

THE NEW POWER HOUSE
WHAT WILL BE IN IT.
LOOKING TO THE FUTURE.

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THE City Council is calling tenders for the erection of the new municipal power station, to be built near the Railway Wharf to supply electric current for lighting and power purposes, and a start will probably soon be made with the building itself. The Council's experience in the electricity business has been on all fours with that of other cities, which is that a modest start soon means the need of a big expansion in plant. It is only four years since the present plant was added to the destructor for the utilisation of the steam furnished by the destructor furnaces. That steam supply very soon became too small, and in the following year additional boilers and machinery were put in.

The proportion of power supplied by the destruction of waste matter has decreased rapidly until it is now a very small proportion of the whole; and it is partly to be able to supply current more economically that the new power station is to be built. The original advantage of the destructor site, in providing the use of the heat of the destructor, has almost disappeared, because the power therefrom scarcely counts when compared with the total amount needed. The new site will provide plenty of room, not only for as much plant as is now to be put in, but for large extensions in the future; a large supply of cold water for condensing purposes will be readily available by pumping from the harbour; and there will not only be plenty of storage room for coal, but the buildings being right on the waterfront, coal can be lifted by a gantry crane straight from the holds of colliers into a hopper in front of the boiler-house.

In connection with the handling of the coal, which amounts to a very large item in a big power station, every labour-saving device is to be employed. On going into the receiving hopper the coal will be automatically weighed, and a bucket conveyer, capable of handling 40 tons per hour, will carry it thence along the full length of the boiler-house, delivering it into bunkers over the boilers. Thence it will be fed into the hoppers of the mechanical stokers which will keep the fires going. There is no practical difficulty in carrying out the whole operation of coaling by machinery, and this will be a striking application of that interesting process. The conveyer that brings the coal into the boiler-house will continue work on the way out, as it will pass into the ash-pit and carry the ashes into a hopper outside the boiler-house.

The boilers, which will be four in number to start with, will be of the water-tube class. Water-tube boilers, in which the water is contained in the tubes instead of surrounding them as in the more ordinary kinds, have been found to possess advantages in the way of economy and otherwise that fits them well for powerhouse purposes; they will, for instance, thrive upon a poorer quality of fuel than their rivals. The boiler-house will provide room for 12 boilers, in order to provide for expansion in the future. It is absolutely necessary in these days to do everything possible to secure economy. and an "economiser," which is a subsidiary boiler for heating up the feed water before it goes into the boilers, will be placed in the main flue.

The generating plant will consist, to start with, of four sets of; dynamos, driven by steam engines. Two will be of 500 kilowatt capacity, and two of 1000 kilowatts, each kilowatt absorbing something over a horse-power for its production. The machinery will be capable of working under an overload of 20 per cent, for one hour. For the immediate future it is only proposed to supply current within a limited radius, and the pressure to be adopted is that now coming from the destructor, namely, 460 volts. That pressure, while not sufficient to carry current any great distance without heavy loss, will enable Parnell, Khyber Pass, Newton Road, Ponsonby Road, and St. Mary's Road to be reached.

When current has to be carried far the pressure must be greatly increased to avoid large losses in the conveying wires, and when, such an extension becomes necessary it is proposed to install two turbine-driven generators supplying alternating current at a pressure of 6000 volts. The alternating current will be reduced at suitable substations to a lower pressure, either to low-pressure alternating current directly or to direct current by means of motors and dynamos, according to the exigencies of the demand.

It has not been specified what type of either boilers, engines, or dynamos will be used, and it will depend upon the firms tendering whether the generators are driven by ordinary steam engines or by turbines. The Christchurch municipal power station consists of generators driven by vertical steam engines coupled direct; and the tramways power plant in that city comprises, generators driven by Curtiss steam turbines, the shafts running vertically. There is very little to choose between the systems, and engineers are chary of making positive assertions as to which is the better.

Beyond the generating plant, which may be likened to the alimentary and muscular systems of the organism, there is the distributing or nervous system.

This will consist, within the station, of a big switchboard installation, comprising a maze of cable and beautiful brass work and delicate apparatus ; and outside of the reticulation, through the city, of cables. The power station will also include a large quantity of auxiliary machinery, among the largest of which will be two big electrically-driven centrifugal pumps for supplying condensing water, which will flow through pipes 2.5ft in diameter. Subsidiary rooms will contain testing apparatus and stores of all kinds.

The main buildings, which will be erected upon massive ferro-concrete foundations, will be constructed of fire-proof materials throughout.

(Searchable PDF version prepared by David Hyde - pseudonym 'David de la Hyde')

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