

TG7 - FITNESS for SERVICE (FFS) - Risk based Inspection (RBI)

EPERC TG7 Potential Technical Program

General Introduction

4 major degradation consequences:	cracks of different origins: fatigue, corrosion, High Temperature Hydrogen Attack (HTHA)...	thinning-pitting	excessive deformation/buckling	loss of material properties (ageing)
4 major steps	understanding root causes and mechanisms	degradation rate	- maximum allowable degradation - leak before break	repair technologies and consequences
WP 1: Existing International Codes & Standards*	review/comparison of International Codes and Rules	comparison of Tables of content		gaps & needs, including new needs associated to innovative industries
WP2: Degradation Mechanisms	Cracks/Thinning/Corrosions/Overloads/Loss of material properties analyses			
WP3: R&D program	Crack analyses	- K, J, C* handbook - crack growth / plasticity effects / mean stress / threshold / environment effects: fatigue/corrosion/creep - critical crack size: brittle/transition/ductile - cladding consequences - defect interaction - creep consequences		
	Residual stresses	- manufacturing - welding - repairs		
	Leak Before Break	- Crack growth rate/shape - TWC critical size - Crack Opening Area		Step by step Procedure, up to leak rate evaluation
	Thinning - Pitting analyses	- thinning rate - allowable thinning rules		
	Corrosion	- rate - consequences		- due to environment - thermal ageing consequences - other types of ageing
	Loss of material properties	- rate - consequences		- due to environment - thermal ageing consequences - other types of ageing
	Overload and Buckling	- examples		
	All needed material properties		- da/dN - ΔK or DJ - J-Δa curves - da/dt - C* - corrosion rate - HTHA - thinning rate - stress-strain curves - thermal ageing consequences	
WP4: Local Approach of Rupture	Presentation of the different available techniques for surveillance of key parameters	- K, J, C* handbook		
WP5: RBI	Risk Based Inspection development and Final Validated Guide	ISI optimisation	techniques, performance, frequency	
WP6: Benchmarks on practical cases	definition	performances	synthesis	
WP7: TG7 Final Recommended practices	All task and WP synthesis	Final Recommended Practices Report	Code Case proposal to European Standards	
WP8: TG7 Synthesis	All task and WP synthesis	Final Best Practices Report	Code Case proposal to European Standards	

WP9: Large Knowledge Transfert	Reports - Workshop - Training - International Conferences -Summer School ...		
WP10: Road Map management	Regularly updated with all TG7 actions		
* FFS International Codes & Standards	ASME BPVC Section XI, RSEM(App.5)/RCC-MRx(App.A16), R5-R6, API-ASME, FITNET, BS 7910, JSME, KEPIC, VERLIFE...		
* RBI International Codes & Standards	ASME BPVC Sec XI Code Cases/Division 2 RIM, API 581, RIMAP, ENIQ, TWI, JSME, EN16991 ...		
WP4:Surveillance program and ISI	techniques for surveillance of key parameters	ISI optimisation	techniques, performance, frequency
	Risk Based Inspection development and Final Validated Guide		