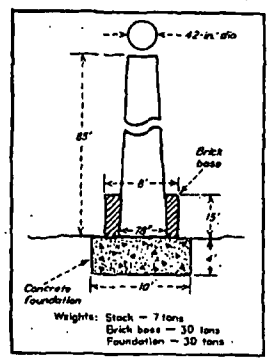
PROBLEMS FROM THE PLANT

Exercise your engineering wits by submitting answers to this question, fresh from the plant. Suitable material will be paid for; answers accompanied by sketches or photographs command additional pay.

WHAT IS BEST WAY TO MOVE AN 85-FT SMOKE STACK?



▶ A POWER ENGINEER runs into all kinds of jobs that are off the beaten path. For instance, something we never met up with before is moving a smoke stack a distance of six feet. Here are the details:

We plan to install a new boiler, and to do so we have to move an 85-ft steel smoke stack laterally a distance of six feet. As shown in the sketch to the left, the stack has a base diameter of 78 in., and weighs approximately 7 tons. An octagonal brick base, which has an 8-ft diagonal, surrounds the lower part of the stack. We estimate that the weight of this base is 30 tons.

The stack and base are supported on a 10x10x4-ft concrete foundation that weighs approximately 30 tons. The foundation surface is level with the surrounding ground. We are hoping to move the stack, base and foundation as a complete unit.

In thinking over various ways to handle the job, we believe that our first step should be to set up guy lines from a ring near the top of the stack to nearby buildings. We then plan to fasten another set of guy lines from about midway on the stack to adjoining buildings. We think next best step is to undermine foundation ends and place H beams under each end. From beam ends we plan on chain slings to another parallel set of H beams, placed on rollers above. We may have to build a supporting concrete base on either side of the foundation for the roller ends. From shackles on the top H beam's ends a system of pulleys could be rigged, and stack, base and foundation moved as a complete unit. It will be necessary to relocate the rollers placed under the H beam as the unit is moved.

All this sounds good, but since we have never handled such a moving job we are not sure about possible complications.

Perhaps some of POWER*'s readers have* met a similar problem and will be able to help us outline a good procedure for handling the job.—*WA*

Readers' Answers

Which Heat Saver System Is Most Economical?

(This question is from August issue with best answers from readers.)

We evaporate an average of 750,000 lb of water daily from six boilers having 2690 sq ft of heating surface and operating at 135 psig with a 3% blowdown. Sketch [see POWER, August, p 112] *shows a continuous blowdown heat-saver system that has been proposed for installation in our plant.*

Our deaerating heater operates at 2 to 4 psi. Using an average of 3 psi, we could expect to flash about 15%, or 3375 lb of steam per day. This leaves 19,125 lb of blowdown per day for the second flash tank, which would probably flash about 1% from 3 psi to atmospheric pressure.

If the second flash tank and steam to the liquid heat exchanger were eliminated, heat in the 1% (or 191 lb) of steam would not be lost since it would pass through the liquid-to-liquid heat exchanger instead.

Will the slight increase in efficiency of the proposed system warrant the extra cost? I believe one flash tank and a liquid-to-liquid heat exchanger is the most economical system for us to install. Do POWER *readers think that I am right?*—CH

Use One Flash Tank and Larger Heat Exchanger

HEAT-SAVER SYSTEM, consisting of one flash tank and a liquid-to-liquid heat exchanger, is most economical for CH's plant.

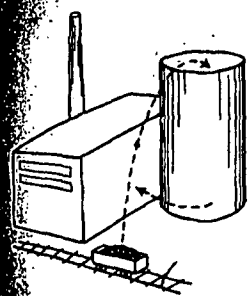
There will be no saving in adding the additional equipment shown in the *original sketch. This is readily seen* since all condensate leaving flash tank No. 1 will be discharged to the sewer in either case.

Quantity of heat that is lost to the sewer is essentially constant as the terminal temperature difference of the liquid-to-liquid exchanger is little affected by the slight increase in flow through it, caused by leaving out the additional flash tank and exchanger.

Heat available for heating makeup water will, therefore, be constant and can be absorbed in the liquid-to-liquid exchanger by increasing its heating surface by about 5%. This is obviously less expensive than adding apparatus and piping.

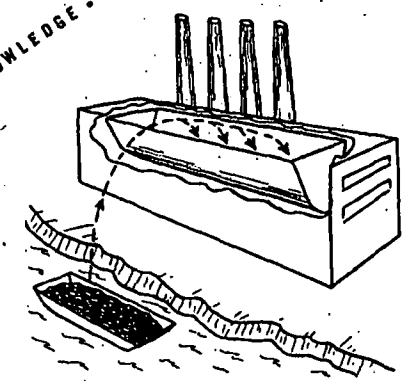
MILTON N KRAUS *Long Island, N.*

(*Continued on page 116*)



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