

응력집중을 갖는 기어의 피로수명 향상을 위한 최적 피닝강도 탐색

이동선[†] · 이국진*(서울산업대 원) · 정성균**(서울산업대)
· 김태형*** (서강대 원) · 황재희**** (한송통상)

Investigation of optimal peening intensity of gear with stress concentration for improvement of fatigue life

Dong-Sun Lee, Kook-Jin Lee, Tae-Hyung Kim, Jae-Hee Hwang, Seong-Kyun Cheong

Key Words: Gear(기어), Shot peening(쇼트피닝), Fatigue life(피로수명)

Abstract : As the industrial society develops rapidly, weight reduction and high strength are demanded gradually. In case of the gear which receives the repeat load, it does a carburized control generally and it improves the material strength. But if it applies the technique which is shot peening, it will be able to improve the durability and the fatigue characteristic of material because the hardness and the residual stress of the surface are on the increase. As the condition of shot peening, there is a great difference in fatigue life. Accordingly, this study investigated material characteristic and cause which it follows in condition of peening. In this study, we detect the optimal peening condition and hardness, roughness, and evaluate reliability.

실무업무 분석을 통한 용접대차프레임 피로내구해석의 자동화

한승호[†] · 방제성* · 임채환*(한국기계연구원)
이광기** · 이광순**(태성에스엔이) · 송시엽*** (로템)

Automation of Fatigue Durability Analysis of Welded Bogie Frame using Work Flow Analysis

Seung-Ho Han, Je-Sung Bang, Chae-Whan Rim,
Kwang-Ki Lee, Kwang-Soon Lee, See-Yeob Song

Key Words: Fatigue durability analysis(피로내구해석), Welded bogie frame(용접대차),
Process Integration(프로세스통합), Multidisciplinary engineering(다분야공학)

Abstract : The automation of fatigue durability analysis for welded bogie frame was proposed by using the ModelCenter, which enables to integrate several engineering tools for the fatigue durability analysis, i.e. I-DEAS, ANSYS and BFAP, and to perform iterative analysis and process related with UIC-code standard. Additionally, the wrapping programs is developed to control input/output file which contain the information of design parameters and execution file at each step of activity. The position of transom support bracket is changed within allowable range to perform the parametric study. The developed automation technique brings not only significant decreasing man-hour required in the fatigue durability analysis, but also providing a framework for the multidisciplinary engineering activities or Reliability based optimization.