

Waller & Son gas exhausters, a long way from home

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George Waller & Sons Ltd were one of Stroud's more interesting engineering companies. In the 1870s, they took over the old Phoenix Ironworks from the Ferrabees and for many years, produced a range of engines, pumps, and hydraulic equipment. They also came to specialise in the manufacture of machinery for gas works. This was supplied both in the UK and overseas, which brings us to the subject of this article.

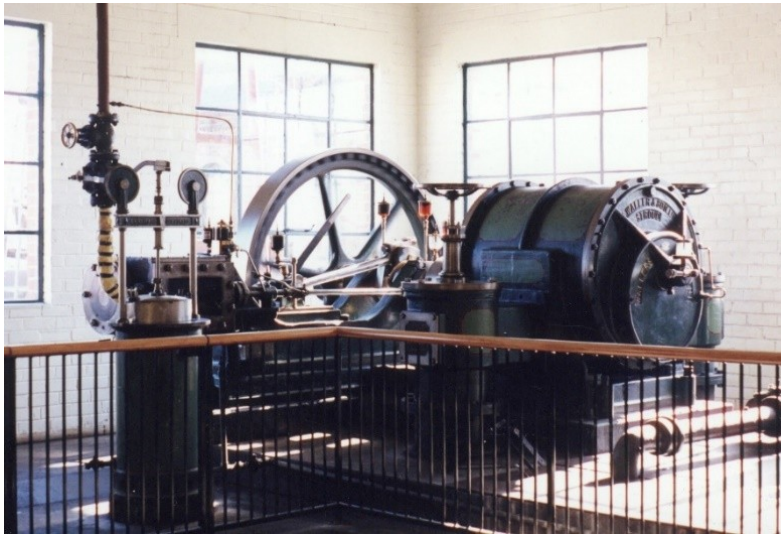
Dunedin is the second-largest city on New Zealand's South Island, and the principal city of the Otago region. In 1863, a gasworks was established there that continued in operation until 1987. It is now one of only three known preserved gasworks museums in the world. It was, in fact, NZ's first and last operational gasworks. The plant was set up to meet the growing needs of Dunedin – at the time, a local gold rush was underway and the town was expanding rapidly. The initial contract was to supply gas made by carbonizing coal to feed 150 street lights for seven years at a cost of £17-10-0 per lamp per year. The price to domestic consumers was 25 shillings per 1000 cubic feet of gas, too expensive for most people.

Coal gas is produced by heating bituminous coal to about 400°C in the absence of air in an enclosed chamber. It then emits a combination of water vapour, rich gas and tar. When the temperature is increased to 1000°C, the remaining volatile matter, ultimately hydrogen, is almost entirely driven off leaving coke as residue. Coal gas consists largely of hydrogen, carbon monoxide and methane, although before use, it requires purification in order to remove unwanted products such as tars and ammonia.

There were a series of plant expansions and upgrading at Dunedin over the years. In 1927, a replacement retort house was built and new exhausting and pumping machinery installed. In the following decade, two large Waller exhausters were installed to cope with the increasing gas demand. These were used to draw gas from the retort house and pump it through a detarrer and purifiers, then into the gasholders. Each unit consisted of a horizontal single-cylinder steam engine coupled to an eccentric vane pump. The pressure of gas in the main controlled the speed of the engine through a governor which regulated the steam supply.

At full capacity, each exhauster could pass 100,000 cubic feet of gas an hour. The first exhauster was installed in 1931 and cost £666. The second identical unit was added in 1939 and cost £622. Both were painted in the standard Dunedin gasworks colour of two-tone green with black and red pinstriping and yellow lettering. They now form part of the display at the museum.

Products from Gloucestershire-based engineering companies were exported around the world. In the Stroud area, many such firms grew out of servicing and maintaining the local cloth mills, often developing specialised products for markets in the UK and overseas. As confirmed by the Wallers gas exhausters in New Zealand, it's remarkable where some of them ended up!



No 1 exhaustor, installed in 1931



No 2 exhaustor, installed in 1939



The original Dunedin gasworks

(all photos courtesy of the Dunedin Gasworks Museum)