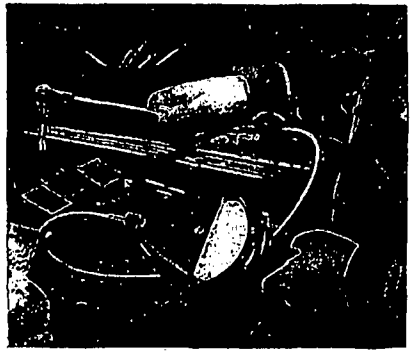
PRACTICAL IDEAS...here's the trading post for your operating and maintenance short cuts

STEVE ELONKA, *Associate Editor*

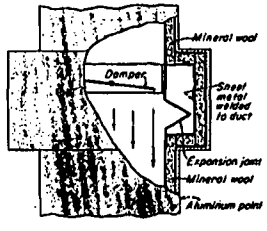


Pyrometer Tells When to Weld on Hard Overlay

PREHEATING castings to right temperature before welding on a hard overlay makes difference between success and failure.

This photo shows fast, accurate temperature indicator with attachment for this purpose. Just place hand pyrometer's thermocouple tip on heated casting, and one quick glance at instrument tells welder when to start laying on the expensive electrode for best results.

H MALIA *Schenectady, N. Y.*



Insulate Duct Expansion-Joint, Damper as Unit

WE REDUCED both installation time and materials cost in duct insulation by locating expansion joints and dampers side by side. Then we covered both as a unit. Sketch shows adjacent V-type expansion joints and damper flanges in circular air ducts covered in this manner. Single sheet-metal enclosure and banded mineral-wool block insulation does job.

Photo shows damper and expansion joint, located on one of three vertical ducts at intersections. They receive preheated air at about 620 F. Hot air is then delivered down through fans to pulverizers. Surfaces of both vertical and overhead ducts are insulated with one layer of 3-in.-thick mineral-wool blocks in 12x36-in. sections. Blocks are secured to the ducts with ¾-in. bands on about 9-in. centers, covered with wire mesh, and finished with a ¼-in. layer of insulating cement and a coat of finishing cement.

Standard 12x36-in. block sections are cut to fit three sides of sheet-metal enclosure over damper and expansion joint. While mineral-wool blocks are also secured with bands on vertical-enclosure surface, smaller insulation sections on enclosure sides are held in place by wire mesh. Enclosure insulation is finished same as regular duct surfaces. Photo shows insulating blocks cut around the damper-control lever on the left side of the duct.

H W SMITH *New York, N. Y.*

Mussels Die Young Now

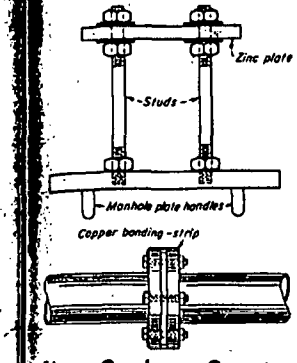
AT LOS ANGELES, harbor water is brought in through duplicate conduits, either of which can carry almost entire cooling-water load, while other is emptied when mechanical cleaning is needed.

Station has operated since 1943. Until 1946, there was no conduit-fouling problem. Petroleum and manufacturing industries emptied high sulfides into the harbor waters. Sulfides killed marine life and corroded the aluminum-brass condenser tubes.

In 1946, harbor pollution was reduced. There was less hydrogen sulfide concentration. As oxygen in the waters increased, marine life began to thrive. Conduits, pumps and suction strainers clogged. Among offenders were bay mussel, a rock-boring clam, barnacles and vegetative matter, and other marine organisms.

H T Duplice read a paper on all this recently at the Los Angeles meeting of ASME. He told how he and C Alexander determined to kill marine life while it was still young. Reason was that shells would be small enough to pass through the entire cooling system to the discharge conduit.

A continuous chlorination system was first thought of, but this was too costly. After testing various possible methods, these men sealed off one circulating-water conduit at both ends to prevent water passage. This was done for five to seven days every four weeks during bay-mussel-spawning period. Mussels consumed oxygen in closed-off water and died when there was no more. After first test, when tunnels stop-log was raised, over 45 tons of dead marine life were washed out of conduit and into discharge basin. Method has been successful since June 1952.



Steam Condenser Care

Idle Condensers: Keep water side of condenser either completely filled or entirely empty. If filled, circulate water often. If empty, dry tubes inside by blowing with air lance; drain steam side.

Water Side: Clean inside of tubes and waterboxes at frequent intervals, depending on deposits like slime, scale, mud, oil, grease, sea growths. For usual cleaning, flush waterboxes with warm fresh water; wirebrush lightly.

Clean tubes with air or water lance, wire-brush, or blow tube plugs through. Plugs are rubber, metal, rubber and canvas, or metal and canvas.

When cleaning tubes and waterboxes, clean and examine zinc plates. Renew ones if more than half deteriorated. When reinstalling zinc, make good metallic contact to condenser.

Corrosion: Wasting away or thinning down of tube. Tube inside is evenly corroded without formation of pits or dezincified spots. Cure here is to install tubes of cupro-nickel alloy. Cause is acid in circulating medium.

Dezincification: Zinc is taken out of tube, leaving a spongy and brittle copper behind. It takes place irregularly, affects tube only in spots. Counteract by installing zinc plates in waterboxes. Water flow through condenser acts as electrolyte for flow of current between zinc plates and tubes.

Deposit Attack or Pitting: Small, round pits or pinholes beneath green salt and cuprite. Foreign deposits often accompany this type of corrosion. Low circulating-water velocity and stray electric currents intensify this corrosion. Binding copper wire around waterbox flange bolts and grounding to earth usually nullifies stray electric currents.

Tailed-Type Pitting: Pits formed by scale removal have deep section at upstream side and shallow trail at downstream side. Condition is from water flow through tubes. Only way to combat is to keep water flow as slow as possible. Keep zinc plates in condition.

Tube Erosion: Tube is worn away by action of solids in circulating water, often accompanied by corrosion. Low circulating-water velocity keeps this attack to a minimum.

Impingement Attack: Corrosion caused by air bubbles, and generally confined to tube's inlet end. This is uniform thinning or appears as grooving. Control circulating water so a slight discharge of water from waterbox vents minimizes this attack.

Scale Thinning: Scale kept thin by chemical action, resulting in corrosion and isolated pits. Zinc plates, causing scale formation through galvanic action, are effective here.

Solution: Scale absence due to presence of acids, etc, resulting in general thinning. Proper care of zinc plates will minimize this attack.

Splitting, Season Cracking: Splitting in a longitudinal plane. This is from improper annealing of tubes during making. Reject or replace such tubes.

Graphite Corrosion: Salt-water action on cast iron, in which cast iron becomes very soft and spongy. Best protection is to paint waterbox with coating of asphalt or cement paint. Paint acts as an insulator between waterbox and water.

Electrolysis: Caused by electrical action in tubes. Minimized by bonding all metal together, grounding to earth.

A D COLLIN *Washington, D. C.*

Old Auto Brake Opens Window, Holds in Place

PLANT WINDOWS often open on a hinge at frame center as shown in photo. Windows are controlled and set with flat steel bar, fastened to bottom and notched so edge engages stationary member at sill bottom. Trouble is a slight jar that can upset bar closes window with a sudden bang. Or notches in bar may be spaced so you can't get the right ventilation without the drafts.

To solve our problems, engineers of Park St Bridge, Alameda, Calif. installed an old automobile hand brake for the desired controls in operating tower. Now each notch on pawl opens window about one inch, holds it easily without danger of accidental tripping.

G BURNLEY *Alameda, Calif.*

Watch Those Leads

WHEN YOU PUT your ohmmeter on the shelf, pull out the leads or turn the selector switch to OFF or some other position than OHMS. Then, if the leads accidentally become shorted, the battery will not be discharged.

ED ECKERT *New York, N. Y.*

(*Continued on page 132*)