EFFECTS OF CORROSION PREVENTION COMPOUNDS AND OVERLOAD INDUCED RESIDUAL STRESS FIELD ON FATIGUE LIFE IN ALUMINUM ALLOY

A Thesis

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GLOSSARY OF SYMBOLS

Roman Notations

a	half crack length
a_i	initial crack length
a_f	final crack length
$\Delta a/\Delta N$	crack growth rate (crack length per cycle)
b	half width of specimen, maximum possible crack length
C	fatigue crack growth coefficient in Paris's equation
CA	constant amplitude
CPC	corrosion-prevention-compounds
E	elastic modulus
f	frequency
FCG	fatigue crack growth
h	half height of test specimen
K	stress intensity factor, a fracture mechanics parameter
K_c	plane stress fracture toughness
K_{IC}	plane strain fracture toughness
k_t	stress concentration factor
ΔK	range of stress intensity factor
ΔK_{eff}	effective stress intensity range
m	fatigue crack growth exponent in Paris's equation
N	number of cycles
N_f	final fatigue life
OL	overload
OLR	overload ratio
R	stress ratio for cyclic loading (minimum stress/ maximum stress)
r_p	radius of plastic zone at the crack tip
S	nominal stress, based on gross area
S_{op}	crack opening stress
ΔS	range of nominal stress
ΔS_{eff}	effective stress range
t	thickness
VA	variable amplitude loading
Y	geometric crack configuration factor

Greek Notations

α	relative crack length aspect ratio ($\alpha = a / b$)
β	geometry correction factor
σ	normal stress at a point
σ_y	yield strength
σ_u	ultimate tensile strength

Subscripts;	**meaning**
a	amplitude
c	critical
f	final
i	initial
m	mean
max	maximum
min	minimum