


PROJECT :			DATE :	03/05/2013
PROJ. NO. :			BY :	S.R. M.
CLIENT :			REV :	
UNIT :			DOC NO.:	

Horizontal Three Phase Separator - Liquid Degassing Check


Input Data	Unit	Vapor	Light Phase	Heavy Phase
Volumetric Flow Rate	m3/hr	NR	2.6	25.8
Density	kg/m3	1.5	756	977
Viscosity	CP	NR	0.69	0.43
Gas Bubble in Heavy Phase	micron	200		
Gas Bubble in Light Phase	micron	200		

Gas Bubble Terminal Velocity in H. phase		
CRe ²	----	539
Drag Coefficient (C)	----	3.55
Re		12.32
Terminal Velocity	m/sec	0.004

Gas Bubble Terminal Velocity in L. phase		
CRe ²	----	125
Drag Coefficient (C)	----	8.63
Re		3.81
Terminal Velocity	m/sec	0.004

Degassing Length Calculation		
Vessel Diameter	mm	1500
Vessel Length	mm	3500
Vessel Cross sectional Area	m2	1.77
BTM - NIL (H. Phase)	mm	600
NIL - NLL (L. Phase)	mm	350
Bubble Rising Time in H. Phase	min	2.4
Heavy phase Cross Sec. Area	m2	0.74
Heavy Phase Velocity	m/sec	0.010
Lmin for Heavy phase Degassing	mm	1376
Bubble Rising Time in L. Phase	min	1.4
Light phase Cross Sec. Area	m2	0.33
Light Phase Velocity	m/sec	0.002
Lmin for Light phase Degassing	mm	185
Degassing Requirement	---	H
Minimum Degassing Length	mm	1376
Degassing Req. Check	----	OK

Notes

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Vertical Three Phase Separator - Liquid Degassing Check

Input Data	Unit	Vapor	Light Phase	Heavy Phase
Volumetric Flow Rate	m3/hr	NR	2.6	25.8
Density	kg/m3	1.5	756	977
Viscosity	CP	NR	0.69	0.43
Gas Bubble in Heavy Phase	micron	200		
Gas Bubble in Light Phase	micron	200		

Gas Bubble Terminal Velocity in H. phase		
CRe ²	----	539
Drag Coefficient (C)	----	3.55
Re		12.32
Terminal Velocity	m/sec	0.004

Gas Bubble Terminal Velocity in L. phase		
CRe ²	----	125
Drag Coefficient (C)	----	8.63
Re		3.81
Terminal Velocity	m/sec	0.004

Degassing Diameter Calculation		
Vessel Length	mm	4000
Vessel Diameter	mm	1500
Vessel Cross sectional Area	m2	1.77
Heavy Phase Maximum Velocity		
Heavy Phase Maximum Velocity	mm/sec	4.200
Dmin for Heavy phase Degassing	mm	1474
Light Phase Maximum Velocity		
Light Phase Maximum Velocity	mm/sec	4.200
Dmin for Light phase Degassing	mm	468
Degassing Requirement		
Degassing Requirement	---	L
Minimum Degassing Diameter	mm	468
Degassing Req. Check	----	OK

Notes