

Shigley Mechanical Engineering Design 6th

It is possible to design gear teeth for gears that are non-circular, yet still transmit torque smoothly. Renaissance natural philosophers identified six simple machines which were the elementary devices that put a load into motion, and calculated... The speed ratios of chain and belt drives are computed in the same way as gear ratios. See bicycle gearing. Many systems are intentionally built much stronger than needed for normal usage to allow for emergency situations, unexpected loads, misuse, or degradation (reliability). Gear teeth are designed to ensure the pitch circles of engaging gears roll on each other without slipping, providing a smooth transmission of rotation from one gear to the next.

Features of gears and gear trains include:

Gear train Gear teeth are designed to ensure A gear train or gear set is a machine element of a mechanical system formed by mounting two or more gears on a frame such that the teeth of the gears engage. element of a mechanical system formed by mounting two or more gears on a frame such that the teeth of the gears engage

Factor of safety Safety factors are often calculated using detailed analysis because comprehensive testing is impractical on many projects, such as bridges and buildings, but the structure's ability to carry a load must be determined to a reasonable accuracy. Strain, 6th edition. McGraw-Hill, 1989. ASME BTH-1: Design of In engineering, a factor of safety (FoS) or safety factor (SF) expresses how much stronger a system is than it needs to be for its specified maximum load. McGraw-Hill, 1986.

Shigley, J and Mischke, C: Standard Handbook of Machine Design, page 2-15

Glossary of engineering: M-Z New York: Oxford University Press. (2011). Theory of machines and mechanisms. Shigley, J. " This glossary of engineering terms is a list of definitions about the major concepts of engineering. ISBN 978-0-19-537123-9. "What is Mechanical Engineering. Please see the bottom of the page for glossaries of specific fields of engineering. E

The transmission... Margin of safety (MoS or MS) is a related measure, expressed as a relative change.

Machine They can also include computers and sensors that monitor performance and plan movement, often called mechanical

systems. The term is commonly applied to artificial devices, such as those employing engines or motors, but also to natural biological macromolecules, such as molecular machines. G. Shigley, 2003, Theory of Machines and Mechanisms, Oxford University Press, New York. E. R. Machines can be driven by animals and people, by natural forces such as wind and water, and by chemical, thermal, or electrical power, and include a system of mechanisms that shape the actuator input to achieve a specific application of output forces and movement. Oxford English Dictionary A machine is a physical system that uses power to apply forces and control movement to perform an action. Pennock, and J. "mechanical"

The gear ratio of the pitch circles of mating gears defines the speed ratio and the mechanical advantage of the gear set.
A planetary gear train provides high gear reduction in a compact package.

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