History of turbochargers

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In 1936, Dr. Werner Theodor von der Nuell started to research the first variable-geometry turbochargers (also known as variable-nozzle turbines) at the Laboratory for Aviation in Berlin,...

In an internal combustion engine, a turbocharger (also known as a turbo or a turbosupercharger) is a forced induction device that is powered by the flow of exhaust gases. It uses this energy to compress the intake air, forcing more air into the engine in order to produce more power for a given displacement .

The History of Turbocharging can be traced back to the late 19th century. During this period, visionaries like Gottlieb Daimler and Rudolf Diesel experimented with forced induction. However, Swiss Mechanical Engineer Alfred Buchi etched his name in history. In 1896, Buchi"s pioneering spirit led to the submission of the first patent for a ...

In fact, a lot of early turbocharged cars were European - cars such as the Porsche 930, Saab 99 Turbo and the BMW 2002 Turbo. However, the first car to ever get boost was as American as apple...

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The current categorisation is that a turbocharger is powered by the kinetic energy of the exhaust gases, whereas a supercharger is mechanically powered (usually by a belt from the engine"s crankshaft).[3] However, up until the mid-20th century, a turbocharger was called a "turbosupercharger" and was considered a type of supercharger.[4]

Prior to the invention of the turbocharger, forced induction was only possible using mechanically-powered superchargers. Use of superchargers began in 1878, when several supercharged two-stroke gas engines were built using a design by Scottish engineer Dugald Clerk.[5] Then in 1885, Gottlieb Daimler patented the technique of using a gear-driven pump to force air into an internal combustion engine.[6]

Turbochargers were used on several aircraft engines during World War II, beginning with the Boeing B-17 Flying Fortress in 1938, which used turbochargers produced by General Electric.[10][19] Other early turbocharged airplanes included the Consolidated B-24 Liberator, Lockheed P-38 Lightning, Republic P-47 Thunderbolt and experimental variants of the Focke-Wulf Fw 190.

The first practical application for trucks was realized by Swiss truck manufacturing company Saurer in the

1930s. BXD and BZD engines were manufactured with optional turbocharging from 1931 onwards.[20] The Swiss industry played a pioneering role with turbocharging engines as witnessed by Sulzer, Saurer and Brown, Boveri & Cie.[21][22]

Automobile manufacturers began research into turbocharged engines during the 1950s, however the problems of "turbo lag" and the bulky size of the turbocharger were not able to be solved at the time.[8][13] The first turbocharged cars were the short-lived Chevrolet Corvair Monza and the Oldsmobile Jetfire, both introduced in 1962.[23][24] Greater adoption of turbocharging in passenger cars began in the 1980s, as a way to increase the performance of smaller displacement engines.[10]

Like other forced induction devices, a compressor in the turbocharger pressurises the intake air before it enters the inlet manifold.[25] In the case of a turbocharger, the compressor is powered by the kinetic energy of the engine"s exhaust gases, which is extracted by the turbocharger"s turbine.[26][27]

The main components of the turbocharger are: