Variable Valve Timing

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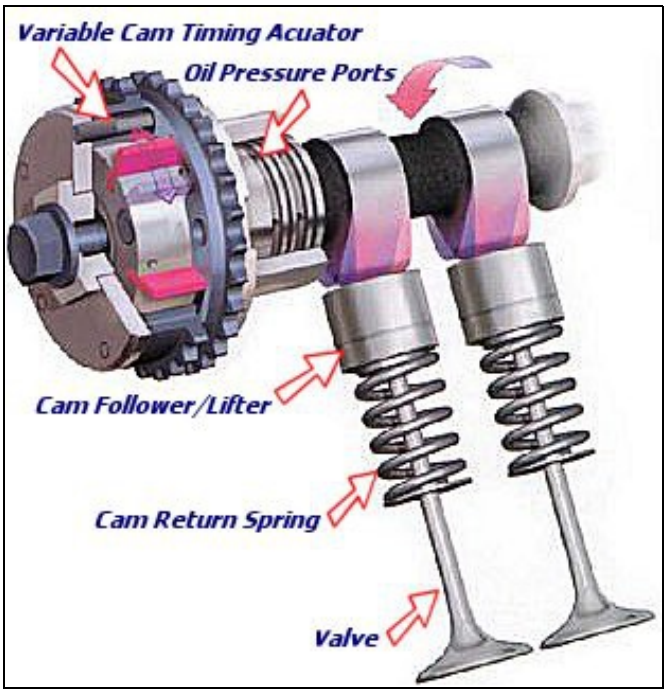


How Camshaft and Variable Valve Timing Works

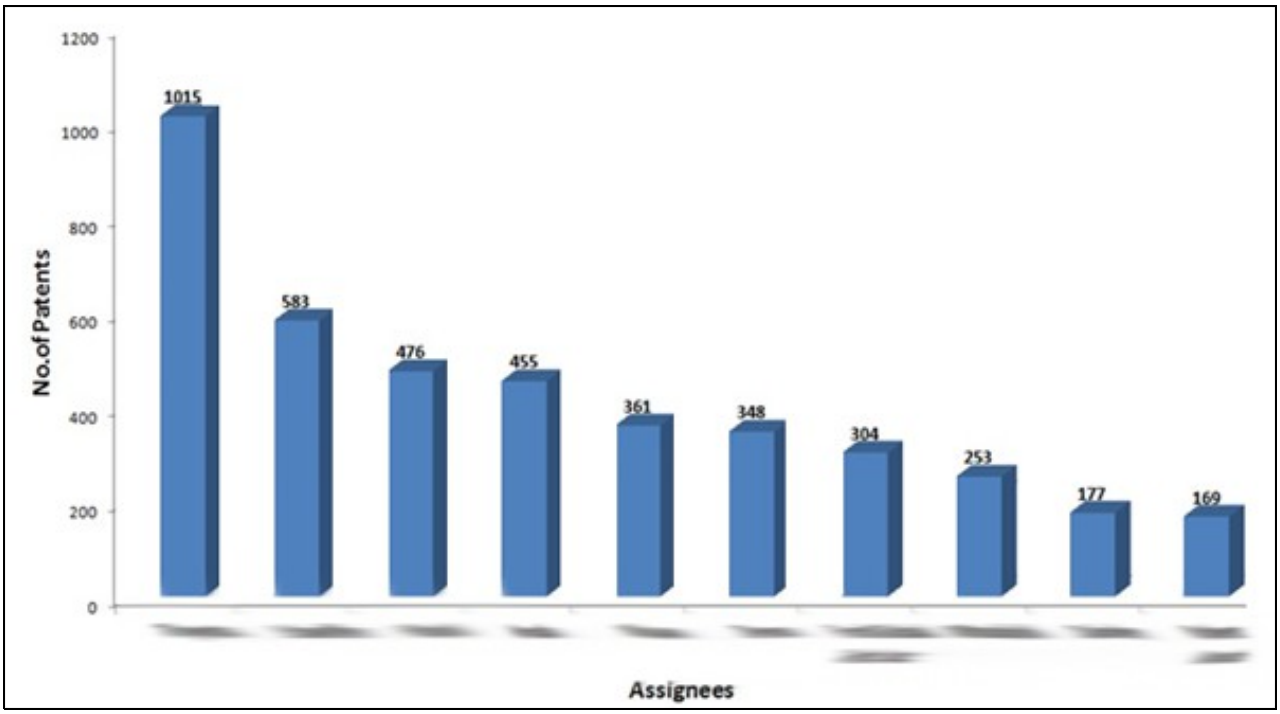
Abstract

Variable Valve Timing is an important phenomenon in all reciprocating internal combustion engines. Valves used to control the amounts of intake air/charge thereby operating the engine without any interruption. Earlier valves open/close at a particular engine rpm. The timing of these valves is independent of engine speed. This leads to reduced engine performance. With the advent of improvements in this technology over the years this technology not only improves engine performance but also reduces harmful emissions, improves fuel economy. Hence in order to improve engine performance auto giants came up with the concept of Valve timing. FIAT first patented on this valve timing technology in 1960. But it took almost 20 years for this technology to transform into practicality. Alpha Romeo is the first car that used this technology in its cars for the first time in 1980.

This present report analyses the technology of Variable Valve Timing in automobiles. It consists of a brief introduction to the technology and detailed information about its classification. By considering highly relevant patents, keywords for the patent search are generated. Different classes relating to the valve timing are identified and are used in the patent search. Detailed technology based taxonomy is also furnished. Sample of 30 relevant patents were analyzed. The report also consists of some key findings regarding top cited patents, Major players, IP activity over the years, statistical analysis of patents using forward citations etc.

Some key findings from the report include:

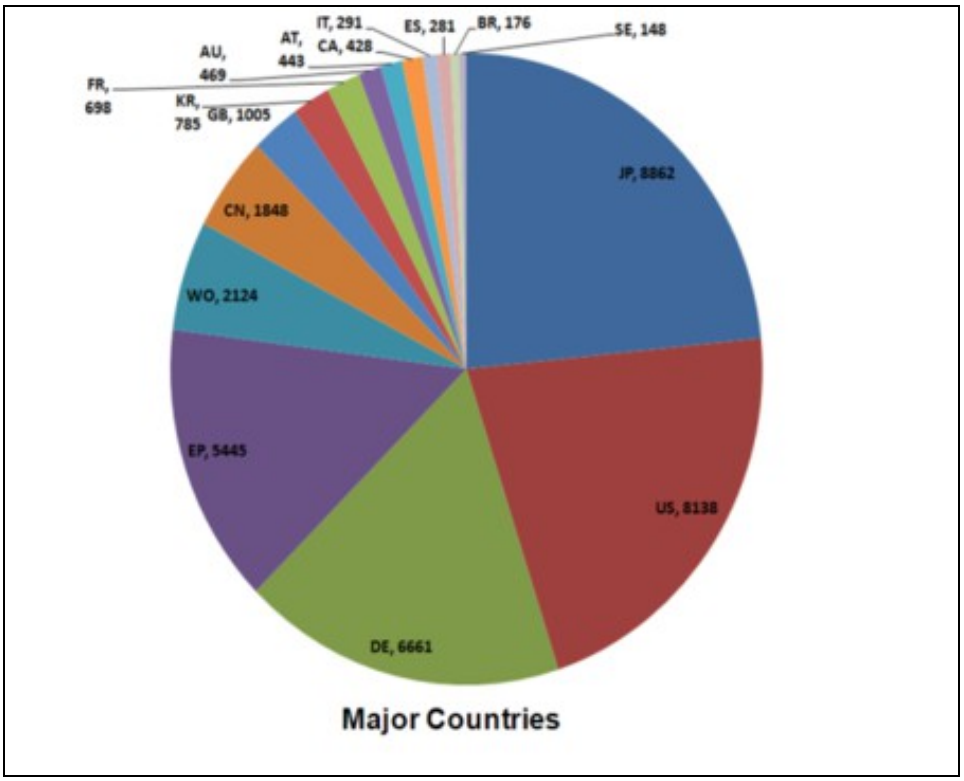
a. The major players in the technology:



Large automotive as well as other companies are developing capabilities in VVT

Top Assignees

b. Country wise patent statistics:



c. Taxonomy:

Class Based Taxonomy

- This taxonomy is based on top 50 IPC/ECLA classes related to variable valve timing technology.

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Technology Based Taxonomy

- This taxonomy is based on various components their functionality and applications of variablee valve timing.

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```

Interested in the analysis?

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