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Comparison of Efficient Production of Small Module Gears

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Abstract : The new designs of satellite gears comprising a number of small gears pose high requirements on the precise production of small module gears. The objective of the experimental activity stated in this article was to compare the conventional rolling gear cutting technology with the modern wire electrical discharge machining (WEDM) technology for the production of small module gear m=0.6 mm (thickness of 2.5 mm and material 30CrMoV9). The WEDM technology lies in copying the profile of gearing from the rendered trajectory which is then transferred to the track of a wire electrode. During the experiment, we focused on the comparison of these production methods. Main measured parameters which significantly influence the lifetime and noise was chosen. The first parameter was to compare the precision of gearing profile in respect to the mathematic model. The second monitored parameter was the roughness and surface topology of the gear tooth side. The experiment demonstrated high accuracy of WEDM technology, but a low quality of machined surface.

Keywords : precision of gearing, small module gears, surface topology, WEDM technology
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