


<b>PROJECT :</b>			<b>DATE :</b>	
<b>PROJ. NO. :</b>			<b>BY :</b>	S.R. M.
<b>CLIENT :</b>			<b>REV :</b>	
<b>UNIT :</b>			<b>DOC NO.:</b>	

**HORIZONTAL THREE PHASE SEPRATOR SIZING CALCULATION SHEET (OVERFLOW WEIR)**

Input Data	Unit	Vapor	Light Phase	Heavy Phase
Volumetric Flow Rate	m3/hr	169.6335079	6	358.3
Density	kg/m3	1.91	896.9	1145
Viscosity	CP	0.011	17.435	3
Particle Dia. Oil in Vapor	micron	44		
Oil in Water	micron	100		
Water in Oil	micron	100		

Light Droplet Terminal Velocity		
CR <sub>e</sub> <sup>2</sup>	----	0
Drag Coefficient	----	1396.02
<b>Terminal Velocity</b>	<b>m/sec</b>	<b>0.0005</b>

Heavy Droplet Terminal Velocity		
CR <sub>e</sub> <sup>2</sup>	----	0
Drag Coefficient	----	60194.05
<b>Terminal Velocity</b>	<b>m/sec</b>	<b>0.0001</b>

<b>Trial Diameter</b>	<b>mm</b>	<b>4500</b>
Inlet Nozzle Size	mm	500
Hv/D Ratio	----	0.2
Vapor Space	mm	1050
Wier Height	mm	3450
Vessel Cross sectional Area	m <sup>2</sup>	15.90

Separation Compartment		
BTM - LLIL	mm	400
LLIL - LIL	mm	800
LIL - NIL	mm	1700
NIL - HIL	mm	200
HIL - HHIL	mm	200
HHIL - WIER	mm	150
<b>Total Liquid level Height</b>	<b>mm</b>	<b>3450</b>
Light Droplet Rising Time	min	107.3
heavy phase Cross Sec. Area	m <sup>2</sup>	10.9
Heavy Phase Velocity	m/sec	0.009
Lmin light drop through heavy pha	mm	<b>58893</b>
Heavy Droplet Settling time	min	118.2
Light phase Cross Sec. Area	m <sup>2</sup>	2.2
Light Phase Velocity	m/sec	0.001
Lmin heavy drop through light pha	mm	<b>5273</b>
<b>Separation Comp. Length</b>	<b>mm</b>	<b>5500</b>
BTM - LLIL Hold up Time	min	0.69
LLIL - LIL Hold up Time	min	2.48
LIL - NIL hold up Time	min	6.84
NIL - HIL hold up Time	min	46.69
HIL - HHIL hold up Time	min	44.92
HHIL - WIER hold up time	min	32.23
<b>Heavy Phase Residence Time</b>	<b>min</b>	<b>6.84</b>
<b>Light Phase Residence Time</b>	<b>min</b>	<b>46.69</b>

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Light Phase Compartment		
BTM - LLLL	mm	150
LLLL - LLL	mm	200
LLL - NLL	mm	1400
NLL - HLL	mm	1400
HLL - HHLL	mm	200
HHLL - WIER	mm	100
<b>Total Liquid level Height</b>	<b>mm</b>	<b>3450</b>
<b>Light Phase Comp. Length</b>		
	<b>mm</b>	<b>600</b>
<b>Hold up Time</b>		
BTM - LLLL Hold up Time	min	1.42
LLLL - LLL Hold up Time	min	2.37
LLL - NLL hold up Time	min	30.78
NLL - HLL hold up Time	min	37.04
HLL - HHLL hold up Time	min	4.84
HHLL - WIER hold up time	min	2.33
<b>Hold up Time</b>	<b>min</b>	<b>67.82</b>

Vapor Side		
K vlaue	m/sec	0.003
Terminal Velocity	m/sec	0.07
Mesh Pad Correction Factor	----	1.00
Drop out Time	sec	14.63
Av Cross sectional Area	m <sup>2</sup>	2.87
Vapor Velocity	m/sec	0.02
<b>Lmin light phase thr. vapor</b>	<b>mm</b>	<b>240</b>

<b>Vessel Length</b>	<b>mm</b>	<b>8125</b>
<b>L/D</b>	<b>----</b>	<b>1.81</b>

