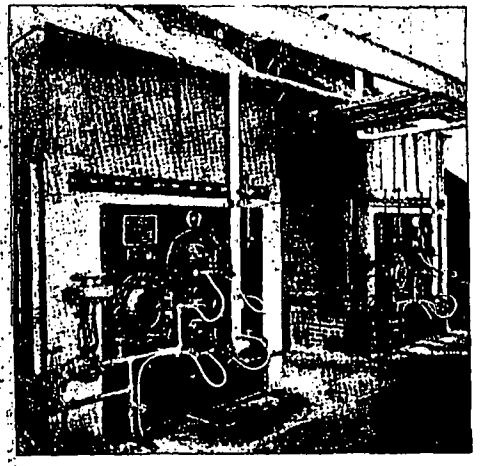
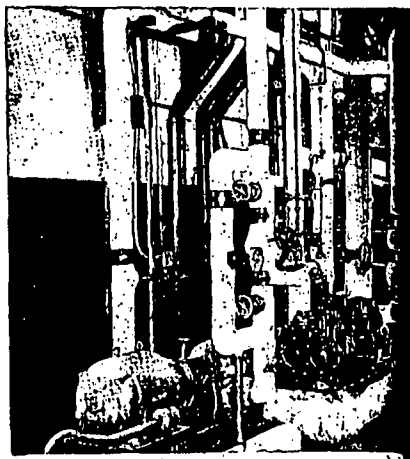
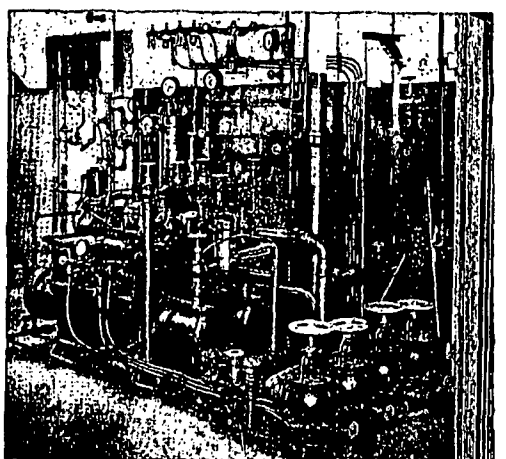


OIL-FIRED BOILERS of the integral-furnace type were selected to provide 100% standby and capacity for load growth



BOILER-FEED PUMPS in foreground, with zeolite softener and phosphate-feed pump in rear and feedwater storage tank, above

FORCED-DRAFT FANS, at rear of boilers, are motor-driven; air volume is regulated by automatically controlled dampers



FUEL-OIL HANDLING SET consists of motor-driven centrifugal pump and a duplex unit, U-tube heaters, strainers and valves

Careful Planning Pays Big Dividends in Layout of Laundry Boiler Plant

Putting "big-plant thinking" into the design of the smaller installation results in simplified, low-cost arrangement and efficient operation at the American Linen Supply Co, Seattle

By R F COMBS, *Chief Engineer, American Linen Supply Co*

WITH THE FIRM CONVICTION that an efficient well-coordinated boiler plant need not be complicated, or full of "frills," we began preliminary studies in 1945 for new steam-generating equipment at American Linen Supply Co, Seattle, Wash. The plant, which went into operation recently, proves our point, we believe, and shows again that smaller plants need not lag behind the parade.

American Linen Supply furnishes freshly laundered uniforms, linens and towels to hotels, restaurants, stores and similar businesses on a rental basis. In addition to the extensive laundry, there are facilities for manufacturing uniforms. Under direction and ownership of C W and R L Maryatt, this business has grown from the small laundry of 27 years ago, employing 12 people, to today's plant with 230.

Preliminary Study. Since laundry-plant production depends on an adequate supply of steam, the boiler room together with its equipment has always been a *matter of great concern. Thus* when growth of the business necessitated an increase in steam-generating capacity for the third time, we could not afford half measures. Experience has taught us that it always pays to make detailed studies; with present costs of labor and materials, we are convinced that such studies are more profitable than ever.

Among the many questions to be answered by our study were:

1. *What will future steam demand be?*
2. *Should we supplement existing equipment, or build an entirely new plant?*
3. *What size and type of equipment should be installed: Which fuel? What type of boiler? What kind of auxiliaries? How much control and metering equipment?*
4. *How should equipment be arranged?*

The existing boiler plant, which had one 1500-sq-ft return tubular boiler, had been extended a number of years ago by the addition of a 750-sq-ft Scotch marine unit, and hogged-fuel firing had been replaced by oil burning. It was found that determination of steam demand on the existing plant was practically impossible. Proposed extension of the laundry facilities further *complicated the picture so* we decided that future steam demand would have to be established by independent calculation.

Estimating Steam Load. American Linen Supply is a member of the American Institute of Laundering, whose research department has compiled data on steam consumption of the various laundry machines and issues recommendations on boiler-plant requirements. We thus predicted steam demand from the proposed laundry equipment, using the steam consumptions in the *American Institute of Laundering Guide*. The table gives the tabulated calculation.

This estimate showed an average demand of about 17,000 lb per hr. To meet this figure, we selected two units each having a maximum continuous capacity of 19,500 lb per hr and a 2-hr peak capacity of 20,500. This left some room to grow, and provided for 100% standby so maintenance and inspection can be carried out during the normal work week instead of on overtime.

The existing boiler plant was in the basement of the main building. Thought was given to retaining existing boilers for standby and adding only one new boiler. As the old units had seen almost 20 years of hard service and were occupying valuable space, we decided to install all new equipment. After looking into the many factors involved, we could see that the equipment should be housed in a new addition to the main building rather than in a separate boiler house.

Fuel Selection. Wartime fuel-shortage experiences were still fresh in our minds. Thus type of fuel to be burned in the new plant was of primary concern. In Seattle and throughout the Northwest, many plants burn wood refuse (hogged fuel) and sawdust, usually on flat grates in dutch ovens. Our plant did this at one time but was converted to oil firing. During the war it looked as if we would have to go back to hogged fuel, but fortunately the oil situation changed before this heavy expense became necessary.

After considering the relative economies of hogged fuel, coal and oil, we decided to stick with oil firing for the new units even though it could be shown that on a Btu basis other fuels were cheaper. Lower first cost and operating-labor cost swung the final decision to oil.

Boiler Installation. In selecting the boilers it was determined that modern steel-encased high-efficiency watertube units of the integral-furnace type were most suitable. Even though steam was to be produced at 135 psi, 250-psi boilers were chosen. The very small increase in capital investment was warranted in view of possible future use of generating equipment, changes in laundry techniques, and better resale value.

Although the initial installation involved oil firing with wide-range burners, foundations for the boilers were

ESTIMATED PLANT STEAM LOAD

No.	Equipment	Steam consumption, lb. per hr: Each unit	Total
9	36x30-in. tumblers	130	1,170
1	42x90-in. tumbler	480	480
26	Pony presses	15	390
54	Combination bosom-body presses	50	2,600
1	Shirt unit	130	130
2	30x120-in. 2-cylinder flatwork ironers	500	1,000
1	6-roll x 120-in. flatwork ironer	350	350
5	Starch cookers	30	90
1	Stocking form	15	15
2	Puff-sleeve forms	15	30
1	Mixing jet	50	50
	Direct steam in workroom	Assumed	585
	Building heating and line losses	.....	330
1	15,000 gal-per-hr hot-water heater from recirculator to 180-deg F	.....	10,000
	Total steam consumption	.....	17,000

Compiled from information obtained from Special Report No. 146, *The Determination of Laundry Power-Plant Requirements*, American Institute of Laundering.