

ultimately effect is not known, but the trials already made to determine this show very satisfactory results.

The best economy recorded in the annexed results of Parsons turbines occurs in the trials of a 1,000 kilowatt machine, built by Messrs. C. A. Parsons & Co. for the Newcastle and District Electric Lighting Company. The trials were conducted by Mr. Hunter, engineer for the Company. The vacuum was 26.5", the initial steam pressure 145 lbs. per square inch (gauge), and the superheat, 237°F. The lowest consumption recorded, 17.7 lbs. of steam per kilowatt hour, is equivalent to 13.2 lbs. per E.H.P. per hour, or expressed in B.T.U. is 268 B.T.U. per E.H.P. per minute. Taking the combined efficiency of turbine and dynamos (there were two placed tandemwise), as 83%, the calculated consumption of steam per I.H.P. per hour is 11.0 lbs. This corresponds to a thermal consumption of 223 B.T.U. per I.H.P. per minute. This same turbine using steam at 138 lbs. per square inch initial pressure (gauge), superheated 71°F., with 26 inches vacuum in the condenser, took 21.5 lbs. steam per kilowatt hour. This corresponds to 16 lbs. per E.H.P. per hour, or 300 B.T.U. per E.H.P. per minute. The advantages of superheating and the higher steam pressure are obvious.

The best results at hand of trials on a Westinghouse-Parsons machine show a consumption of 12.4 lbs. of steam per E.H.P. per hour. Taking the efficiency of the combined plant as above, the calculated steam per I.H.P. per hour is approximately 10.3 lbs. This corresponds to 246 B.T.U. per E.H.P. per hour. These trials were made on a 1,500 kilowatt machine, with an initial steam pressure of 150 lbs. (gauge), 140°F. superheat, and a vacuum of 28 inches.

The trials giving this very low consumption were made by the Westinghouse Machine Company, who vouch for their accuracy, and the results are substantiated by three distinct tests.

The trials for the 1,000 kilowatt turbo-alternator, built by Messrs. C. A. Parsons & Co. for the city of Elberfeld, were made by Mr. W. H. Lindley and Professors Schröter and Weber. A complete account of these trials, which were very exhaustive, may be found in the *Revue de Mécanique* for November, 1900. The best consumption recorded—19.43 lbs. per kilowatt per hour—is equivalent to 14.43 lbs. per E. H.P. per hour, or, assuming an efficiency of 83% for turbine and alternator, the calculated steam per I.H.P. per hour is 11.8 lbs. The steam pressure was 129 lbs. per (square) inch (gauge), with 18.4°F superheat and the vacuum 28.2 inches. The consumption expressed in B.T.U. is 270 B.T.U. per E.H.P. per minute and 264 B.T.U. per I.H.P. per minute, a result agreeing very closely with the previous one.