

Test of Chatham Gas Plant

Report of K. L. Aitken, Engineer for the Municipality of Chatham, of the Gas Engines and Producer, made to Determine Whether the Contract had been Carried Out by Colonial Engineering Co.

In the last POWER EDITION of THE CANADIAN MANUFACTURER appeared illustrations, and descriptive matter of the municipal electric lighting plant of Chatham, installed by the Colonial Engineering Co., Montreal. This plant consisted of two 100 h.p. Hornsby-Stockport suction gas engines and producer. Before taking over this plant the municipality employed K. L. Aitken, electrical engineer, Toronto, to make a test of the plant and report as to whether the contract had been fulfilled by the Colonial Engineering Co. This test has been made and the plant taken over by the city.

Because of the very great interest which is being taken in producer gas by the manufacturers of Canada just now, the important features of this report are reproduced here. The first part of the report calls attention to the fact that the Colonial Engineering Co. installed two gas engines instead of one as called for in the contract. Concerning this Mr. Aitken says:

"I understand that the Colonial Engineering Co. made this change from one large unit to two smaller ones without additional cost to you, and if such be the case, you may consider yourselves fortunate. Had I been designing your equipment, I would have put in the two smaller engines in preference to the one large machine, and would have been willing to pay more for the two smaller engines.

"I understand that it was your idea to install one gas engine and put in a steam engine as a reserve, such steam engine being supplied with steam from the waterworks boilers some distance away. This arrangement would be good, and the steam engine might be a desirable acquisition with only one gas engine, but with the two gas engine plant I am very much inclined to think that the necessity for an auxiliary steam service is entirely eliminated and you are therefore saved the cost of this work, I will say further that I think you will be able to give better street lighting service with the plant as now installed, for the equipment, while it may on rare occasions require the cutting off of one machine for a few moments, will not suffer a complete shut-down. With the proposed plant of one gas engine and one steam engine, a dirty igniter would mean cutting off every light in town until the igniter could be cleaned or the steam engine could be put in operation. This latter move would take some little time due to the long length of piping required to connect the gas engine power house with the pumping station.

"The engines show every evidence of proper design, good material and good workmanship. The hit-and-miss system of governing which is used, is standard English and Continental practice, and will be found quite satisfactory for your work.

TESTS OF ENGINES.

"During almost all tests your city engineer, Mr. Jones, was present.

"The output of each engine was measured by means of a friction brake, which apparatus your city engineer will inform you is an en-

tirely reliable device for making power measurements.

"In making a maximum capacity test on engine No. 25938 with natural gas, I obtained 125 h.p., and the engine then was running in such a manner as to be capable of delivering somewhere between 5 and 10 per cent. more than this amount.

"A similar maximum capacity test was made with producer gas, and 100 brake h.p. was obtained with three or four per cent. more capacity left in the engine.

"Engine No. 25939 showed a maximum capacity on producer gas of 98 brake h.p.

"On the combined test of the two engines I found that a horse power hour was developed with .92 (92-100) pound of coal, and therefore the two smaller engines have shown an efficiency eight per cent. better than that guaranteed for the large unit.

"The contract states that the one engine, when used on natural gas, must be capable of delivering a maximum of 210 brake h.p.

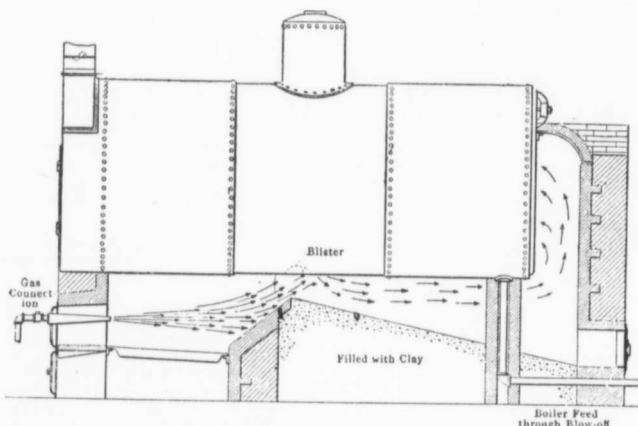


FIG. 1. HOW BOILER WAS FIRST ERECTED

Please note that engine No. 25938, as above stated, showed 125 h.p. on natural gas and had something to spare. The two engines are identical (note that on the maximum test on producer gas one showed 100 brake h.p. and the other 98 brake h.p.), and I would therefore say that the combined maximum power of the two engines on natural gas will be approximately 250 h.p., or 19 per cent. better than the guaranteed maximum.

"On producer gas, the contract calls for the one engine to have a capacity of 190 brake h.p. From figures given above, you will note that the combined maximum capacity of the two engines on producer gas was 198 brake h.p., or something over four per cent. better than the guarantee.

SUMMARY OF REPORT.

"As stated at the beginning of this report, the letter of the contract has not been fulfilled by the Colonial Engineering Co. in

the two particulars mentioned, but the spirit has certainly been fulfilled, and I believe, and will most unhesitatingly say that a better and more suitable equipment has been furnished you than contemplated in the agreement. The guarantees have all been exceeded, and the furnishing of two units without additional cost to you will, as before stated, do away with any question of installing an auxiliary steam plant.

"In conclusion, I would state that the tests herein referred to were very carefully made, and the results as herein given are correct to the best of my knowledge and belief. Respectfully submitted,

(Signed) K. L. AITKEN."

Personal Mention

W. E. Archer, mechanical superintendent of the Nasmith Co., Toronto, has just returned from a trip through the Eastern States, including New York and Philadelphia, investigating producer gas plants to be used in connection with the Nasmith gas heated oven.

Mr. W. Stark, secretary-treasurer of W. H. Storey & Son, Limited, of Acton, has resigned his position. Mr. Stark has been with Messrs. Storey for over twenty-three years.

Wrong Boiler Setting

By C. S. ROBINSON.

The two illustrations are of a boiler located in the plant at which I am employed. Fig. 1 shows the boiler as it was when first erected. The fuel used is natural gas and the boiler has been in use over a year, but was not worked very hard until about three months ago. The feed water is fed through the blowoff pipe, a thing I objected to when the boiler was set up, but I was not the chief engineer then, and the fellow who was in charge was able to talk the management into feeding this way.

Things went smoothly enough until we commenced to crowd the boiler, then scale began to collect at the end seam and around the blowoff pipe. A few weeks ago the feed pump gave out and I placed a larger one in its place. The result was that the mud