

## More PLANT PROBLEMS

Code requires spring-loaded-type safety valve, sealed to open at a pressure not greater than 15 psi. Determine size from grate area, as in the code.

Don't replace nonreturn valves because they will operate on any pressure. They'll serve both as check and as stop valves.

Install new steam gages calibrated at twice the pressure, or to 30 psi. Remove all steam-reducing valves from the lines. If steam piping run is long, it may be necessary to increase pipe size to prevent excessive pressure drop.

There is no need to revamp the heating system because it now operates at 5 psi. Allow condensate from vacuum and gravity returns to flow to a receiver before pumping it to the boiler. Use a float-operated motor-driven low-pressure centrifugal pump for this service. Feed makeup from city-water system to condensate receiver, if local laws do not prohibit such a hookup.

Simplest way to find boiler output is to install water meters and thermometers on condensate return to each boiler. Lastly, if you're using a steam whistle, it may be necessary to take it off the steam line and then to fit it to the compressed-air system.

GEORGE HILL, Sunbury, Pa.

**SOME SAFETY VALVES** are suitable for conversion to low-pressure service. Before buying new valves, check with manufacturer to see if yours are. Be sure valves you choose have enough capacity to relieve properly under the new firing rate. Nonreturn valves do not need any changes.

Remove present reducing valves that cut steam pressure from 125 to 5 psi. LP's existing piping appears large enough to handle the low-pressure steam. It may be advisable to change some of the gravity returns to vacuum to assure prompt return of condensate from system.

Determine boiler output by weighing coal fed to stoker hopper. With this and the heating value of the coal known it is easy to find output if you use the equation given in the ASME Boiler Code.

H A KAISER, Glendale, N. Y.

**BOILER INSURANCE** companies and state codes require strict adherence to their rules. Check your insurance company and code before getting to work.

Present safety valves can probably be fitted with new springs to handle about 2000 lb of the required relieving capacity. Remainder of capacity can be assigned to two new valves on a Y.

Find maximum stable steaming rate

by testing boiler at lowest suitable pressure for heating system after the new safety valves are installed. Test may show there is a capacity limit or that piping alterations are needed.

LP can find boiler output by measuring system returns, weighing coal fed to boiler, and computing evaporation or computing steam output as 3 lb per hr per sq ft of heating surface.

C W BELL, Sr., Hazleton, Pa.

**HEATING SYSTEM** will require same Btu output after pressure is reduced, as before. About 5150-lb-per-hr steam is required after pressure is reduced in the boiler. Pressure drop through the 6-in. boiler lead is about 0.3 psi per 100 ft of pipe. LP may find he must increase line size to reduce pressure loss.

A H MOULTON, Pittsfield, Mass.

**AN EXPENSIVE JOB** is in store for LP if he reduces his boilers to low pressure. Safety valves must be overhauled, fitted with new springs and reset. Check nonreturn valves to see there is enough pressure to lift the disks.

I think a vacuum-return system is better than gravity because it eliminates sluggish lines and permits use of smaller return lines. Install a steam flowmeter and a draft gage to make operation easier and more dependable.

A A HUNNEWINKEL

Woodstock, Ill.

**CHANGE FIRING RATE** of stoker when boiler pressure is reduced. This prevents unnecessary safety-valve popping.

LP should consider installing a 3-element combustion-control system to regulate feedwater, fuel and air to maintain proper firing rates at various loads. Cost of a simple system like this is more than offset by fuel and labor savings.

Safety-valve setting will have to be changed. LP may be able to use the same valve bodies if he changes the orifice size and spring. See safety-valve manufacturer for recommendations on orifice and spring size.

Check nonreturn valves. Force on underside of disk may not be enough to lift it. Valve manufacturer will recommend any needed adjustments. Don't make any changes without first checking with the ASME Boiler Code, state and local laws.

If combined pressure drop of steam and condensate systems exceeds the available boiler pressure, a vacuum-return system is needed. Be sure pump is specially designed for this system.

H B WAYNE, Brooklyn, N. Y.

(Continued on page 136)

## YOUR NEW PROBLEMS

### 1 How Can We Stop These Valve Leaks?

Valves in lines to our two pressure feedwater heaters leak when load is low. These valves are in vent, steam and drain lines for the heaters.

Plant is rated at 400,000 lb. Air appears to leak through valve packing at the gland. There is some leakage at valve stem.

New packing doesn't help much. Air that enters through valves shows up in our condensers, hurts plant performance.

Since most of these valves are usually kept fully open or fully closed, we've been wondering if reversing them in the line would help. Flow would then act against top of disk of these globe valves instead of bottom, as it now does. Condensate on top of disk would help seal it while the valve is closed. Or is there a better way to stop leakage?—GD

### 2 How Can We Find Underground Valves?

Our hospital has over 100 buildings on 1600 acres of land. Water-supply pipes run underground to all parts of the hospital. System is quite complex.

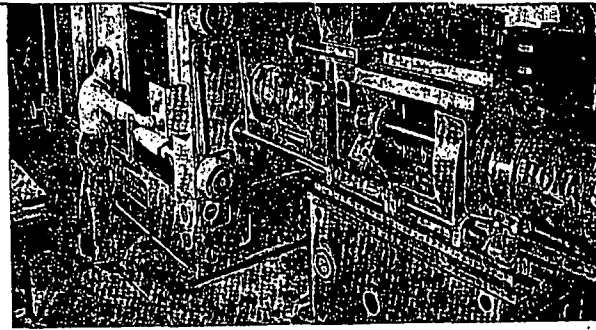
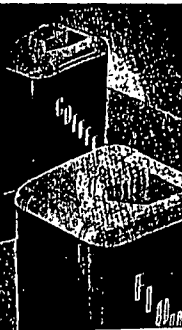
Several times we have had to locate underground shut-off valves in a hurry. Because we have no positive system for finding the valves we've wasted water, isolated the wrong buildings, and had many delays.

Problem is further complicated by system changes not marked on our blueprints, personnel turnover and poor indication on our drawings of the is also some leakage at valve.

What I'd like to do is straighten out this mess without having to dig up every pipe and valve we have. Then I'd like to place unobtrusive markers for the valves that will not interfere with lawn mowing.

How do Power readers running large plants mark their valves? What system is best for quickly showing which valves should be closed to isolate one building or a group?—BL

Will you help readers who sent us problems? Extra pay for photos or sketches.



**PRESSURE LOSSES ENDED.** There are few plastic molding machines as big as this 60 ounce model. It exerts a pressure of 1,000 tons. Because the hydraulic oil formerly used sludged up and thinned out, it could not maintain this pressure. But Sunvis 999 has fully met these severe requirements, as well as those of Rona's nine other hydraulic machines of varying sizes.

## PLASTIC MOLDER'S BOTTLENECK ENDED BY SUNVIS HYDRAULIC OIL

Less than a year ago Rona Plastic Corporation, New York, had trouble with its hydraulic molding machines. The machines functioned erratically due to oil sludge clogging the control mechanisms. In addition, the oil heated out excessively at normal operating temperatures and resulted in the loss of proper clamping pressure on the dies. To keep the machines going at all, it was necessary to drain, clean, and entirely recharge the oil at frequent intervals.

A Sun representative, called in by Rona, studied the problem and recommended Sunvis 999. He knew it would

put an end to pressure losses, because, even at elevated temperatures, it does not decrease in viscosity as much as most other oils. He also knew its exceptional stability would end the sludging problem.

Sunvis 999 proved to be the answer to all Rona's hydraulic oil problems. The original charges, with minimum make-up, are still giving good service. Rona can expect the same performance for a long time to come, because experience shows that under normal operating conditions, Sunvis 900 Series Oils are good for the life of the equipment.



**NO OIL CHANGES HAVE BEEN NEEDED.** Before Sunvis 999 was adopted, the oil in each of the machines had to be changed frequently (the one pictured holds 450 gallons). The original charges of Sunvis 999 have been in use now for more than a year.

### Department P-4

Sun Oil Company, Philadelphia 3, Pa.

I am interested in knowing more about Sun Hydraulic Oils. ☐ I would like to consult with a Sun representative. ☐ Send the booklet "Hydraulic Fundamentals and Industrial Hydraulic Oils."

Name \_\_\_\_\_

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**TECHNICAL ASSISTANCE AVAILABLE.** Sun's engineers are at your service for consultation on all hydraulic oil applications. It will pay you to utilize the experience they have gained in solving a wide variety of problems in many different industries.

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