


<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 (BOOT & WIER)**

Input Data	Unit	Vapor	Light Phase	Heavy Phase
Volumetric Flow Rate	m3/hr	695.8	22.77	8
Density	kg/m3	10	750	990
Viscosity	CP	0.01	0.5	0.9
Particle Dia.	Oil in Vapor	micron	150	
	Oil in Water	micron	150	
	Water in Oil	micron	150	

Light Droplet Terminal Velocity		
CR <sup>2</sup>	----	13
Drag Coefficient	----	47.21
<b>Terminal Velocity</b>	<b>m/sec</b>	<b>0.003</b>

Heavy Droplet Terminal Velocity		
CR <sup>2</sup>	----	32
Drag Coefficient	----	22.49
<b>Terminal Velocity</b>	<b>m/sec</b>	<b>0.004</b>

<b>Trial Diameter</b>	<b>mm</b>	<b>1600</b>
Inlet Nozzle Size	mm	200
Hv/D Ratio	----	0.2
Vapor Space	mm	450
Maximum Liquid Level Height	mm	1150
Vessel Cross sectional Area	m2	2.01

Heavy Phase Compartment		
<b>Boot Diameter</b>	<b>mm</b>	<b>300</b>
Boot TL - LLIL	mm	150
LLIL - BTM	mm	450
<b>Boot Height</b>	<b>mm</b>	<b>600</b>
<b>Boot L/D (2 - 5)</b>	<b>----</b>	<b>2.00</b>
BTM - LIL	mm	50
LIL - NIL	mm	150
NIL - HIL	mm	150
HIL - HHIL	mm	150
HHIL - Wier	mm	50
<b>Total Liquid level Height</b>	<b>mm</b>	<b>550</b>
Light Droplet Settling time	min	1.1
Heavy phase Cross Sec. Area	m2	0.2
Heavy phase velocity	m/sec	0.015
Lmin light drop through heavy p	mm	<b>923</b>
<b>Heavy Phase Comp. Length</b>	<b>mm</b>	<b>2300</b>
Boot TL - LLIL Hold up Time	min	0.08
LLIL - LIL Hold up time	min	0.72
LIL - NIL Hold up Time	min	2.13
NIL - HIL hold up Time	min	3.10
HIL - HHIL hold up Time	min	3.64
<b>Heavy Phase Hold up Time</b>	<b>min</b>	<b>5.23</b>

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Light Phase Compartment		
Weir Height (BTM - LLLL)	mm	550
LLLL - LLL	mm	150
LLL - NLL	mm	150
NLL - HLL	mm	200
HLL - HHLL	mm	100
<b>Total Liquid level Height</b>	<b>mm</b>	<b>1150</b>
Heavy Droplet Settling time	min	2.6
Light phase Cross Sec. Area	m <sup>2</sup>	0.9
Light phase velocity	m/sec	0.007
Lmin heavy drop through light p	mm	1043
<b>Light Phase Comp. Length</b>	<b>mm</b>	<b>3500</b>
BTM - LLLL Hold up Time	min	5.69
LLLL - LLL Hold up Time	min	2.15
LLL - NLL hold up Time	min	2.21
NLL - HLL hold up Time	min	2.89
HLL - HHLL hold up Time	min	1.37
<b>Light Phase Hold up Time</b>	<b>min</b>	<b>5.10</b>

Vapor Side		
K vlaue	m/sec	0.035
Terminal Velocity	m/sec	0.30
Mesh Pad Correction Factor	----	1.00
Drop out Time	sec	1.51
Av Cross sectional Area	m <sup>2</sup>	0.47
Vapor Velocity	m/sec	0.41
<b>Lmin light phase thr. vapor</b>	<b>mm</b>	<b>623</b>

<b>Vessel Length</b>	<b>mm</b>	<b>4220</b>
<b>L/D</b>	<b>----</b>	<b>2.64</b>

