

An Overview of Piezoelectric Motors

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The number of inventions and patent applications in the field of piezo motors is increasing constantly. All piezo motors have one thing in common. These motors operate using the piezoelectric effect where microscopic small oscillatory motions are converted into continuous or stepping rotary or linear motions. The term "piezo motor", however, is confusing to a certain extent, as it consists of various functional principles. Each principle varies considerably in construction/assembly and drive specifications.

We can divide the piezo motors into 3 categories:

- Piezo Walk-Drives (drives that use various piezo actuators for clamping and shifting alternatively to produce a movement)
- Ultrasonic Motors (motors with ceramics oscillating within the ultrasonic frequency range)
- Stick-Slip-Drives (drives which produce a movement due to speed dependent friction factors)

Even though study and investigation of the Stick-Slip-Drive type piezo motors are increasing recently, ultrasonic motors are among the most examined actuators. Various piezo motors with their functional and operating principals in addition to their advantages and disadvantages will be described and discussed with examples.

The session should serve as an overview and summary on piezo motors not only for the experts in this field.