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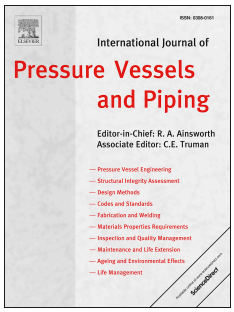

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CANMET SENT TEST METHOD, UPDATES AND APPLICATIONS

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ABSTRACT

CANMET researchers developed a single-edge notched tension (SE(T) or SENT) procedure approximately a decade ago. The developed procedure is a single-specimen test using an unloading-compliance technique for crack size estimation and the J-integral approach as in ASTM E1820. Since then, the CANMET method has been validated and evaluated extensively by applying it to numerous pipe steels and girth welds, and some equations have been revisited for further improvement. The significance of use of the CANMET method enables calculation of J-integral that provides a more logical methodology particularly for instability assessments with significant crack growth. This paper reviews the CANMET SE(T) test method, comparing with other existing procedures and updating the equations for crack size and stress intensity factor.

Key words: SE(T), SENT, toughness, J-integral, pipe steels

NOMENCLATURE

a, a_o	crack size, original crack size
A_{pl}	plastic area under the load-CMOD curve
b	uncracked ligament (=W-a)
B	specimen thickness
B_{eff}	effective thickness
B_N	net thickness (thickness after side-grooving)
C_i, C_{icorr}	crack mouth opening displacement (CMOD) compliance, corrected CMOD
E	elastic Young's modulus
f_1, f_2	parameters used in evaluation of K
F	rotation correction factor
$F\left(\frac{a_i}{W}\right)$, $G\left(\frac{a_i}{W}\right)$	geometry-dependent functions in equation for K
h_1, h_2	knife edge heights measured from specimen surface
J	J-integral
K	stress intensity factor

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