ERNST WERNER von SIEMENS
GERMAN INDUSTRIALIST

by Brian Roberts, CIBSE Heritage Group

Werner von Siemens was born in Lenthe in Hanover on the 13th December, 1816 the fourth child (of fourteen) the son of a tenant farmer, Christian Ferdinand Siemens (1787-1840), and his wife Eleonore Deichmann (1792-1839).

His hopes of studying in Berlin proved impossible, since his family was highly indebted, and instead he chose to join the Prussian Military Academy’s School of Artillery & Engineering. From 1835 to 1838, Siemens trained as an officer, receiving tuition in mathematics, physics and chemistry. Following the death of his parents, he invented an improved process for gold- and silver-plating (sold to Elkington of Birmingham in 1843). He then transferred to the staff of the Berlin Artillery Works and joined the circle of academics at the University.
Around 1845, Siemens improved the indicator telegraph of Charles Wheatstone and went on to develop a complete telegraph system. In 1847, together with Johann Georg Halske (a scientific instrument maker), he founded the firm of Siemens & Halske to manufacture and construct telegraph systems. The company obtained government contracts to build a telegraph network in northern Germany. Then having left the Army, Siemens visited Russia where he planned the telegraph line from St Petersburg to the Crimea (used during the Crimean War). The Russian business proved so profitable that Siemens’ brother Carl was made the resident Russian representative and this enabled Werner to conduct research resulting in improvements to the telegraph and underwater cable telegraphy.
Werner von Siemens with his first wife Mathilde and sons, c.1876

Werner von Siemens with his wife and family, c.1876
Werner was appointed scientific consultant to the British Government which resulted in the formation of Siemens Brothers in London, headed by William (later Sir William) to manufacture and lay underwater cables. The first special cable-laying ship, the *Faraday*, was designed and built, which, after 1875 laid five Atlantic cables in ten years.

*The Faraday*

Perhaps the most impressive achievement of Siemens Brothers at this time was organising and constructing the Indo-European Telegraph from London via Berlin, Odessa, and Teheran to Calcutta, completed in 1870.

*Siemens' London Factory*
Meanwhile in 1867, Werner made his outstanding contribution to scientific technology with his discovery of the dynamo principle.

Having already introduced the double-T armature, the electromagnetic field, and the external load of an electrical generator in a single circuit…. (he avoided) the costly permanent magnets previously used in the field. Other inventors (Wheatstone and Moses Farmer) discovered the dynamo principle about the same time; but Siemens foresaw the consequences of his dynamo for heavy current, or power, uses and developed practical applications.

The Siemens Company went on to pioneer the use of electricity for trams, locomotives and in central generating stations.
Siemens electric tram, 1882

Siemens electric tram in Frankfurt, 1884
Werner von Siemens has been credited with inventing the first electric elevator in 1880 (a rack-climbing type)
The Siemens brothers
(Left to right): Werner, Carl, Ferdinand & Frederick, 1889
Werner von Siemens retired in 1889. His Company continued and prospered.
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Ernst Werner von Siemens, 1816-1892
William Siemens (seated) with his wife Anne and related family
Standing (left to right) Walter, Carl, Werner and Otto
Siemens dynamo
Siemens in India, 1910

Steam Dynamos at Kingston Electric Lighting Station.

(Fig. 7)
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Siemens Brothers
1858-1958
Inventor and entrepreneur: Recollections of Werner von Siemens

Siemens, Werner von

Note: This is not the actual book cover

1968
Artur Fürst

Werner von Siemens

Der Begründer der modernen Elektrotechnik

2016
EPILOGUE

Ernst Werner von Siemens died on the 6\textsuperscript{th} December, 1892 in Berlin-Charlottenburg. He had received an honorary doctorate from the University of Berlin in 1860, had been a member of the Berlin Academy of Sciences since 1873 and was ennobled in 1888.

He was described as “a responsible entrepreneur and far-sighted inventor, (who) lent significant impetus to the still young-field of electrical engineering in the second half of the nineteenth century, and played a key role in fostering the development of the electrical industry.”

The SI derived unit, siemens (symbol S) for electric conductance is named after him.
The Werner von Siemens Grave & Memorial in Berlin