Economics of Combustion

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1. FUELS AND FLUE GASES.

In the production and transformation of energy in its many forms more or less loss occurs. In order to meet successfully modern competition the user of energy must be eternally virilant. The form which this vigilance takes at the present day consists largely in a scientific inspection of processes and operations, with the aim of detecting and eliminating waste, and the consequent attainment of an output as near the theoretical as is possible under practical everyday factory conditions. Every fraction of a percentage nearer the theoretical means dollars saved, and consequently a lessening of the cost of production to the manufacturer.

Nowhere is this more true in the whole realm of manufacturing than in the production of steam as a result of the combustion of fuels. Here, under the best practical conditions, a loss of 20% occurs. Under less favorable conditions, an efficiency of from 50% to 15% of the theoretical may be all that is reached. The difference means dollars wasted. The problem of the intelligent manufacturer is to eliminate as much of this waste as possible.

The problem divides itself into several parts. FIRST, in order to be able to estimate the waste he must know the theoretical heating power of the various fuels, and determine which is the best under local conditions for his purpose.

In the SECOND place, he must use such boilers and grates that as much ax possible of the heat produced from the combustion of his coal may be turned into steam. This part of the problem is largely mechanical.

THIRD, he must examine the products of combustion to determine whether all his fuel is being completely consumed. This is the final check, and it lies in the province of the chemist. If an

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