

Anyone who read the Ray Toler biography in the July/August 2006 Tired Iron Newsletter knows of his illustrious forty-year career with Arkansas Power and Light, beginning just after World War II. His varied experiences brought him in contact with many developments in electric power production. His interest and knowledge includes that of the development of diesel engines. Below is his short history of diesel engines.

## **RUDOLPH AND HIS ENGINE**

By Ray Toler

Rudolph Diesel (1858-1913) did pioneer work on his “Diesel” engine beginning in 1892 when he was only 34 years old. Failure after failure marked early development as the test engine was turned by a belt from a steam engine.

It is not true that the first engines burned pulverized coal. It was tried but was not successful. The early work was done in the shops that later became Maschinenwerk Augsburg Nurnburg (MAN).

Eventually the engine was developed enough to market, and Diesel licensed MAN and Deutz and Krupp in Germany; Sulzer in Switzerland; Dyckhoff in France; AB Diesel Motors in Sweden; Mirrlees in Britain; Werkspoor in Holland; and Burmeister and Wain in Denmark. Early American builders were Bush-Sulzer [Yes, from the Bush beer family], Nirsberg, and Nelseco.

The first Diesel engines were heavy and best suited for stationary use, such as in factories and electric power plants. In the early 1950s while I was working for Arkansas Power and Light Company, I was sent to Osceola, Arkansas, to negotiate an electric power contract with the city so they could retire their aging diesel engine powered generators. While touring their plant I commented on an ancient four-cylinder Busch-Sulzer diesel engine. My guide informed me that the engine was a three-cylinder unit of the two-stroke type and that the fourth cylinder was a compressor for supplying scavenging air.

In due course, diesel engines found use in ships and then in submarines. By 1918, MAN was building 13,000 horsepower diesel engines.

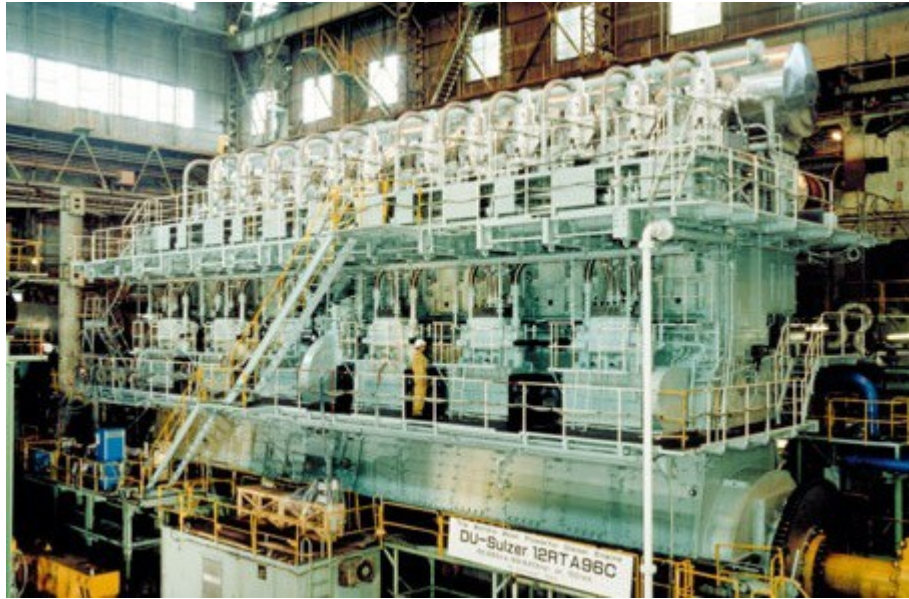
Diesel-electric locomotives were built in Sweden, Switzerland, and Russia as early as 1913, followed by General Electric in the United States.

Rudolph Diesel visited America in 1912 and met Thomas Edison. Rudolph disappeared from a channel steamer the night of September 29, 1913. His body was found October 11 and positively identified by personal effects.

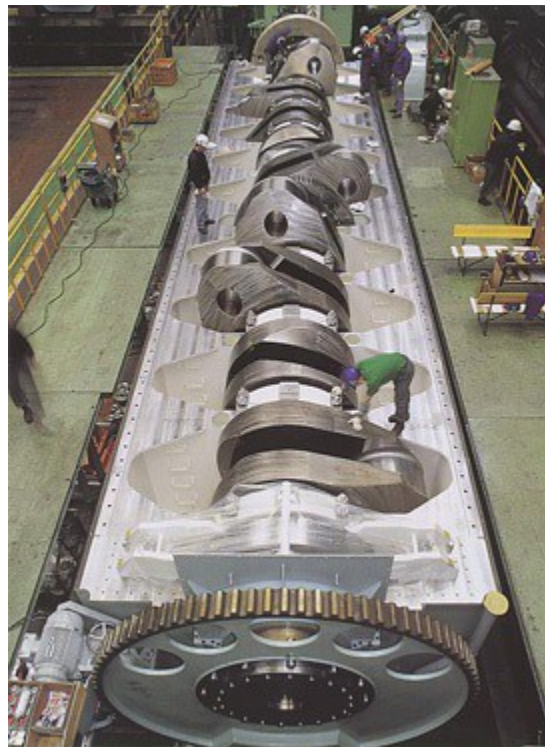
Marine propulsion today is changing from steam turbines to mammoth Diesel engines, most of which are designed in Germany and built in Japan by Wartsila-Sulzer and in Korea by Hyundai. The Wartsila –Sulzer engines are built in 6, 8, 10, 12, and 14 cylinder inline configurations using 38” diameter bore with 98” stroke using the two-stroke cycle. The 12 cylinder version weighs 2,000 metric tons and delivers 90,000 horse power at 100 revolutions per minute.

We are reminded daily of Rudolph Diesel as his name lives on in millions of engines in power plants, ships, locomotives, trucks, buses, cars, tractors, and in the multitudes of signs in every city and town advertising “Diesel Fuel.”

Reference: Diesel’s Engine by Lyle Cummins, Cummins Press, 1993



Wartsila-Sulzer RTA96-C turbocharged two-stroke diesel



A ten cylinder crankshaft