

Extracted from "INDUSTRIAL GEELONG" which was printed in honor of a visit by the Interstate Conference of The Institution of Civil Engineers. October 30th., 1923. "INDUSTRIAL GEELONG" was compiled by the Faculty of Engineering, The Gordon Institute of Technology. G.R. King, F.R.V.I.A., Principal.

ELECTRIC SUPPLY.

This undertaking was first established in 1902, and was continued in operation as a purely D.C. system until 1920, when, in anticipation of the industrial development of Geelong, it was entirely replaced by a three-phase 6,000 volt 50 cycles system of generation and distribution.

The Power Station is situated on the south shore of Corio Bay, at the corner of Corio Terrace and Yarra Street, and is designed for a plant capacity of 10,500 K.W. It supplies electricity for domestic, tramway, and industrial requirements, under Orders-in-Council, throughout the City of Geelong, Town of Geelong West, Borough of Newtown and Chilwell, Shires of Corio, South Barwon and Bellarine. The station comprises two blocks of buildings in concrete and brickwork. The general offices, technical and commercial departments, engine and boiler rooms, car shed, work shops and garages occupy the buildings fronting Corio Terrace and Yarra Street. The mains and installation departments, show room, laboratory and meter testing, together with the general stores, occupy the frontage to Yarra and Corio Streets.

The Fuel used consists principally of black coal, brought to Geelong by direct shipment. It is discharged into hoppers, is crushed, and then delivered to the service bunkers by a Babcock and Wilcox gravity bucket-type conveyor capable of handling 40 tons of coal per hour. There are six service bunkers each capable of holding 200 tons. The coal is weighed by Avery Automatic Scales before being delivered to the hoppers of the stokers.

The Boiler Room is of steel throughout, with concrete floors and brick and concrete filled walls. It measures 113 feet by 68 feet and 59 feet to the underside of the roof trusses. It has a 12 feet high basement, the floor of which is at ground level. Accommodation is provided for six boilers in batteries of two. These are manufactured by John Thompson, of Wolverhampton, and are of the six-drum vertical straight-tube type, with a steam drum above the centre top drum. Each boiler has a heating surface of 4,500 square feet, and a superheater surface of 516 square feet. The rated evaporation is 23,000 lbs. from and at 212 degrees Fahrenheit, the steam pressure being 200 lbs. per square inch, and the superheat 200 degrees Fahrenheit. In addition to the usual gauges, each boiler is provided with draught gauges, a steam flow meter, and a pyrometer indicating the temperature of the flue gases.

The stokers are the Erith Riley Underfeed type, each consisting of 5 retorts, and having a grate area of 80 square feet. Two boilers are fitted with the Underfeed Stoker Company's travelling-grate type of stokers, each having a grate area of 120 square feet. Forced draught is used on all boilers, each stoker having a separate motor-driven fan, the motor also serving to drive the stoker gear. The furnace volume is approximately 1,050 cubic feet.

The stokers discharge the ashes into concrete hoppers suspended under the boilers from the firing floor. A mechanical ash-disposal system is provided for.

The ring steam main is of 8 inch seamless steel pipe, with the flanges welded on. It feeds to the headers in the basement of the engine-room. A suitable arrangement of valves makes it possible to supply any or all the turbines from either leg of the main. All joints are made with Taylor Rings.

The condensate from the turbine condensers is delivered to a cast-iron hot-well tank. From this tank the feed-water passes through a closed heater of 1000 square feet heating surface, where the temperature is raised some 15 degrees Fahrenheit.

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The water, in passing from the heater to the feed pumps, is measured by means of a Lea Recorder. Direct acting Weir pumps deliver the water into the cast-iron boiler feed main, which is also arranged on the ring system. The boiler feed is automatically controlled by Crosby Regulators.

The Economisers are situated 36 Feet above the firing floor, each having a heating surface of 8,150 square feet. The main flue, which consists of 3/16 inch steel plate, has a sectional area of 91 square feet, and is lagged with Silex compound. It is supported on rollers, and provision is made at one end, and at the boiler uptakes, to allow of movement longitudinally.

The Stack is of brickwork, the top being 150 feet above the firing floor. The internal dimensions are 8 feet at the top, and 13 feet at the bottom.

An 8,000 gallon fresh water tank on the economiser floor provides a reserve should the town water supply fail.

At present the "make up" water is not treated, but at a later date a Paterson water softening plant will be installed.

The Engine Room is 91 feet by 47 feet, and 22 feet in height to the crane runway, and has a 12 feet basement. It is equipped with a 15 ton Travelling Crane. The generating equipment at present installed comprises one 1500 K.W. Brush-Ljungstrom, and two 3,000 K.W. Metropolitan Vickers Turbo-Alternators. A third Metropolitan-Vickers Set is to be installed. All turbines are designed for a steam pressure of 200 lbs. per square inch, superheated 200 degrees Fahrenheit, and for a vacuum of 28½ inches. The speed of all sets is 3,000 r.p.m.

The rolling stock consists of ten single-truck combination cars, seating 36 passengers, and equipped with two 45 H.P. motors; two open-type cars with similar equipment, seating 40 passengers; and two open-type trailer cars. The car bodies were manufactured by Messrs. Duncan and Fraser, of Adelaide, and are mounted upon Brush Type Flexible Wheelbase trucks, with British Westinghouse equipments.

The track is laid with 90 lb. per yard grooved rails, laid on concrete stringers or wooden sleepers. A two-mile section of track has recently been constructed with 80 lbs. Tee-headed rails of Australian manufacture, laid on wooden sleepers. Track rail joints are electrically welded, and tracks are cross bonded.

In the centre of the city, where the streets are wide, the No. 00 B. & S. grooved copper trolley wire is supported by centre poles, while further out span-wires construction is used. The trolley voltage is 550.

The system is very shortly to be extended, and the rolling stock will be increased by eight new combination cars, and two Birney light-weight Safety cars.

The Company's activities include an Installation Department dealing with the supply and maintenance of industrial power requirements and domestic power, heating and lighting. This department is equipped with show rooms, motor vehicles, and a permanent staff of wiremen.

The Mains and Installation Departments and Tramways operate ten motor vehicles comprising three-ton and one-ton lorries, tower waggons, a motor road-roller, and a portable air compressor for pneumatic tools.