

FATFREE IS READY <i>License status: OK. License expires in 375 days.</i>		FATFREE FATIGUE ANALYSIS OF FREE SPANNING PIPELINES				FatFree Suite v13.0.1 FatFree GUI v13.0.1		Support: Software.Support@dnvgl.com			
		Project: Example 02				Date:		Calculations by			
References:		Free Span Scenario		Response Data		Soil Properties		SN-Curve, cap position			
Multi-mode	RP-F105	Flat sea-bed	RP-F105 Span	User Defined	F1 (seawater cp)	F1 (seawater cp)	MEDIUM				
Return Period Values	Directionality	h [m]	200	f _l (in-line)	1,323	ζ _{struc}	0,005	m ₁	3		
Automatic Generated	Discrete - C dir.	L [m]	17	f _l (cr-flow)	1,327	ζ _{soil} (in-line)	0,015	m ₂	5		
Current Modelling	Current Sheet Name	e [m]	1,00	A ₁ (in-line)	170	ζ _{soil} (cr-flow)	0,009	Log(C ₁)	11,299		
Uc Weibull pdf	Current Template	d [m]		A ₁ (cr-flow)	170	ζ _{h, RM}	0,0000	Log(C ₂)	14,832		
<p>Damage vs. direction</p> <p>Current pdf and response models for critical direction</p>		θ _{pipe}	0,0	λ ₁	1,290	K _S (in-line)	0,46	logN _{sw}	6,00		
		D [m]	0,279	δ/D	0,10	K _S (cr-flow)	0,32	SCF	1,40		
		L/D _s	62	S _{eff} /P _E	-0,27	K _V	1,000E+05	R _{cap}	0,137		
		Wave Modelling		Wave Sheet Name		K _L		1,000E+05		R _{root}	
		Hs Weibull pdf		Wave Template		K _{V,S}		1,000E+05			
STRUCTURAL MODELLING											
Coating data		Functional Loads		Pipe Dimensions [m]		Constants		Densities [kg/m ³]			
k _c	0,00	H _{eff} [N]	6,00E+04	D _s	0,2731	v	0,30	ρ _{steel}	7850		
f _{cn} [Mpa]	42	p [bar]	147,1	t _{steel}	0,0111	α [°C ⁻¹]	1,17E-05	ρ _{concrete}	0		
k [m]	3,3E-03	ΔT [°C]	0	t _{concrete}	0,0000	E [N/m ²]	2,07E+11	ρ _{coating}	935		
				t _{coating}	0,0027			ρ _{cont}	200		
RESULTS											
FATIGUE LIFE				DYNAMIC STRESS [MPa]							
In-line (Response Model)				1,14E+05 yrs		Cross-flow		Von Mises		Inline	
Cross-Flow				1,00E+06 yrs		Peak		Von Mises		Peak	
In-line (Force Model)				1,00E+06 yrs		σ _x (1 year)		0,0		131,0	
In-line (Combined)				1,09E+05 yrs		σ _x (10 year)		0,0		131,0	
						σ _x (100 year)		0,0		131,0	
						σ _x (1 year)		2,6		133,0	
						σ _x (10 year)		6,6		132,3	
						σ _x (100 year)		11,5		131,5	
Special input											
Normal											
R _{S,C}											
R _{S,W}											
R _{IL, strakes}											
R _{CF, strakes}											
R _{CF-ind-IL, strakes}											