



## Study of failure of gears and analysis through SEM of Fracture surface

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**Introduction** : Gears are the most common means of transmitting motion and power in the modern mechanical engineering world. A gear is a component within a transmission device that transmits rotational force to another gear or device. A gear is different from a pulley in that a gear is round wheel which has linkages —teeth that mesh with other gear teeth, allowing force to be fully transferred without slippage. A gear is a machine element designed to transmit force and motion from on mechanical unit to another. The design and function of gears are usually closely associated, various types of gears have been developed to perform different function, the most common of these being spur gears, helical gears, straight and spiral bevel gears, and hypoid gears.



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The basic reasons of gear failure misalignment of gear, spalling, pitting etc, follow the reason of gear failure. Gears generally fail when the working stress exceeds the maximum permissible stress. Advances in engineering technology in recent years have brought demands for gear teeth, which can operate at ever increasing load capacities and speeds. The gears generally fail when tooth stress exceed the safe limit. In this study the technology of gears is presented along with the various types of failure that gears have. The causes of these failures are studied. The type of stress related failure due to ( fatigue failure ) of gear tooth because of stress concentration is detailed in this thesis. it focused on the different types methodology, that is used by the various researcher in the past recent year to find out causes of failure in gear and what is final result of that to reduce the failure in gear. Gears are commonly used for transmitting power.

Key Words : Gear, Failure, Teeth, gear failure misalignment of gear, spalling, pitting etc.

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