

# VARIABLE AMPLITUDE LOADING IN En8 (080M40) STEEL: A DETAILED EXPERIMENTAL STUDY OF CRACK GROWTH

1. S. P. Ng'ang'a,
2. M. N. James

Article first published online: 2 APR 2007

DOI: 10.1111/j.1460-2695.1996.tb00960.x

## Keywords:

- Variable amplitude loading;
- Crack closure;
- Medium carbon (En8) steel

**Abstract** —The load interaction effects that occur under variable amplitude loading conditions following single peak overloads, low-high blocks and high-low blocks have been investigated on a commonly used structural steel. A detailed investigation has been carried out on long cracks which aims at developing and assessing the efficacy of a simple predictive model based on closure and plastic zone effects.

The material was tested in a quenched and tempered condition. All the tests were carried out in the four point bending mode, in both the Paris regime and near the threshold, with overloads ranging from 10% to 100%.

An attempt to relate crack closure to crack growth rates in the transient growth rate region (which follows a load change) was made.

The trends observed for a wide range of loading parameters are presented.