The capital cost power factor exponent for ethanol plants

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A large plant often has an advantage over a small plant, because total capital costs tend to increase less than proportionately compared to capacity expansion. Capital costs in chemical processing and storage are related to a container's surface area while capacity increases more rapidly with volume (Ladd). Moore obtained a statistical relationship between the output ratio (o) and the capital cost ratio (k) from large and small plant comparisons $k=o^{0.6}$, which is referred to as the 0.6 factor rule. Peters and Timmerhaus have reported power factors that range between 0.38 and 0.83 for specific processes in the petro chemical industry.

Many believe that economics of scale is also important in the ethanol industry. But an estimated power factor is not available. The proposed paper will present an estimate of a power factor for the ethanol industry and discuss estimation methods. Data from a recent survey of the U.S. ethanol industry is becoming available (Sharpouri, et al.). Capital Cost and capacity data from the survey will be used in the estimations.

References

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