

Study on Residual Stress Measurement of Inconel-718 under Different Lubricating Conditions

Authors : M. Sandeep Kumar, Vasu Velagapudi, A. Venugopal

Abstract : When machining is carried out on a workpiece, residual stresses are induced in the workpiece due to nonuniform thermal and mechanical loads. These stresses play a vital role in the surface integrity of the final product or the output. Inconel 718 is commonly used in critical structural components of aircraft engines due to its properties at high temperatures. Therefore it is important to keep down the stresses induced due to machining. This can be achieved through proper lubricating conditions. In this work, experiments were carried out to check the influence of the developed nanofluid as cutting fluids on residual stresses developed during the course of machining. The results of MQL/Nanofluids were compared with MQL/Vegetable oil and dry machining lubricating condition. Results indicate the reduction in residual stress with the use of MQL/Nanofluid.

Keywords : nanofluids, MQL, residual stress, Inconel-718

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