

In the trials made by Professor Ewing on the 500 kilowatt Parsons turbo-alternator, at the Cambridge Electric Supply Co.'s plant, with a steam pressure of 145 lbs. per square inch (gauge), vacuum 25.4 inches, the consumption was 24.4 lbs. per kilowatt per hour, corresponding to 18.2 lbs. per E.H.P. per hour, or 274 B.T.U. per E.H.P. per minute. With the same assumption as above, the calculated consumption per I.H.P. per hour is 15.1 lbs., corresponding to 225 B.T.U. per I.H.P. per minute. It is to be noted that in these trials the turbine was driving its own air and circulating pumps. The trials were made after the turbine had been in operation for one year. In the maker's tests, when the turbine was not running the air and circulating pumps, the consumption was 24.1 lbs. per kilowatt per hour—i.e., practically the same as after one year's operation.

The guaranteed efficiency of the turbines for the Metropolitan Railway Co.'s plant, referred to above—17 lbs. of steam per kilowatt hour—is equivalent to 12.7 lbs. per E.H.P. This corresponds to a consumption of about 10.5 lbs. per I.H.P. per hour, or 213 B.T.U. per I.H.P. per minute.

There is very little data at hand concerning the economy of the Curtis turbine. A test made by the makers on a 600 kilowatt machine shows a consumption of 19 lbs. of steam per kilowatt hour. The initial steam pressure being 140 lbs. gauge, the vacuum 28.5 inches and no superheat. This is equivalent to 14.2 lbs. per E.H.P. per hour, or, expressed in B.T.U., 269 B.T.U. per E.H.P. per minute.

In trials on a 10 H.P. De Laval turbine at Purdue University by Professor Goss, the best consumption recorded is 47.8 lbs. of steam per B.H.P. per hour, corresponding to 895 B.T.U. per B.H.P. per minute. The initial pressure of the steam was 138 lbs. per square inch (gauge), and the brake horse power of the turbine, 10.33.

In a trial on a 50 H.P. De Laval turbine by Professor Cedarblom, of the Royal Polytechnic College at Stockholm, Mr. Andersson, assistant at the Royal Polytechnic College at Stockholm, and Mr. Uhr, Inspector of the Board of Trade, Stockholm, a consumption of 19.78 lbs. of steam per B.H.P. per hour was obtained. The initial pressure was 122.3 lbs. per square inch (gauge), and the vacuum 26.4 inches. The thermal consumption is 352 B.T.U. per B.H.P. per minute.

In trials on a 300 H.P. De Laval turbine by Dean and Main, an average consumption for six trials is recorded of 14 lbs. per B.H.P. per hour, corresponding to 272 B.T.U. per B.H.P. per minute. The initial steam pressure was 207 lbs. per square inch (gauge), the vacuum 27.2 inches and the superheat 84°F.