

MULTIOBJECTIVE OPTIMAL DESIGN OF HEAT FLOW IN CALENDER SHAFT

Summary - In the paper the analysis of a heat transfer for a calender is considered. With respect to working condition of this type of systems the highest smoothness of temperature field on the working surface is demanded as well as minimization of temperatures on bearing journals. The main problem is the nonuniform temperature distribution on the working surface along calendar axis. The high level of its temperature causes bad working conditions of bearings of calender. The uniformness of the field temperature can be ensured by manipulating of heat sources distribution when manipulating of heat stream, to reduce bearing journals temperature, is possible using different conduction conditions in directions to working surface and to bearings. The optimal design of heat distribution and conduction properties is carried out using hybrid algorithm (consisting with evolutionary algorithm combined, in series, with Hooke-Jeeves method) when the analysis of the state of the calendar is done with finite element method.