More TECHNICAL BRIEFS

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structure, consisting of the main burner elements, fan, diffuser, throat, etc.

Today we find these and other problems solved for this class of boiler. There has been favorable improvement in a number of design and operating phases, including greater reliability of safety controls, more conservative furnace and heating-surface ratings without a sacrifice in compactness, automatic burners for natural-gas and high-viscosity residual fuels, lower noise levels, improved accessibility and improved manufacturing techniques. *ASME paper no. 54-F-27.*

Stack design

The design and comparative costs for high stacks. *By E J Stankiewicz, Sargent & Lundy.*

Improved dispersion for flue gas by increasing stack heights has introduced new problems and economic considerations for the engineer. This paper reviews these problems in connection with the design of steel, brick and concrete stacks. Relative costs are discussed and charts presented for use in selecting the most economical type.

Factors discussed include vibration of steel stacks, stresses in steel stack design, radial-brick stacks, concrete stack design practice, cost computations, linings, etc. *ASME paper no 54-A-260.*

Stack heights required to minimize ground concentrations. *By E W Hewson, University of Michigan.*

The atmosphere is a vast reservoir that may be used for industrial waste disposal. Used wisely, it permits disposal without damage or nuisance; used without due consideration of its widely varying diffusing capacity, wastes may at times remain at sufficiently high concentrations near the ground to cause annoyance, and even illness and death.

A primary factor in determining whether or not industrial wastes emitted to the atmosphere will be a nuisance is the stack design. Generally speaking, higher the stack and greater the exit velocity, the better is the design.

But improvement at the ground does not vary proportionally with increasing values of height and velocity. Also, economic and other factors limit height and exit velocity.

There are thus optimum design values which vary with climatic conditions, topography, plant configuration, composition, temperature, and exit velocity of effluents, etc. The purpose of this

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