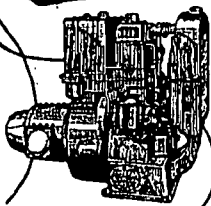


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WATER TREATMENT

Continued from page 101

with calcium or magnesium. To forestall this development, you need still higher alkalinities. Moreover, the greater the feedwater silica content, the stronger must be the boiler water's caustic alkalinity, to safely retain silica in the form of soluble sodium silicate.

Alkalinity Restraint. It follows that the more elevated boiler-water alkalinities become, the more effective treatment is. However, there is a limit to the degree of alkalinity each specific boiler design can sustain and yet furnish good-purity steam. Sudden surges in boiler-water causticity can cause violent priming. And persistently high alkalinity concentrations will induce continual carryover of boiler-water solids with the steam. Steam-purifying units are inefficient under such burdensome demands. In a watertube packaged unit alkalinity, yielding a maximum pH value of 11.5, can be carried with a moderate measure of safety. Consequently, boiler-water alkalinities within the pH range of 10.5 to 11.5 assure (1) driving down the calcium hardness entirely as the desired phosphate (2) removing magnesium hardness completely in the hydroxide form, while (3) still keeping silica soluble.

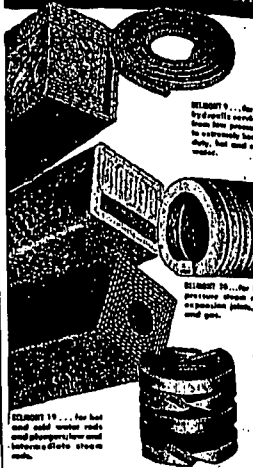
Embrittlement Prevention. Certain tannin derivatives offer protection against intercrystalline cracking of boiler metal besides functioning as an effective coagulant for hardness precipitates. Furthermore, the surplus of phosphate carried to ensure zero hardness also serves as an added inhibitor, so normally you need not add more chemicals.

Blowdown. You can't precipitate any amount of hardness nor hold any quantity of silica in solution within any boiler. There are definite limits whether or not internal water treatment does a satisfactory job alone, and much of the success relies heavily on the demand a selected water treatment places on blowdown. Rate of blowdown, in turn, is governed primarily by the maximum total solids content permissible at your particular operating pressure. Feedwater chemical characteristics and the boiler pressure may combine to cause foaming and carryover or undesirable deposits that you cannot prevent without excessive blowdown. In this event, external presoftening and silica reduction become a necessity.

For watertube packaged boilers, schedule a minimum of two sludge blows per unit per day. Make it a daily practice, even if such blows are to be mere puffs. Give one blow in early morning and the other in late afternoon during comparatively light loads

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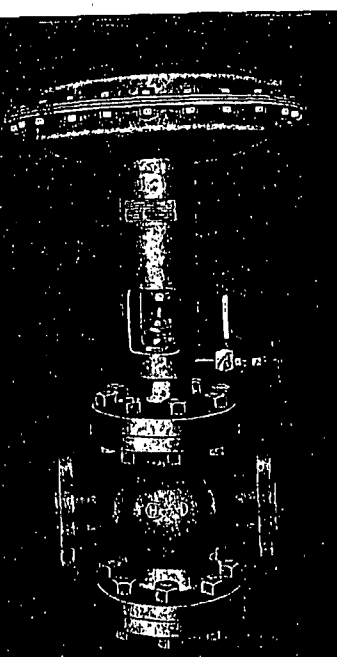
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