete benefits for the rendering industry, research will be initiated by FPRF to exploit this concept.