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Thermal Analysis of Helical Gear Transmission System Considering Machining and Installation Error

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HIGHLIGHTS

- The three-dimensional temperature field of helical gear considering machining and installation error is analyzed.
- The average contact stress model of tooth surface considering error is set up.
- The friction heat flux of the helical gear is different from the spur gear, the helical gear has a spiral angle, and its friction heat flux is distributed along the helix angle.
- The calculation formula of convective heat transfer coefficient which considers different surfaces of gear tooth are derived.
- The finite element parametric model for thermal analysis are built and it realizes the parametric modeling, automatic loading and generation of temperature field by APDL program.

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