ANTUNES, F. V.; CAMAS, D.; CORREIA, L.; BRANCO, R. (2015) - Finite element meshes for optimal modelling of plasticity induced crack closure. Engineering Fracture Mechanics. ISSN 0013-7944. Vol. 142, p. 184-200

Abstract: The main goal here is to optimise the finite element mesh used to predict plasticity inducedcrack closure (PICC). A numerical model was developed for a M(T) specimen made of6016-T4 aluminium alloy. The parameters studied were the size of most refined region perpendicularly to crack flank (y_m) and along propagation direction (x_r), the size of finite elements near crack tip ($L1$) and the vertical size of refinement close to crack flank ($y_{A/B}$). A maximum size of about 1.3 mm was found for y_m, but a smaller value has a limited impact on PICC. An analytical expression was proposed for x_r, dependent on DK and Kmax. An optimumvalue seems to exist for $L1$.