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# Grinding of internal gears by setting a large crossed-axes angle using a barrel-shaped grinding wheel

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## highlights

- Internal gear grinding method for mass production is proposed.
- Higher grinding speed is performed by a large crossed-axes angle.
- The barrel-shaped grinding wheel is used to realize a large crossed-axes angle.

## ABSTRACT

Recently, there has been an increase in the demand for mass production of high-precision internal gears in order to lower vibration and noise. Therefore grinding of internal gears has become necessary. However, the conventional grinding method cannot achieve target cycle times and hence is not suitable for mass production. To address this problem, a high-precision and high-efficiency method of grinding internal gears has been developed which is described in this paper. The grinding method presented in this study, uses a barrel-shaped threaded grinding wheel to realize a large crossed-axes angle between the internal gear and the grinding wheel, which leads to a higher grinding speed. The geometrical and numerical analysis of the grinding method and the surface of the barrel-shaped threaded grinding wheel have been carried out. Production test of the barrel-shaped grinding wheel and grinding experiment of an internal gear with a large crossed-axes angle have been performed and their results show that the proposed internal gear grinding method is effective.

*Key words:* Gear

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