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(57) Abstract :
The present invention relates to a device for improving cooling in high-speed rotating bearings, comprising airflow channels (101), bearing housing (102), heat-dissipating fins (103), outer casing (104), lubricant circulation system (105), micro-channels (106), and embedded sensors (107). The device enhances thermal management by integrating airflow-driven convection, fin-assisted conduction, and lubricant-based heat absorption. This ensures uniform temperature distribution, reduces lubricant degradation, prevents premature wear, and extends bearing life. The invention is compact, lightweight, and adaptable for both retrofitting and new high-speed machinery applications.

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