

TECHNICAL BRIEFS

ENGINEERING DEVELOPMENTS HERE AND
ABROAD DIGESTED FOR BUSY POWER MEN

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FUELS AND FIRING

Possibilities of Coal Processing in Power Production, by A D Singh, Singh Co. Coal consumption in power plants represents a major portion of the nation's annual coal supply. For the public utilities alone, coal demand has grown to 68 million tons and is expected to reach 100 million annually by 1952.

The author believes that coal utilization in the power industry can be (1) improved (2) put to work as a vital factor in a sound national fuels-conservation plan.

Partially gasifying coal prior to its combustion in steam-generating furnaces leaves a char, highly suitable, in the author's opinion, for steam-generating purposes. Advantages claimed are (1) higher furnace temperatures (2) faster combustion rates (3) increased evaporation rates (4) less surface cleaning (5) 25 to 35% decrease in sulphur-compound emission (6) possible generation of a suitable gas fuel for home and industry.

Over and above these gains from partial gasification are the products that can supplement national crude-oil and natural-gas supplies. If all the coal needed to produce the required char for the utilities were partially gasified, a coal gas would be produced able to supply heat equivalent to more than a trillion cu ft of natural gas, about 20% of our present rate of consumption.

Recent technological advances in the Fischer-Tropsch synthesis of liquid fuels indicate that coal gas from the source described above could produce 40 million barrels of synthetic liquid fuels. MPC Paper.

Experiences with a Multiple-Fuel-Fired Water-tube Boiler, by R. Frank Hollis, Alton Box Board Co. A 100,000-lb-per-hr 475-psi 750-F boiler, designed to fire coal singly or in multiple with residual fuel oil or natural gas, served as the basis for the author's experience. Coal is 1 1/4-in. screenings from Illinois Inner Group mines. It ranges in moisture from 10 to 20%; ash from 10 to 22%; sulphur 4%; grindability 55, average; ash-fusion temperature 2000-2100 F; normal Btu average of 10,200. Gas averages 980 Btu per cu ft and is very clean. Residual fuel oil runs about 150,700 Btu per gal, 0.99 specific gravity, 5729 sau at 100 F. Oil must be heated to not less than 160 F to pump it from transport trucks.

Six forced outages have occurred in a little over three years. Two were tube failures in auxiliary feeders. They have been corrected by using Nelson studs and refractory to protect them from radiant heat of the furnace. One outage came from a bearing failure on the forced-draft fan. The rest were from a badly balanced condition on the induced-draft fan.

This induced-draft fan is the greatest operating worry. Wheel erosion requires replacement with a spare assembly about every ten months and, together with intermediate unbalancing, makes up most of the headaches.

Original firing was with gas and the furnace was relatively dark. When a switch to coal was made, ignition proved unstable at high loads. The furnace grew too cold. To correct this the front-wall furnace tubes on 6-in. spacing were studded with Nelson studs around the burner parts and covered with chrome refractory. Ignition on straight coal still

stays unstable at loads below 45,000 lb per hr. Nothing has been done for this condition because (1) unit is not normally firing coal at this load (2) characteristics for multiple and single firing are so good at heavy loads we do not want to upset them.

When gas or oil are admitted along with the coal, ignition stays stable throughout the load range. MPC Paper.

Oil Cannot Heat All America, by R E Wilson, Standard Oil Co of Indiana. The fuel problems of the past winter have made both the refineries and the oil-burner sales industries appreciate the need of frank discussions and better understanding. In keeping with this need the author gives his appraisal of the fuel situation.

Oil burner sales in 1947 were at a rate nearly five times the average for the ten prewar years. On the petroleum industry side, market for distillates grew to a point where they are no longer a byproduct but a main product costing more and more to make as they cut into the yield of gasoline and other products.

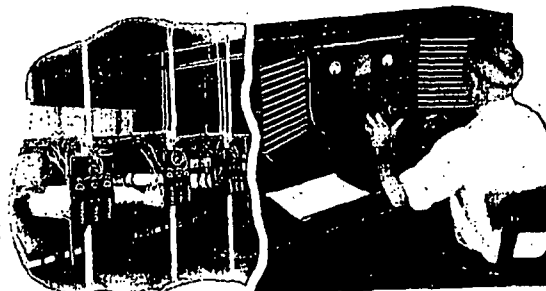
Fuel oils will no longer be sold on a price basis competitive with other fuels. Fuel oil prices were bound to increase at a greater rate than prices for gasoline because fuel oil is being made at a sacrifice of gasoline.

Barring strikes or catastrophes the oil industry can be reasonably sure of producing, transporting and refining 7 or 8% more petroleum for domestic use in 1948 than in 1947. But this does not mean the oil industry can meet a 7 or 8% increase in oil burners in 1948. First of all some of the increase must be used to fill up the stocks of heating oils, now extremely low. The additional five will

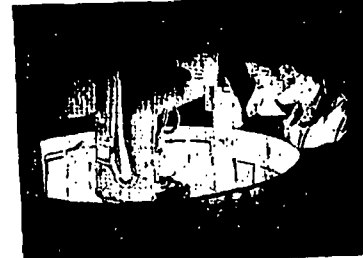
Facts about J-M Insulations Subject: RESEARCH

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