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Chlorination of Sea Water by means of Electrolysis

by

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On request of the Chairman of the Shellfish Committee I present herewith some information on an apparatus used in Zeeland for the chlorination of sea water.

This steriliser unit, bearing the name of Clorocel, type SM/60/60, is manufactured by the Paterson Engineering Company Ltd., Windsorhouse, Kingsway, London, W.C.2. It was originally designed for water treatment through addition of electrolytic sodium hypochlorite. The main item of the equipment is the Clorocel electrolytic cell, which requires only a relatively small amount of electric power to convert a weak solution of common salt into sodium hypochlorite.

According to my experience it is, however, possible to use sea water itself instead of a weak salt solution, which reduces the operational costs to a mere consumption of electricity. In this case the Clorocel type SM/60/60 is able to produce approximately 78 grams of chlorine per hour and to treat 78 m^3 (17360 gallons) of sea water at 1 p.p.m./hour. The electricity consumption is 1,000 watts.

The sea water is pumped up by means of a centrifugal pump. Part of the sea water in the delivery main of the pump passes through the Clorocels and flows from there to the injecting valve fitting on the suction main to the pump. The dose control switches of the apparatus adjust the amount of electric current being fed to the electrolytic cells. Ammeters indicate the amount of current used which is also a direct measure for the amount of sodium hypochlorite produced. When sea water is used each ampere represents the equivalent of approximately 0.7 p.p.m. chlorine being applied to a flow of 900 litres (200 gallons) per hour.

The rectifier unit of the equipment makes it suitable for an input supply of 200/250 Volts, 50 cyclus, 1 phase A.C.

This steriliser unit has the advantage that no skilled supervision is required and that the dangerous use and handling of chlorine cylinders or of carboys with Eau de Javelle is no longer necessary.