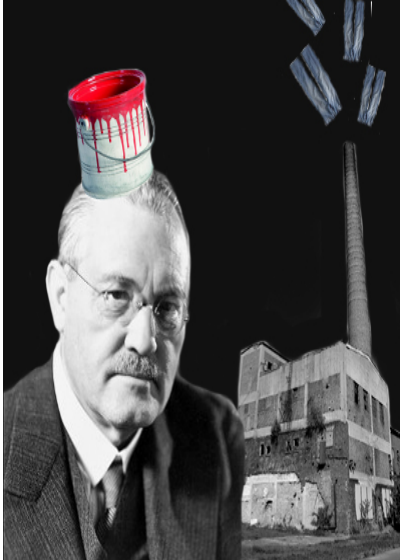


(Carl) Bosch

Written by volunteer

Thursday, 05 September 2013 16:33 - Last Updated Wednesday, 18 September 2013 16:14

Carl Bosch (1874 - 1940)



Carl Bosch, born in Cologne, Germany, was a prominent German industrial chemist and entrepreneur.

Carl Bosch's uncle was the legendary industrialist Robert Bosch who helped develop the first spark plug.

Carl himself developed the Haber-Bosch process for high-pressure synthesis of ammonia and was one of the founders of IG Farben, which became one of the world's largest chemical companies.

1931 Bosch won the Nobel Prize for Chemistry for formulating chemical high-pressure methods, the first Nobel in chemistry given for practical rather than theoretical discoveries.

Bosch began his studies in mechanical engineering and metallurgy, the study of metallic elements in 1894 and within two years began to study chemistry and received his doctorate in 1898.

After graduating, Bosch was given his first job as a chemist at Badische Anilin- and Soda-Fabrik.

They recruited Bosch to create a synthetic indigo color (dye) for cotton, the color used for blue jeans.

While working at BASF in 1908, Bosch met Fritz Haber who had been working on synthesizing ammonia from hydrogen and atmospheric nitrogen (One of the primary chemicals in fertilizer that makes plants grow).

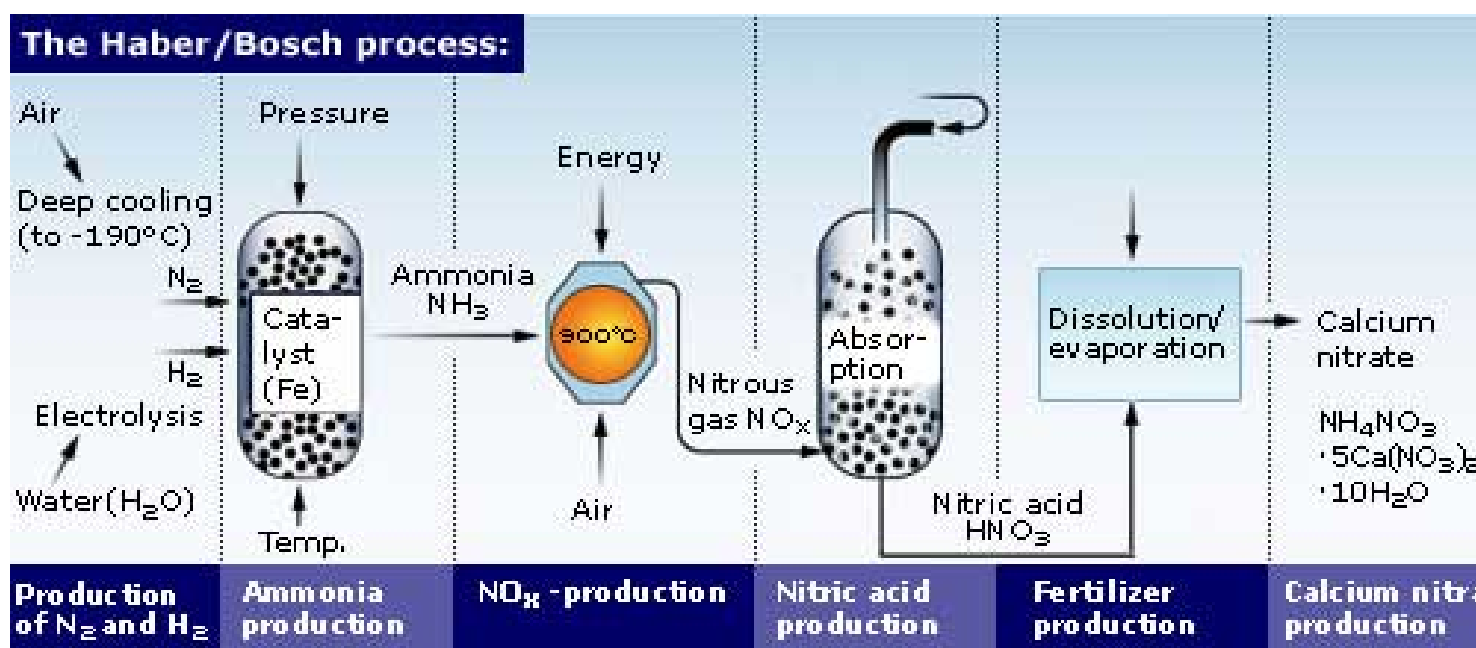
What exactly is the Haber-Bosch process?

At the end of the nineteenth century, supplying the expanding population with food, raised a growing difficulty, since the nitrogen content of the soils exhausted, whereas the industrial support of nitrogen fertilizers remained unsolved.

Nitrogen is primarily assimilated in the form of nitrate ions (is an atom or molecule in which the total number of electrons is not equal to the number of protons, giving the atom a net positive or negative electric charge) and ammonium ions by plants, it's very common in the atmosphere, but difficult to get into a liquid or solid form that can be used. Doing so is known as "fixing" nitrogen.

At the beginning of the twentieth century scientists had been trying for more than 100 years to fix or synthesize nitrogen in a man-made manner.

In 1908 Fritz Haber discovered the principles of ammonia synthesis, utilizing all the physical and chemical resources available that time. The synthesis takes place in the presence of an iron catalyst, at high pressure and temperature.



Carl Bosch commercialized the process by establishing the first industrial-level production in 1913.

This industrial process allowed the expansion of both, agriculture production and human population, during the 20th century and so created a capacity to sustain the world's need for food production.

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"The Haber-Bosch-Process has been of greater fundamental importance to the modern world than ... the airplane, nuclear energy, space flight, or television. The expansion of the world's population from 1.6 billion people in 1900 to six billion in 2000 would not have been possible without the synthesis of ammonia." - Vaclav Smil (Canadian scientist and policy analyst).