

Sulzer diesel engines - past and present

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SULZER DIESEL ENGINES

The story begins in 1879 when the young Rudolf Diesel, having completed his studies, entered the employment of Sulzer Brothers as a trainee. In 1893 Diesel published his work "Theory and Design of an Economical Heat Engine", and embarked upon the practical realisation of his invention.

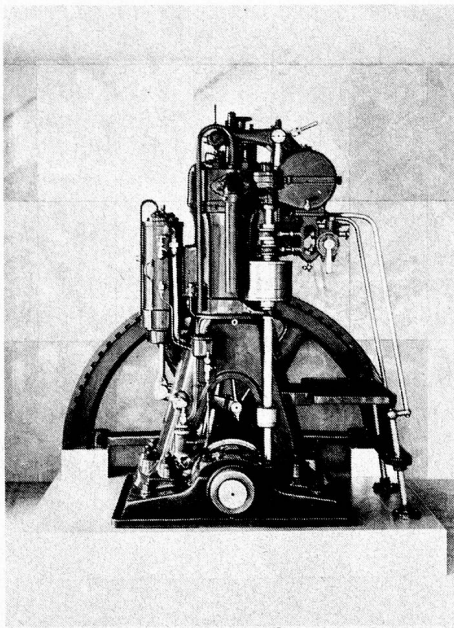
He was keenly interested in securing the co-operation of Sulzer Brothers and succeeded in getting them to sign an agreement. Since that time intensive development work has been carried out. From the basic conception of a vertical, single acting engine the modern Sulzer Diesel engine, a power unit satisfying even the most exacting requirements has evolved.

The first Sulzer experimental four-stroke engine was built in 1897 and several engines made. The switch to the two-stroke principle in 1905 constituted a decisive advance. The first two-stroke engines had uniflow scavenging, with air inlet valves in the cylinder cover and exhaust ports in the liner. About 1910 the next step was made to the valveless two-stroke engine with its gas exchange controlled solely by inlet and exhaust ports in the cylinder liner. Eliminating the valves in the cylinder cover, together with their driving gear was an important simplification creating a conspicuous feature of the Sulzer two-stroke engine still retained today.

It was felt at an early stage that the diesel engine was suited for the propulsion of sea-going vessels, but that larger unit output would be needed. Accordingly in 1911 a single-cylinder experimental engine was built with a cylinder bore of 1,000 mm.

In 1955 a fresh period of intensive development began. Its aim was to raise the specific output by means of supercharging and also at the same time boosting the maximum output obtainable from the diesel engine by adopting larger cylinder bores — up to 1,050 mm. This development was accelerated by the tremendous advances in ship building. Ships were built in increasing numbers with greater and greater tonnages requiring even more drive horse-power.

Successful use was made of cheaper residual oils for fuel in these slow speed engines and this development went a long

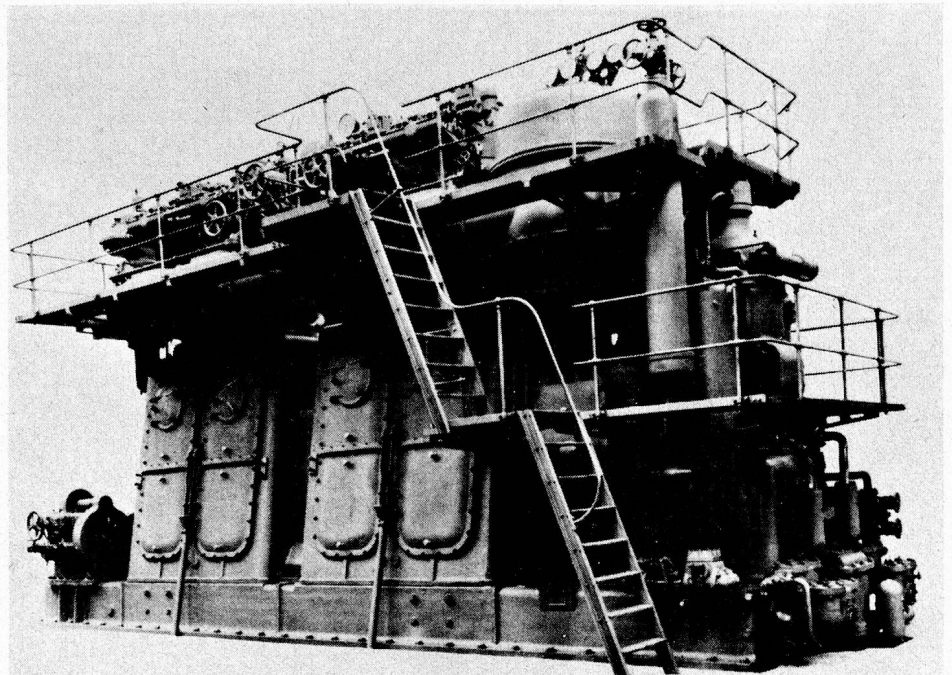


One of the first Sulzer four-stroke diesels. Installed as a pump drive in 1903, it ran ten hours a day until 1951 without giving trouble.

way towards securing a larger share of marine propulsion for the slow speed diesel engine at the expense of the steam turbine and giving the best thermal efficiency obtainable over all other prime movers.

Since 1962 upwards of 40 Sulzer slow speed diesel engines have been commissioned or are on order for power stations. These installations include the diesels for Bong Range Power Station in Liberia. At present this power station is being enlarged by three further Sulzer engines making a total of 11 Sulzer engines. With a total output of 100 mW it will be the largest diesel power station in the world.

Recently the States of Guernsey Electricity Board have placed an order with Sulzer Bros. (U.K.) Limited for one diesel engine an alternator of 12 mW with engine room accessories. An extension to the existing Valve Power Station will be built to accommodate this and future engines. The Sulzer Group has received two other major orders for Sulzer engines based on the low speed marine type diesel engine — one for Vazzino, Corsica, and the other for Al Ain, United Arab Emirates.



Four-cylinder Sulzer, two-stroke crosshead marine engines giving 1350 bhp (1917).



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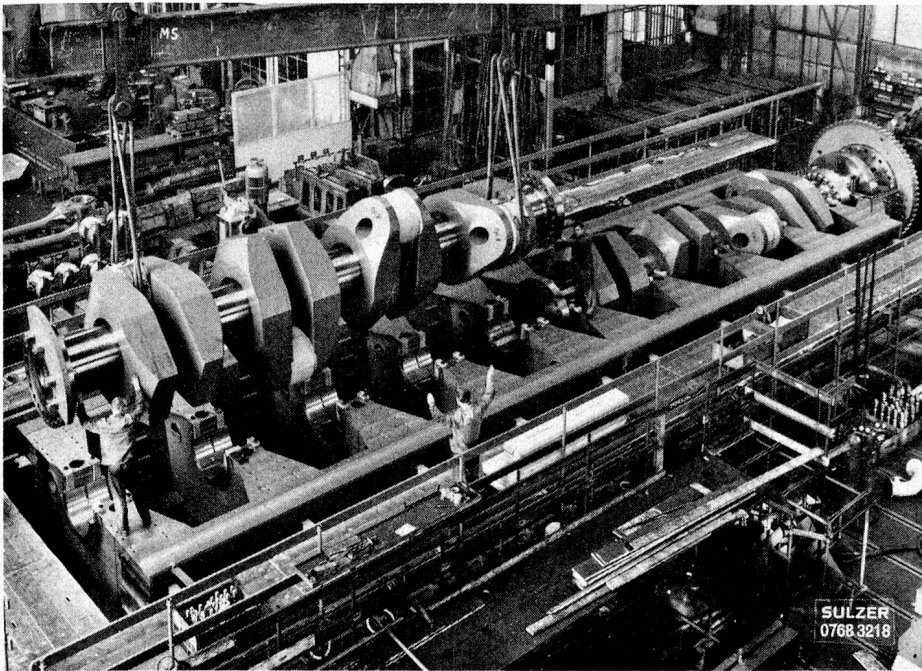
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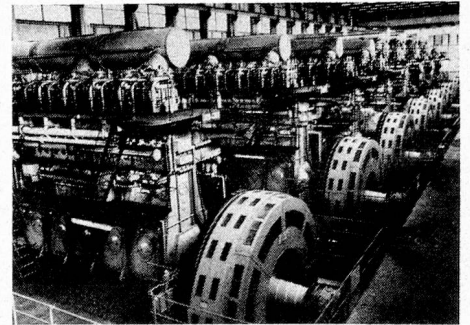
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- PAST AND PRESENT



Part of the crankshaft of an eight-cylinder Sulzer crosshead engine with 1050 mm cylinder bore (32,000 bhp).



The "Bong Range" diesel power station employs 11 Sulzer diesels.

ACKNOWLEDGEMENTS

W. Kilchenmann – 75 years of Sulzer Diesel Engines. Sulzer Technical Review No. 4/1974.

H. Ringgenberg – Africa's Largest Diesel Power Station. Sulzer Technical Review No. 1/1966.

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