


PROJECT :			DATE :	
PROJ. NO. :			BY :	S.R. M.
CLIENT :			REV :	
UNIT :			DOC NO.:	

HORIZONTAL THREE PHASE SEPRATOR SIZING CALCULATION SHEET (NO INTERAL)

Input Data	Unit	Vapor	Light Phase	Heavy Phase
Volumetric Flow Rate	m3/hr	2046	50	70
Density	kg/m3	57.8	650	1023
Viscosity	CP	0.012	0.92	1.54
Particle Dia. Oil in Vapor	micron	100		
Oil in Water	micron	100		
Water in Oil	micron	100		

Light Droplet Terminal Velocity		
CRe ²	----	2
Drag Coefficient	----	321.75
Terminal Velocity	m/sec	0.001

Heavy Droplet Terminal Velocity		
CRe ²	----	4
Drag Coefficient	----	167.88
Terminal Velocity	m/sec	0.002

Trial Diameter	mm	2800
Inlet Nozzle Size	mm	250
Hv/D Ratio	----	0.2
Vapor Space	mm	560
Maximum Liquid Level Height	mm	2240
Vessel Cross sectional Area	m2	6.15

Heavy Phase Section		
BTM - LLIL	mm	150
LLLL - LIL	mm	200
LIL - NIL	mm	250
NIL - HIL	mm	200
HIL - HHIL	mm	200
HHIL to BTM of LP Nozzle	mm	50
Light Phase Section		
Light Phase Outlet Nozzle Size	mm	150
TOP of LP Nozzle - LLLL	mm	375
LLLL - LLL	mm	200
LLL - HLL	mm	250
HLL - HHLL	mm	200
Total Liquid level Height	mm	2225
Light Droplet Rising Time	min	8.2
heavy phase Cross Sec. Area	m2	1.0
Heavy Phase Velocity	m/sec	0.020
Lmin light drop through heavy ph	mm	9719
Heavy Droplet Settling time	min	9.1
Light phase Cross Sec. Area	m2	3.5
Light Phase Velocity	m/sec	0.004
Lmin heavy drop through light ph	mm	2171

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Hold up Time		
Separation Comp. Length	mm	5000
BTM - LLIL Hold up Time	min	0.66
LLIL - LIL Hold up Time	min	1.34
LIL - NIL hold up Time	min	2.23
NIL - HIL hold up Time	min	2.90
HIL - HHIL hold up Time	min	3.13
Heavy Phase hold up Time	min	5.13
HHIL to BTM of LP Nozzle	min	0.58
LP Nozzle	min	1.76
TOP of LP Nozzle - LLLL	min	4.49
LLLL - LLL	min	2.35
LLL - HLL	min	2.80
HLL - HHLL	min	2.06
Light Phase Hold up Time	min	2.80

Vapor Side		
K vlaue	m/sec	0.028
Terminal Velocity	m/sec	0.09
Mesh Pad Correction Factor	----	1.00
Drop out Time	sec	6.26
Av Cross sectional Area	m ²	0.90
Vapor Velocity	m/sec	0.63
Lmin light phase thr. vapor	mm	3974

Vessel Length	mm	6260
L/D	----	2.24

