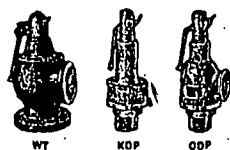
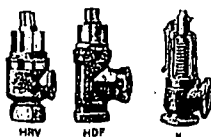


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COMBUSTION AIR

Continued from page 204

cooling-medium temperature. Wider approach of aftercooler is a compromise dictated by space limitations.

Typical 4-cycle engine with inlet air at 115-F d-b, 65-F w-b at 3000 ft elevation, with a charging pressure of 15 in. Hg, receives air at 225 F without conditioning equipment. With conditioning, results are:

Initial conditions	115-F d-b 65-F w-b
After evaporative cooler	72-F d-b 70% rh
After turbocharger	182-F d-b 5% rh
After aftercooler; combustion air supplied engine with 80-F water	105-F d-b 37% rh

Supercharged engine fitted with the more efficient combined aftercooler-evaporative cooler in Fig. 7 receives air as follows:

Initial conditions	115-F d-b 65-F w-b
After turbocharger	225-F d-b 5% rh
Air from aftercooler	105-F d-b 6% rh
Air from evaporative cooler to engine	71-F d-b 66% rh

Space limitations govern the size of equipment usable on engines of this type. Improved cooler designs permit conditioning of combustion air to values indicated above. Cooling of combustion air is one step but true conditioning of combustion air offers more advantages in providing higher efficiency, more reliable prime movers.

WITH OUR READERS

Continued from page 3

parts of a complex, monolithic, rigid frame, with infinite degrees of freedom, of such sizes that their weight cannot be neglected and the loading is usually partially uniform. Consequently, computations based on single degree of freedom may not be adequate.

Structural engineers, as a rule, seldom are well versed in the theories of vibration. However, the following suggestions may be applied without higher mathematics:

1. Turbine foundation should be thoroughly analyzed as a rigid frame for all possible vertical and horizontal loadings.
2. From the moment analysis, an envelope of the maximum and minimum moments should be plotted. From this, an approximate degree of fixity for the girders can be established.
3. Using the formula

$$f = \frac{a_n}{2\pi} \sqrt{\frac{EI}{u_n I^3}}$$

establish the first few modes of natural frequencies of vibration. The coefficients a_n should be interpolated in the ratio of fixity

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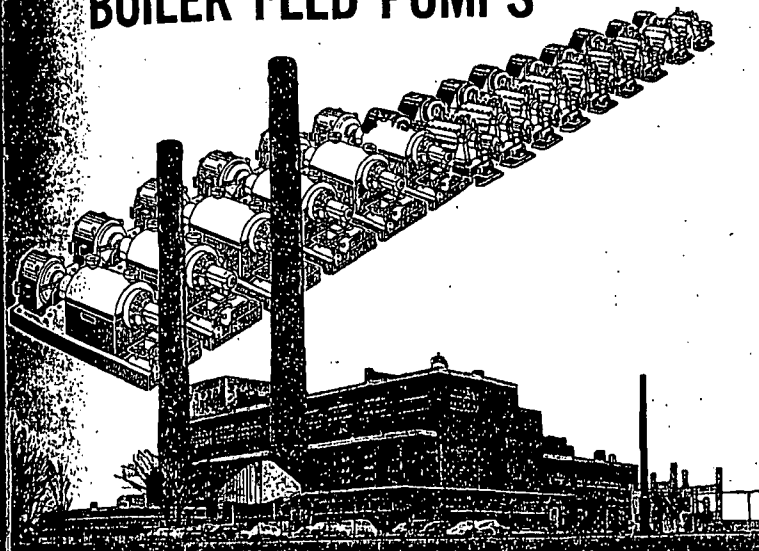


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Six 9-Stage CHTA high pressure pumps will serve two new 68,000 kw units at this fast-growing station of Indianapolis Power & Light Company

To keep plant capability abreast of increasing load demands, two new 68,000 kw units are now being added. Unit No. 4 is to be put into service in December 1952 and No. 5 a year later. Six 9-stage, 4-inch Class CHTA "double case" pumps will serve these units—driven by 900 hp motors and delivering 708 gpm of 303° feed water at 1565 psi.

Other I-R pumps at White River include vertical circulating and condensate pumps for the five I-R rectangular condensers, evaporator and chlorinator feed pumps and a host of general service units. This installation is another example of the wide variety of pumps offered to the power generating industry by Ingersoll-Rand. Your nearest I-R branch office will be glad to consult with you on your pumping problems.

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