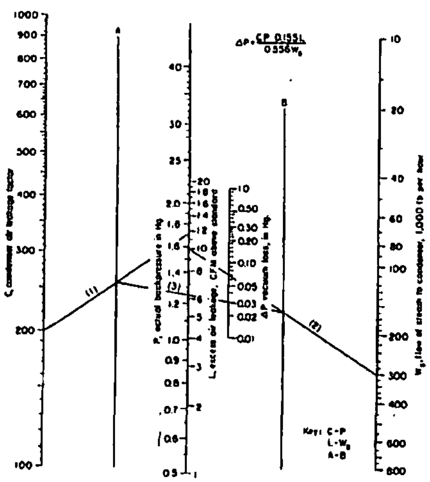
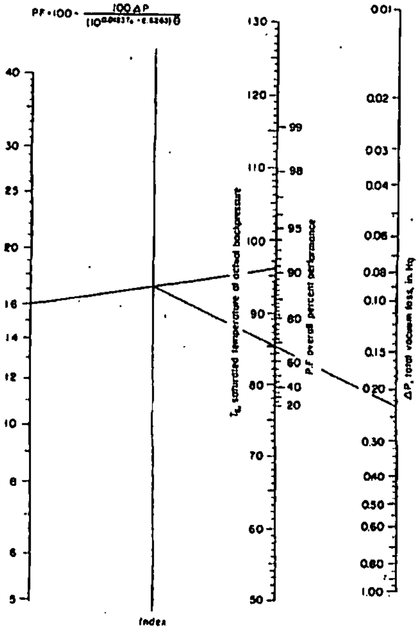


3: Vacuum Loss From Excessive Air Leakage

1. Draw a line connecting the air-leakage constant C for the condenser with the actual backpressure P.
2. Draw a line connecting the amount of air leakage in excess of standard L with the condensate flow W_c.
3. Connect the intersection of lines (1) and (2) with A and B; read ΔP, the loss is in. Hg.

Example: $P = 1.71$ in. Hg, $C = 200$, air leakage $= 15.0$ cfm, standard leakage $= 5$ cfm, excess leakage $= 10.0$ cfm, $W_c = 300{,}000$ lb per hr, $\Delta P = 0.03$ in. Hg.

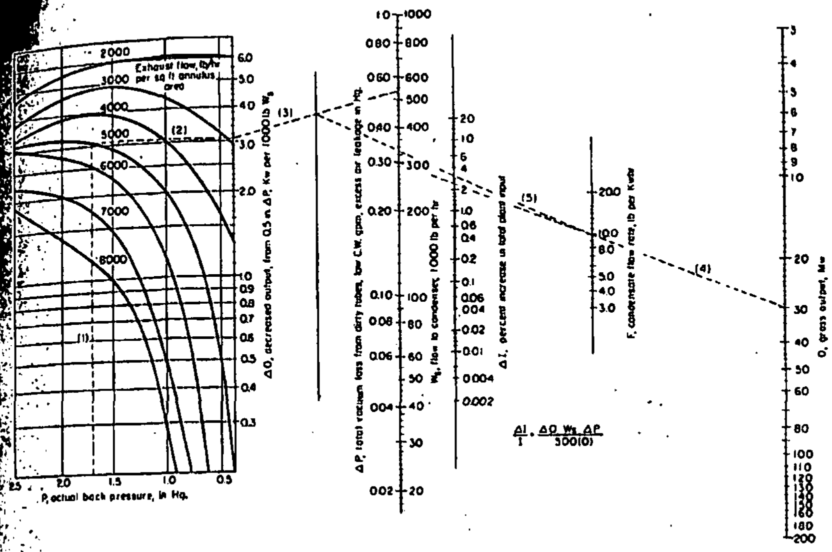
To determine air-leakage constant C with other conditions stabilized, bleed a quantity of air into the condenser. Using the excess leakage L (as measured by the air-removal meter) and P_2, the actual backpressure after bleeding (then $P = P_2 - P_1$) and the steam flow, solve backward for C. Check C at several loads to determine extent blanketing varies with load.



4: Condenser Over-all Performance Factor, Percent

1. Draw a line connecting θ, log mean-temperature difference with T_s, saturation temperature corresponding to actual backpressure (see Chart 1 adjacent scales for relationship).
2. Draw a line connecting intersection of line (1) with index with the total pressure loss ΔP, and read performance factor, percent.

Example: $T_s = 96$ F, $LMTD = 16$ F, cleanliness $= 77.2\%$, loss due to dirty tubes $= 0.16$ in. Hg, low gpm $= 0.04$ in. Hg, excess air leakage $= 0.03$ in. Hg. Total $\Delta P = 0.23$ in. Hg, performance factor $= 68.0\%$.



5: Plant Input Increase From Loss of Condenser Vacuum

1. Find actual backpressure P on horizontal scale.
2. Read up to unit exhaust-flow curve, then horizontally to decreased output scale, ΔO, line (2).
3. Draw line (3) from ΔO to vacuum loss ΔP, in. Hg abs.
4. Draw line (4) from condenser flow W_c to gross output O.
5. Connect intersection, of line (3) with index, with the intersection of line (4) with F, the condensate flow rate.
6. Read ΔI on vertical scale, percent increase in input.

Example: $P = 1.71$ in. Hg, total vacuum loss $\Delta P = 0.53$ in. Hg, $W_c = 300{,}000$ lb per hr, $O = 30{,}000$ kw, exhaust annulus $= 60$ sq ft, exhaust flow rate $= 300{,}000/60 = 5000$ lb per hr per sq ft, $\Delta O = 3.1$, $F = 10$ lb per kwhr, $\Delta I = 3.2\%$.

Central Station Capability Grows to New Highs

► ELECTRIC POWER SURVEY COMMITTEE of the Edison Electric Institute, in their *13th Semi-Annual Electric Power Survey*, report that they expect the national station capability of 81,400,000 kw as of Dec 1952 to grow to about 125,500,000 kw in 1956. This growth of 44,100,000 kw is 54% of the 1952 capability to take place in a 4-year period. The trend continues to exceed past growth rates in the industry.

The report includes figures on the nameplate capacity, scheduled to be installed during the next four years, as of April 1, 1953. On the average, capability exceeds nameplate rating by about 15%. For steam turbines, 4000 kw and larger, annual figures are:

1953	151 units	9,682,000 kw
1954	125 units	10,018,000 kw
1955	71 units	7,800,000 kw
1956	35 units	3,757,000 kw

For hydraulic units, 4000 kw and larger, the annual figures are:

1953	64 units	1,924,000 kw
1954	37 units	1,063,000 kw
1955	41 units	1,584,000 kw
1956	12 units	458,000 kw

Combining the two types of units, we get the following annual figures on total nameplate rating for units 4000 kw and larger:

1953	215 units	11,606,000 kw
1954	162 units	11,081,000 kw
1955	112 units	9,384,000 kw
1956	47 units	4,215,000 kw

The gross margin of capability reserve in 1952 for the country as a whole was 11.7%. The indicated gross margin for 1953 is 14.6%, and for 1954 it is 16.2%. These percentages assume scheduled capacity will be added as listed. But the committee feels that all scheduled installations won't be completed as expected.