


<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 (BUCKET & WEIR)**

Input Data	Unit	Vapor	Light Phase	Heavy Phase
Volumetric Flow Rate	m3/hr	2046	50	70
Density	kg/m3	1.17	800	1000
Viscosity	CP	0.01	0.8	1
Particle Dia. Oil in Vapor	micron	100		
Oil in Water	micron	200		
Water in Oil	micron	200		

Light Droplet Terminal Velocity		
CRe <sup>2</sup>	----	21
Drag Coefficient	----	31.29
<b>Terminal Velocity</b>	<b>m/sec</b>	<b>0.004</b>

Heavy Droplet Terminal Velocity		
CRe <sup>2</sup>	----	26
Drag Coefficient	----	26.16
<b>Terminal Velocity</b>	<b>m/sec</b>	<b>0.004</b>

<b>Trial Diameter</b>	<b>mm</b>	<b>3000</b>
Inlet Nozzle Size	mm	250
Hv/D Ratio	----	0.2
Crest Safety Height	mm	100
Vapor Space	mm	600
Crest Height	mm	2400
Wier Height	mm	2300
Vessel Cross sectional Area	m2	7.07

Separation Compartment		
BTM - LLIL	mm	250
LLIL - LIL	mm	100
LIL - NIL	mm	1000
NIL - HIL	mm	650
HIL - HHIL	mm	100
HHIL - WIER	mm	200
<b>Total Liquid level Height</b>	<b>mm</b>	<b>2300</b>
Light Droplet Rising Time	min	5.5
heavy phase Cross Sec. Area	m2	3.1
Heavy Phase Velocity	m/sec	0.006
Lmin light drop through heavy ph	mm	<b>2069</b>
Heavy Droplet Settling time	min	3.8
Light phase Cross Sec. Area	m2	2.7
Light Phase Velocity	m/sec	0.005
Lmin heavy drop through light ph	mm	<b>1175</b>
<b>Separation Comp. Length</b>	<b>mm</b>	<b>2300</b>
BTM - LLIL Hold up Time	min	0.61
LLIL - LIL Hold up Time	min	0.35
LIL - NIL hold up Time	min	5.16
NIL - HIL hold up Time	min	5.31
HIL - HHIL hold up Time	min	0.77
HHIL - WIER hold up time	min	1.47
<b>Heavy Phase hold up Time</b>	<b>min</b>	<b>5.16</b>
<b>Light Phase Hold up Time</b>	<b>min</b>	<b>5.31</b>

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Bucket Compartment		
BTM - BTM Bucket	mm	300
Bucket Wier Height	mm	2000
BTM Bucket - LLLL	mm	200
LLLL - LLL	mm	150
LLL - NLL	mm	700
NLL - HLL	mm	700
HLL - HHLL	mm	150
HHLL - WIER	mm	100
<b>Total Liquid level Height</b>	<b>mm</b>	<b>2000</b>
<b>Bucket Comp. Length</b>		
	<b>mm</b>	<b>1000</b>
<b>Hold up Time</b>		
BTM - LLLL Hold up Time	min	0.49
LLLL - LLL Hold up Time	min	0.42
LLL - NLL hold up Time	min	2.34
NLL - HLL hold up Time	min	2.48
HLL - HHLL hold up Time	min	0.49
HHLL - WIER hold up time	min	0.31
<b>Hold up Time</b>	<b>min</b>	<b>4.82</b>

Heavy Phase Compartment		
Wier Height (based on NIL)	mm	2110
BTM - LLLL	mm	200
LLLL - LLL	mm	150
LLL - NLL	mm	750
NLL - HLL	mm	750
HLL - HHLL	mm	150
HHLL - WIER	mm	110
<b>Total Liquid level Height</b>	<b>mm</b>	<b>2110</b>
<b>Heavy Phase Comp. Length</b>		
	<b>mm</b>	<b>1100</b>
<b>Hold up Time</b>		
BTM - LLLL Hold up Time	min	0.30
LLLL - LLL Hold up Time	min	0.34
LLL - NLL hold up Time	min	2.48
NLL - HLL hold up Time	min	2.94
HLL - HHLL hold up Time	min	0.57
HHLL - WIER hold up time	min	0.41
<b>Hold up Time</b>	<b>min</b>	<b>5.42</b>

Vapor Side		
K vlaue	m/sec	0.012
Terminal Velocity	m/sec	0.32
Mesh Pad Correction Factor	----	1.00
Drop out Time	sec	1.87
Av Cross sectional Area	m <sup>2</sup>	1.03
Vapor Velocity	m/sec	0.55
<b>Lmin light phase thr. vapor</b>	<b>mm</b>	<b>1032</b>

<b>Vessel Length</b>	<b>mm</b>	<b>6000</b>
<b>L/D</b>	<b>----</b>	<b>2.00</b>

