



WHY INSULATE YOUR CONDENSER TUBES?

You may be doing just that if your plans don't include **CHLORINATION EQUIPMENT** for slime control by **WALLACE & TIERNAN**.

Chlorination equipment because it controls slime that grows on the walls of condenser tubes not protected against it. Enough of the growth eventually seriously reduces heat transfer efficiency — actually insulates your steam from the cooling water. Back pressures go up, production drops, operating and maintenance costs

rise, and eventual shut-down becomes necessary for regular clean-out periods.

Wallace & Tiernan equipment because it is versatile, sturdy and dependable — proven by thousands of successful installations, vouched for by satisfied users everywhere — and because there's a Wallace & Tiernan chlorinator for every job. Write today for information on how Wallace & Tiernan chlorination may help you solve your slime problem.

**NO WATER
IS
SLIME-FREE**
regardless of the
source. Chlorination
helps reduce slime in
make-up or cooling
water.

CD-37

**WALLACE & TIERNAN
COMPANY, INC.**

CHLORINE AND CHEMICAL CONTROL EQUIPMENT
NEWARK, N. J. — REPRESENTED IN PRINCIPAL CITIES

DEMINERALIZATION

Integrating meter on the demineralization unit can serve for both larger plants you'll find a flowmeter both on the common outlet of the demineralizer. The once-in water that these two indicates shows amount of waste.

Recording conductivity meter desirable on the common outlet. A contactor to sound an alarm conductivity rises above the limit. In addition, they may have cells to test influent as well. variable in composition, so they can determine the expected total between regenerations.

Recording pH meters on the inlet, installed with a contactor sound an alarm if pH drops too low.

Precautions. 1. When you place filters in a dusty location, put them on the air-blower suction to prevent contaminating the anion bed.

2. Where organic matter appears appreciable amounts in the raw water, eliminate it as far as possible before contaminating the anion bed.

3. When you encounter high levels of nitrate in the raw water, a bed system, using Rohm & Haas or Nalcite WDR, will remove nitrates when regenerated with soda. This solution saves operating and protects the important feed removal unit.

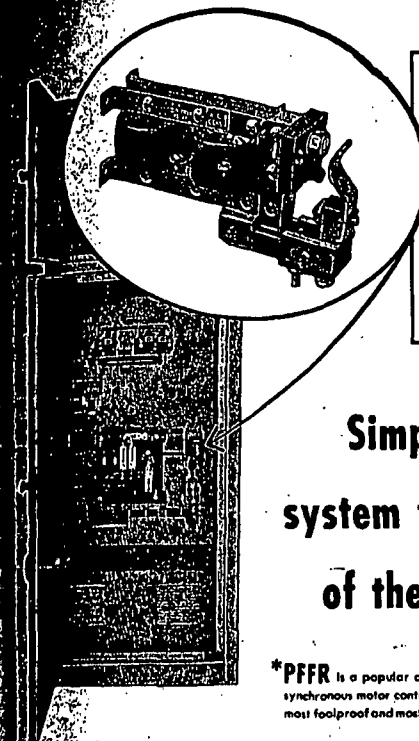
4. Always regenerate the anion bed with demineralized water or effluent to avoid precipitating hardening the anion resin.

5. Specify the so-called "reversal" rather than the "bottoms" type of control. It is relatively iron-free and automatically eliminates the anion resin.

6. Allow at least 24 hours between regenerations to assure highest quality of average throughout the day.

Properly run 2-bed demineralizer produces final effluents, averaging 2 ppm of total electrolyte, and 0.1 ppm of silica. The end product usually double these figures.

Mixed-Bed Demineralizing. A component of Rohm & Haas, about consists of placing both cation and anion resins in a single shell and mixing together by air. At the end of the backwashing, classifies the cation anion resin particles hydraulically. The lighter anion bed rises to the top, the heavier cation bed drops to the bottom so they can be regenerated separately in place. A screened pipe system goes in at the bottom between the two beds. A separate pipe system distributes the effluent above the anion bed and passes it



PFFR*

**Simplest, most reliable
system for "conscious" control
of the synchronous motor**

*PFFR is a popular abbreviation for the Polarized Field Frequency Relay system of synchronous motor control, invented by E-M and generally considered to be the simplest, most foolproof and most completely effective starting and synchronizing system available.

It's so simple... a reactor, and a relay with two small coils do your synchronizing easily, automatically and right. No fussy, complicated mechanisms to get out of order... PFFR has few parts, is easy to understand, requires only routine attention.

PFFR is sensitive to the electrical condition of the motor field winding during starting... field excitation is applied at the proper rotor angle for maximum synchronizing torque with minimum current inrush. PFFR Control is "conscious", interpreting best motor speed and rotor position. Motor pulls in step without pole slippage or "bumping".

And should the motor pull out of step in operation because of undervoltage or overload conditions, PFFR reacts to remove field excitation.

When time delay undervoltage protection and automatic unloading are provided, PFFR will automatically re-synchronize motor when voltage is restored or peak load is passed.

To get the best operation from your synchronous motors, specify E-M PFFR Synchronous Motor Control. It's a product of long, specialized experience. Your nearest E-M sales engineer can give you complete information on synchronous motor controls and protection systems. And write for your copy of "The ABC of Synchronous Motor Control".

ELECTRIC MACHINERY MFG. COMPANY
MINNEAPOLIS 12, MINNESOTA



**ORIGINATORS OF
Automatic Synchronous Motor Control**